



Diplôme technicien ES informatique

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- Présentation
- Technologies
- Outils utilisés
- Fonctionnalités
- Démonstration
- Architecture
- Technique
- Améliorations possibles
- Conclusion

Choix du sujet

- Logiciel d'animation
- Utilisation d'images vectorielles

FreeFrame 

Choix du sujet

FreeFrame 

- Logiciel d'animation
- Utilisation d'images vectorielles

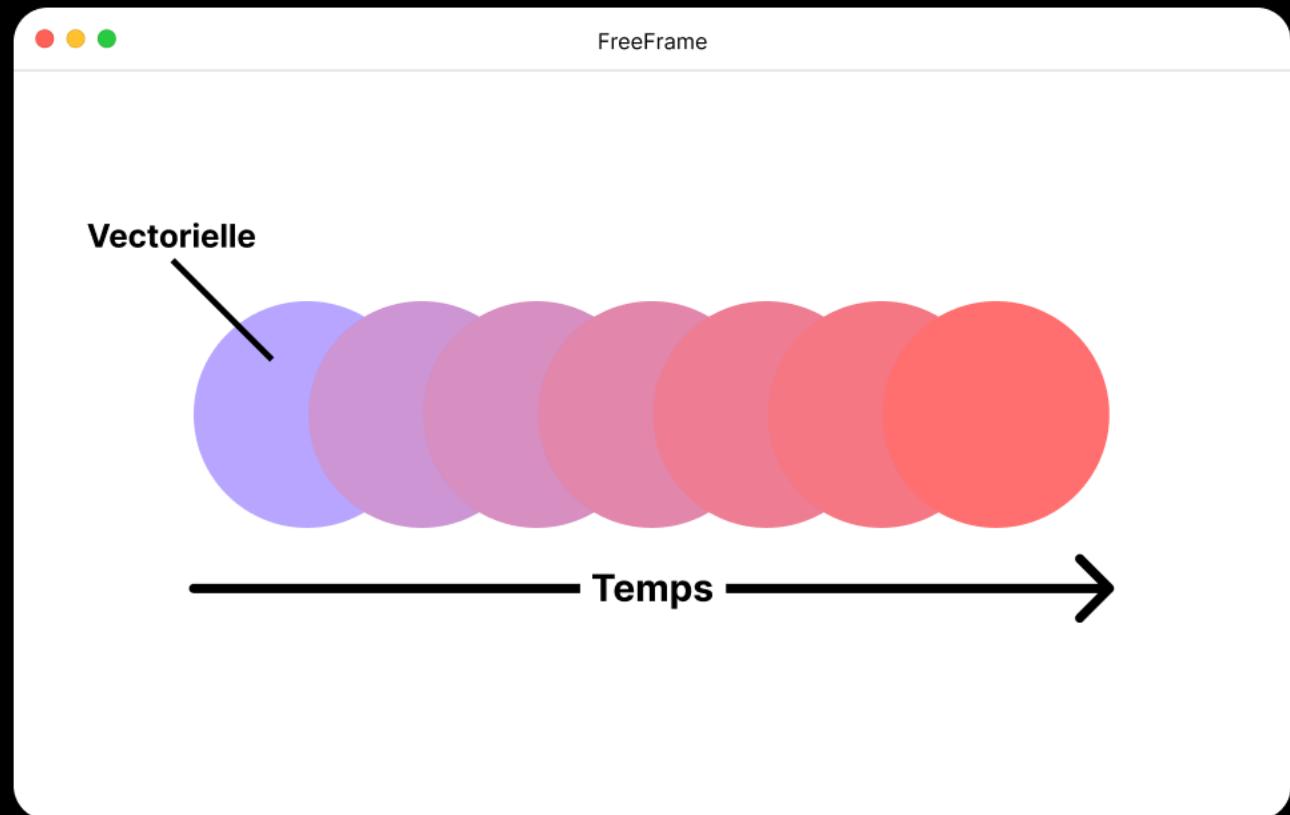


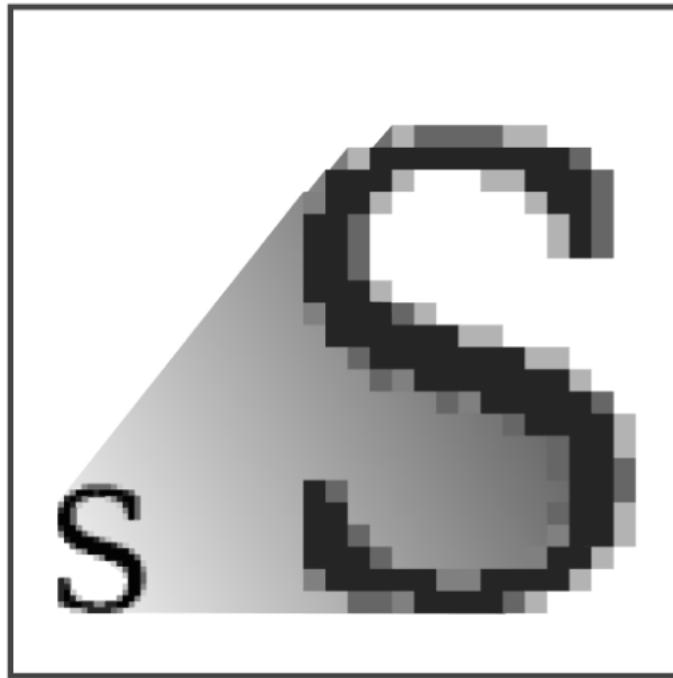
Image vectorielle ?



Matriciel
.jpeg .gif .png



Vectoriel
.svg



Matriciel
.jpeg .gif .png



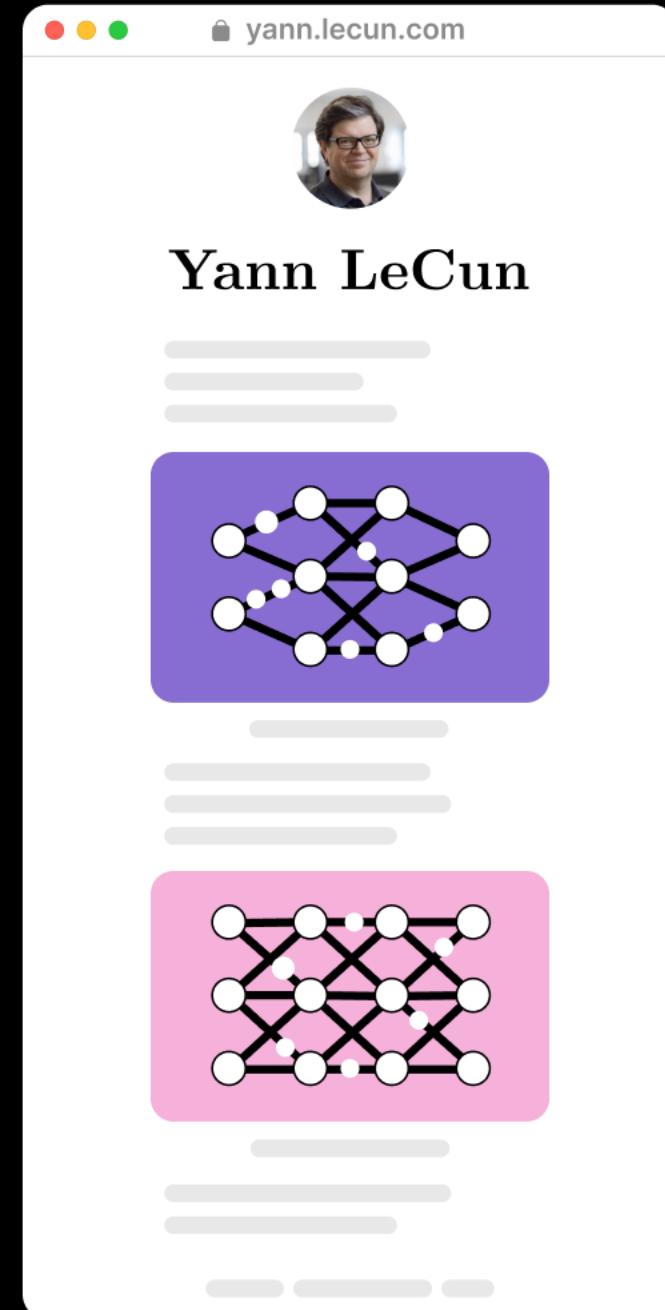
Vectoriel
.svg

But

- Simple
- Facile d'utilisation
- Rapide

But

- Simple
- Facile d'utilisation
- Rapide



Technologies



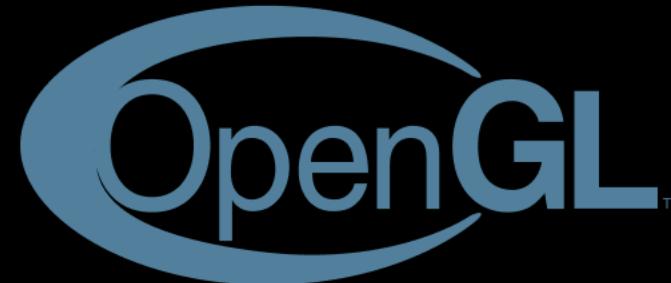
C# 9.0



.NET 6.0

Dear ImGui

Dear ImGui 1.87.3 (via ImGui.NET 1.87.3)



OpenGL 4.6 (via OpenTK 4.7.4)

Technologies



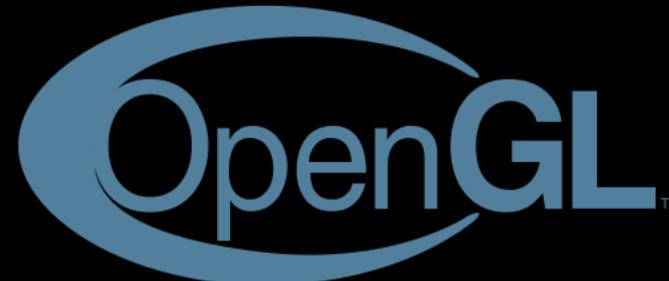
C# 9.0



.NET 6.0



Dear ImGui 1.87.3 (via ImGui.NET 1.87.3)



OpenGL 4.6 (via OpenTK 4.7.4)

Technologies



C# 9.0

.NET

.NET 6.0

ImGui.NET

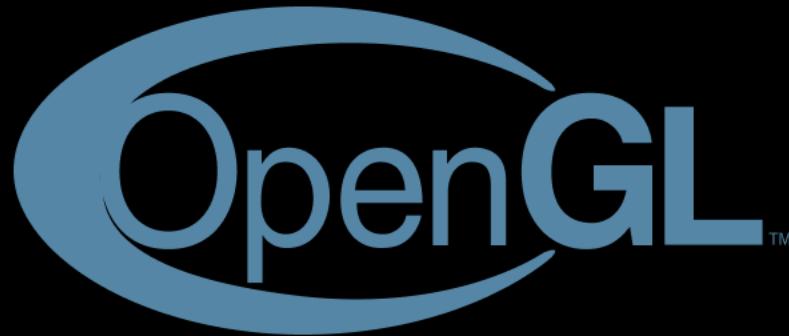
Dear ImGui 1.87.3 (via ImGui.NET 1.87.3)



OpenTK

OpenGL 4.6 (via OpenTK 4.7.4)

API graphique ?



Microsoft®
DirectX®

API graphique ?

Vulkan®



Outils utilisés



GitHub



Visual Studio 2022

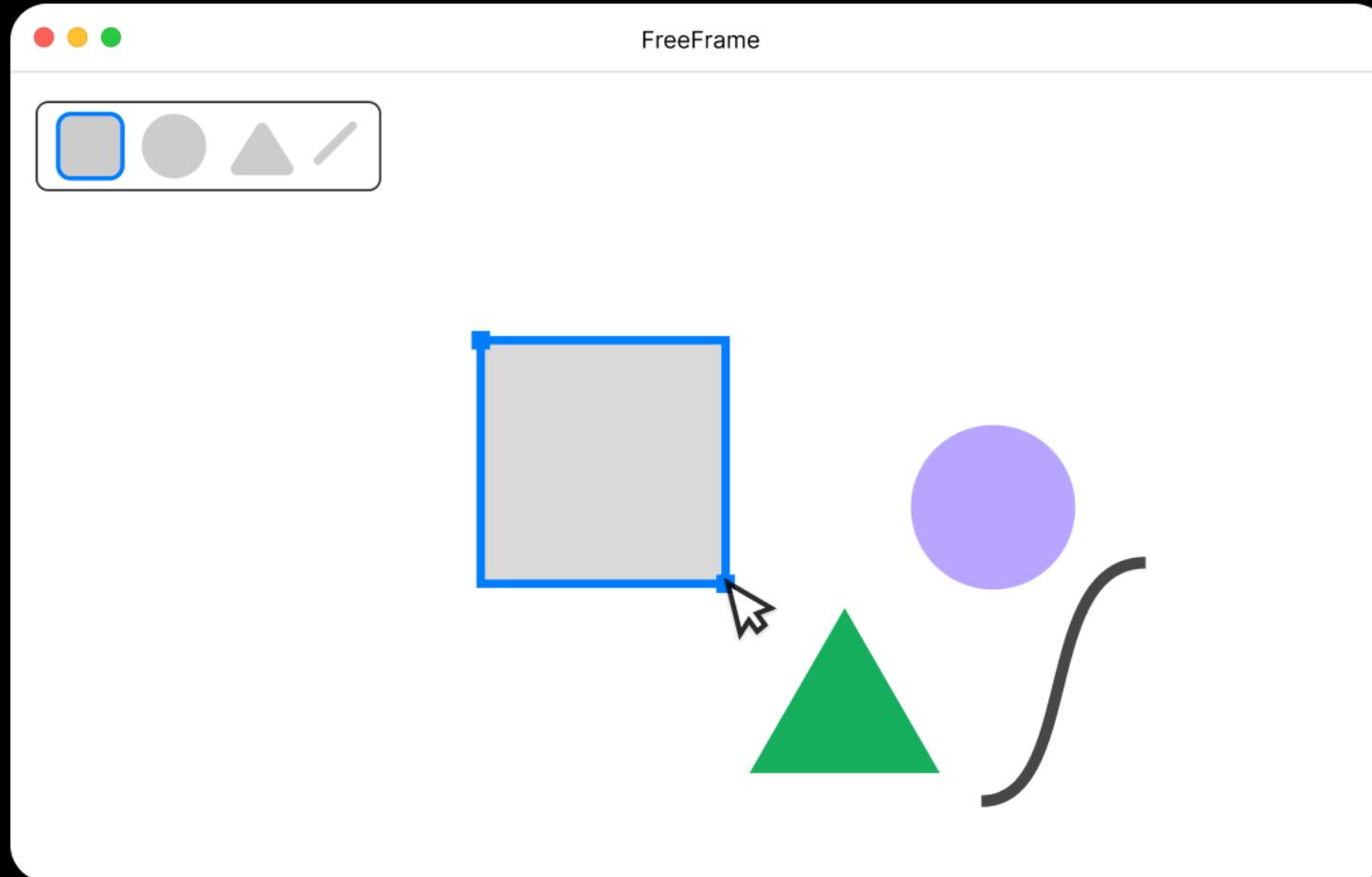


Zotero

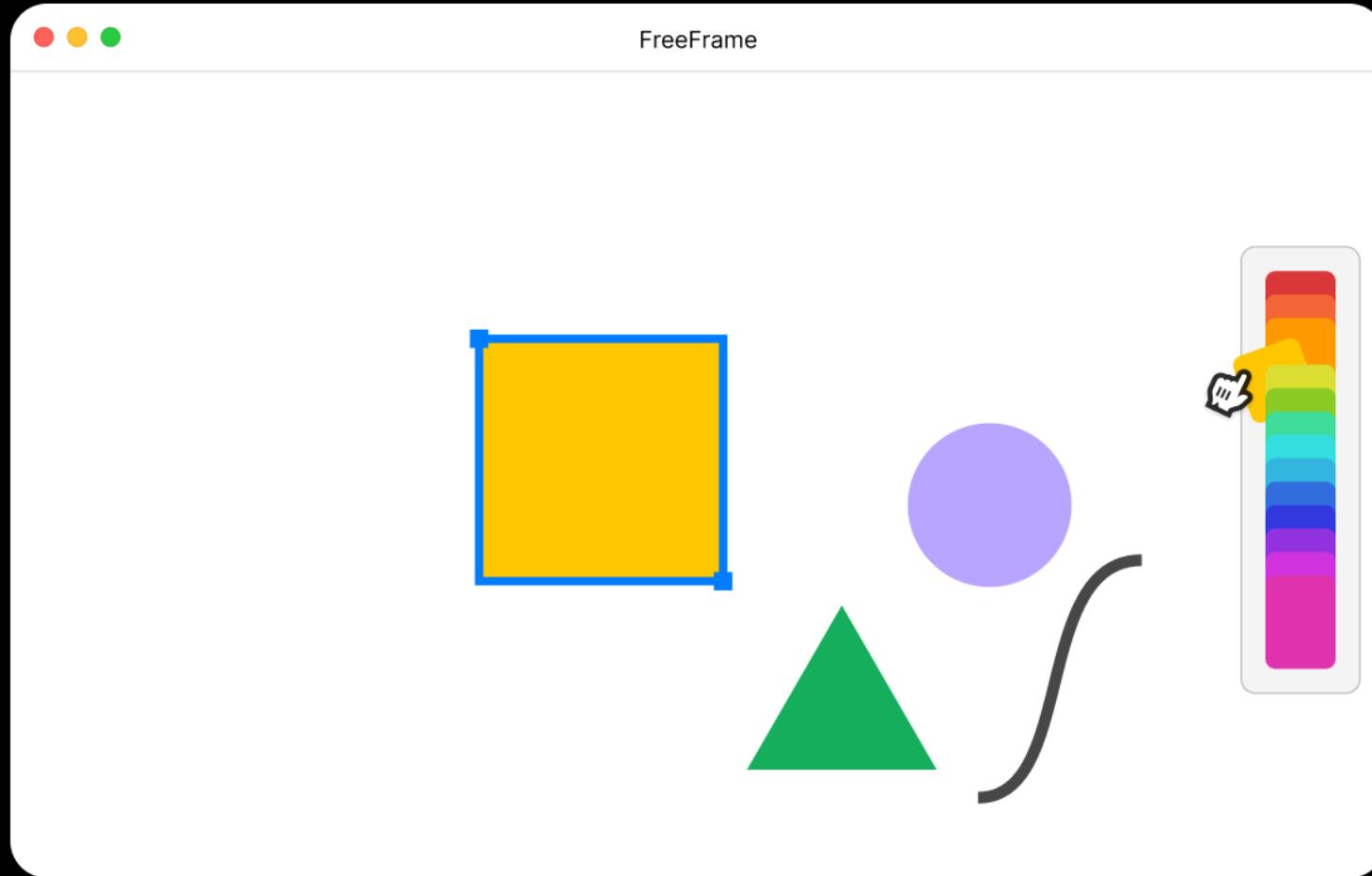


Obsidian

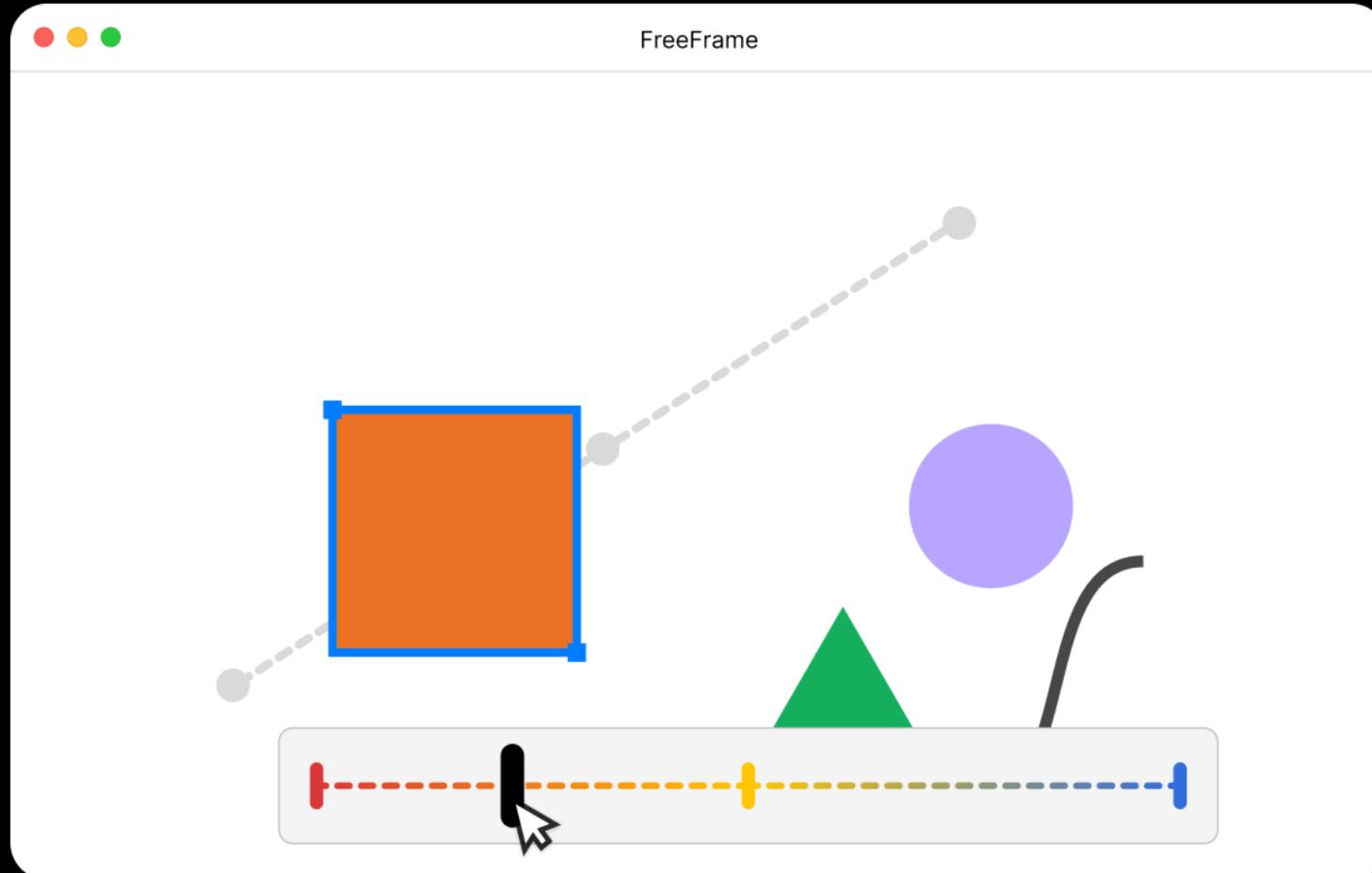
Création



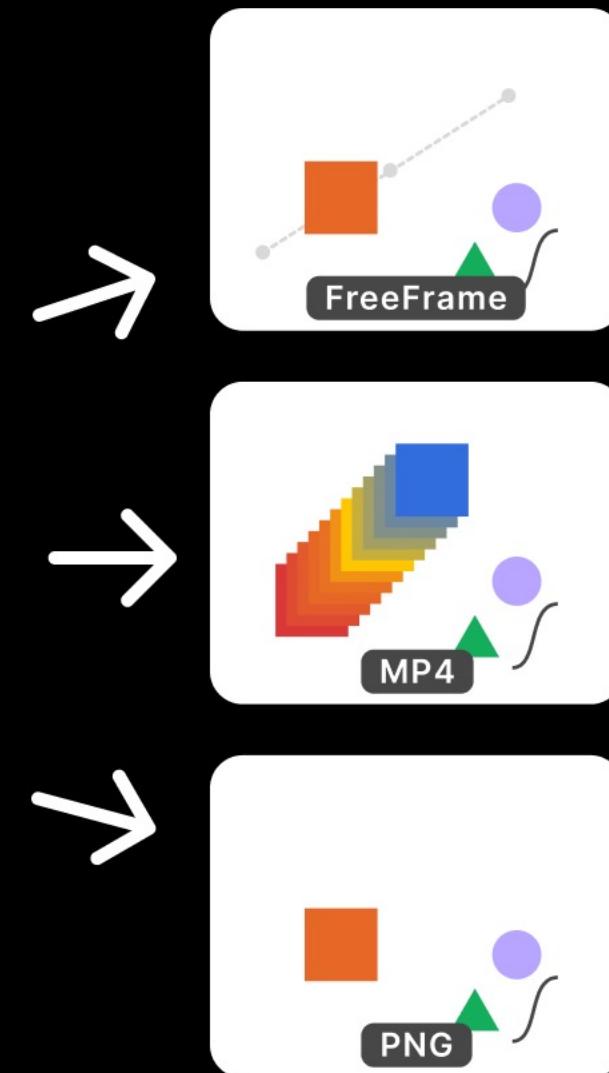
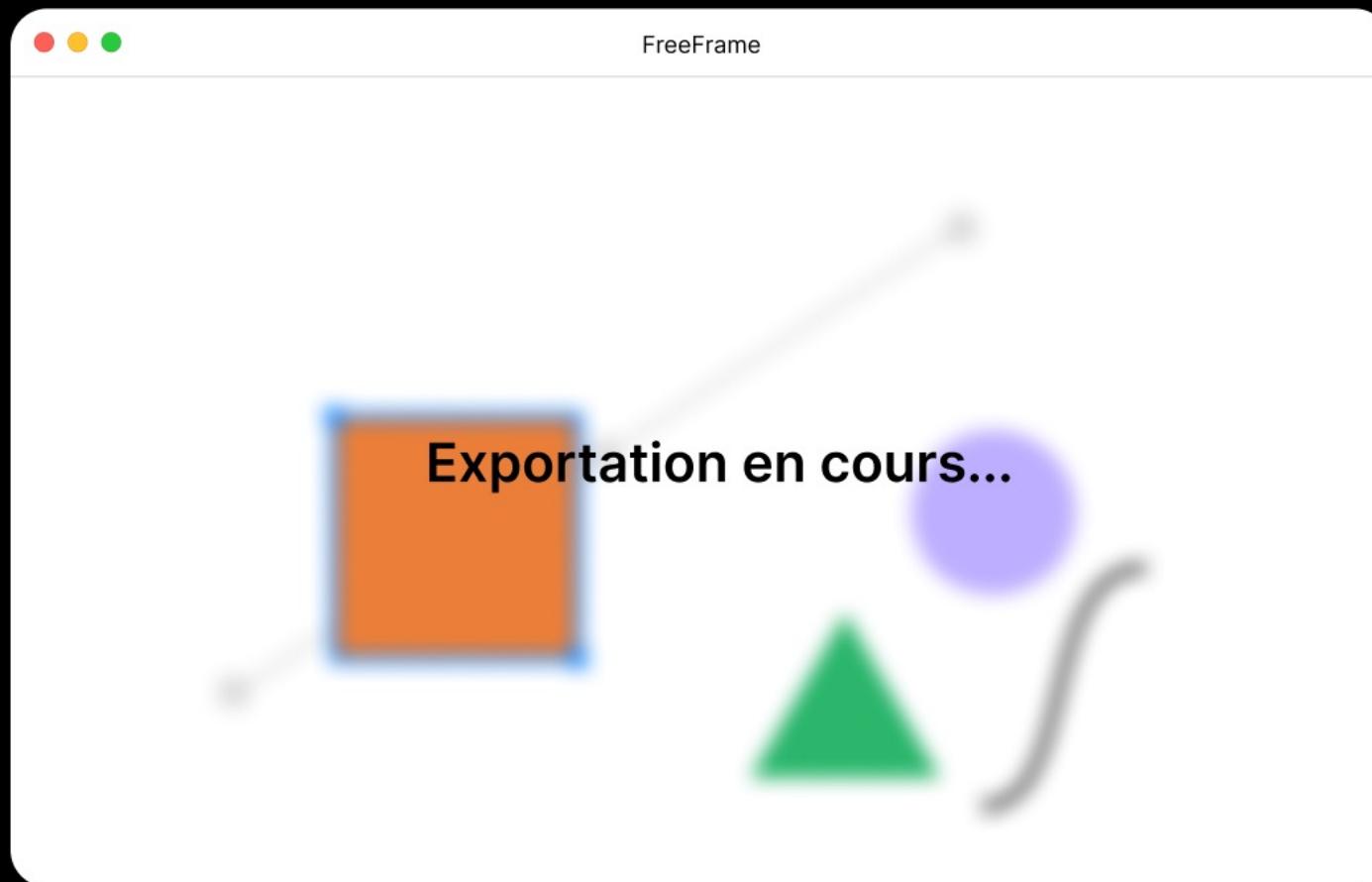
Édition



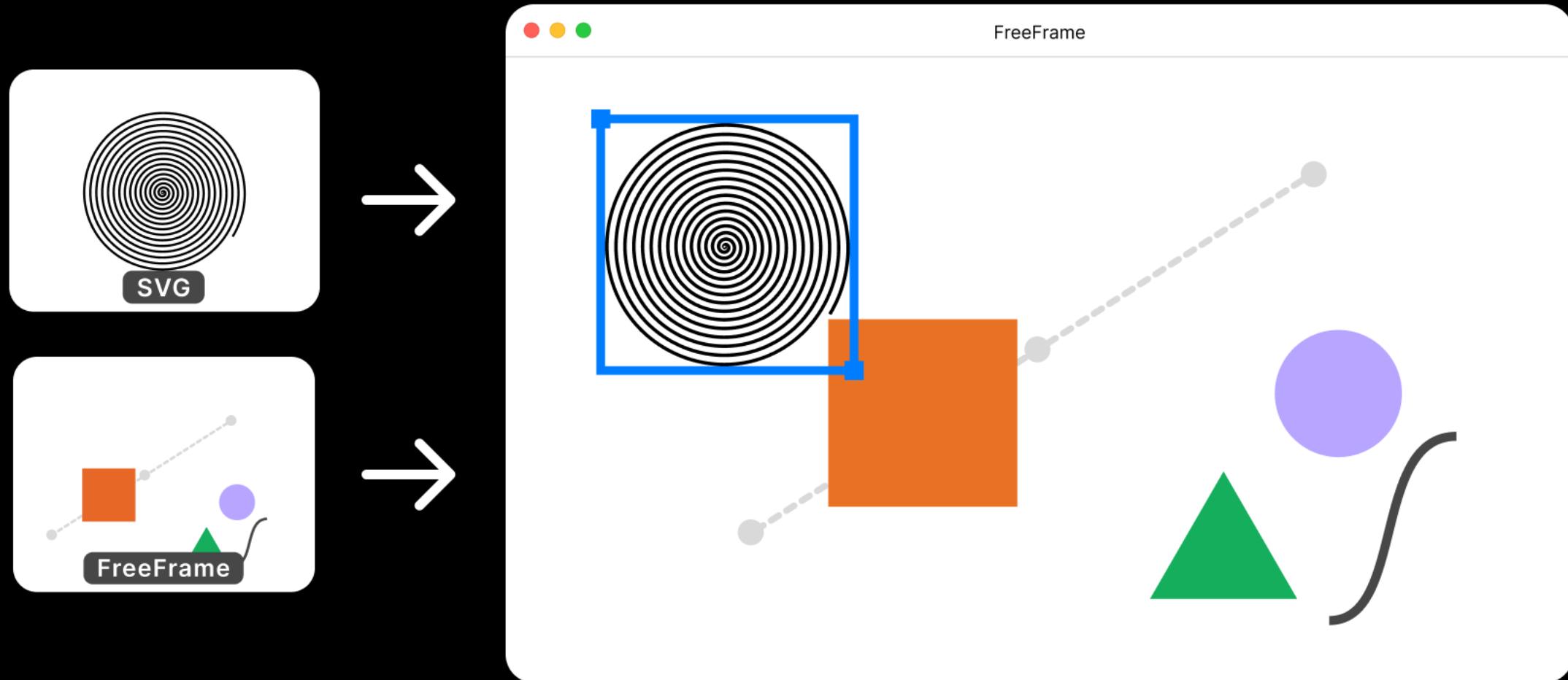
Animation



Exportation



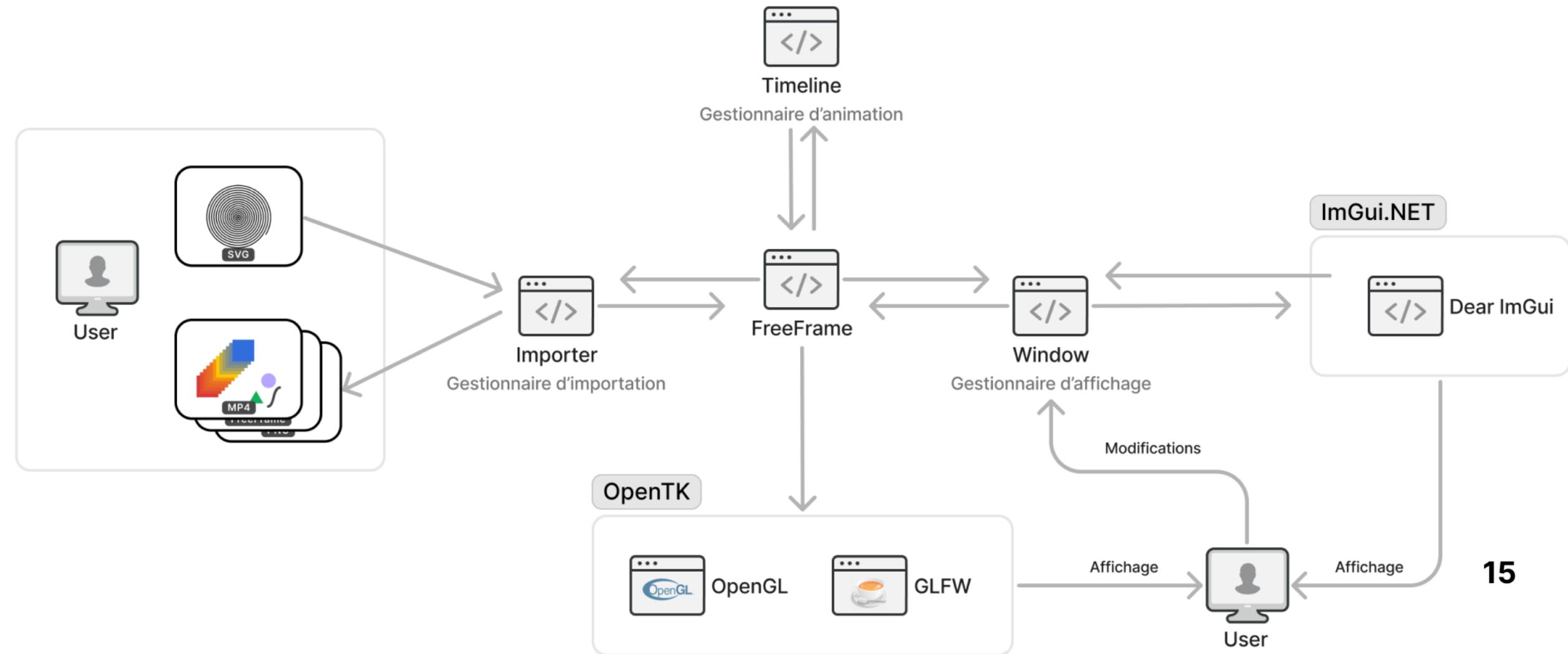
Importation



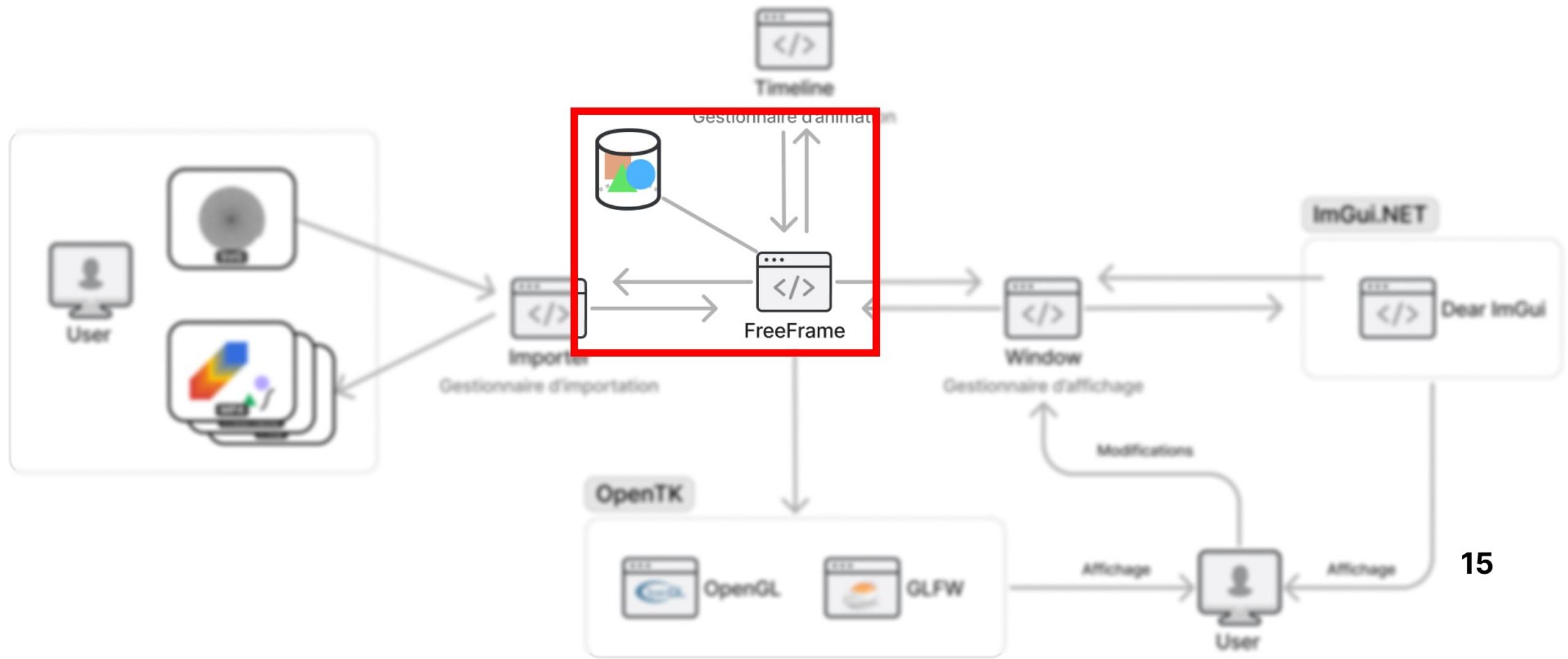
SVG ?

Démonstration

Architecture



Architecture

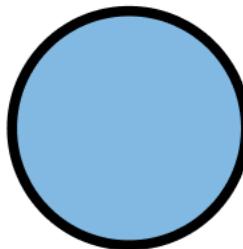


Affichage des formes

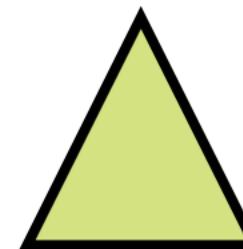
Formes qui peuvent être affichés



Rectangle



Rond



Triangle

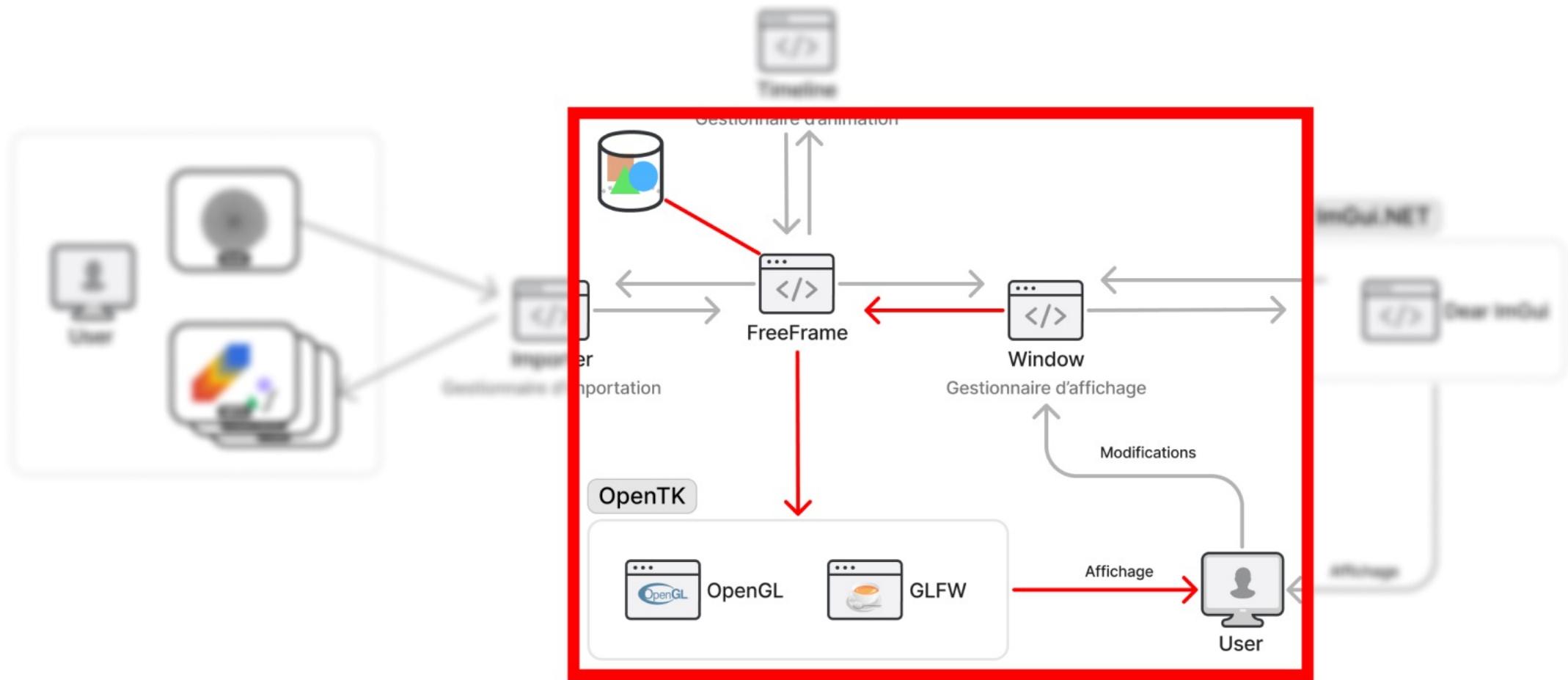


Ligne

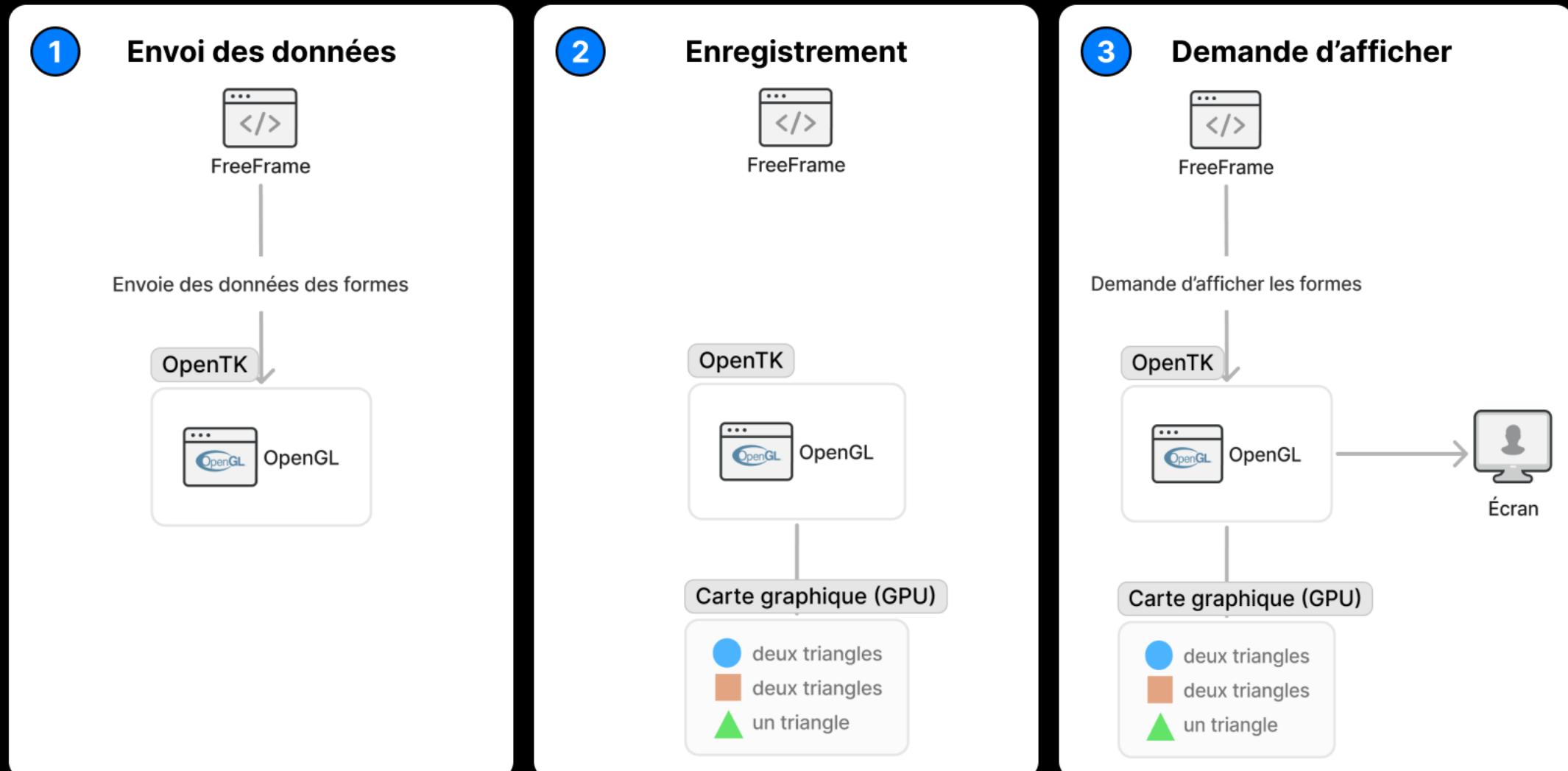


Chemin

Affichage pour OpenGL

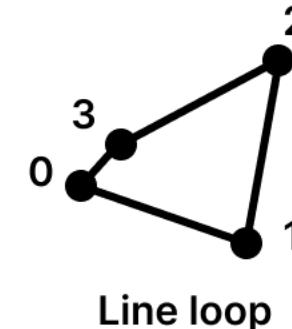
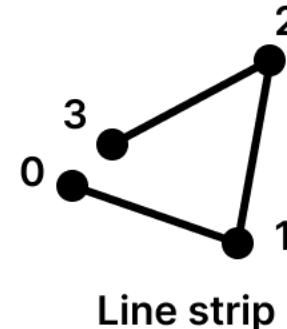
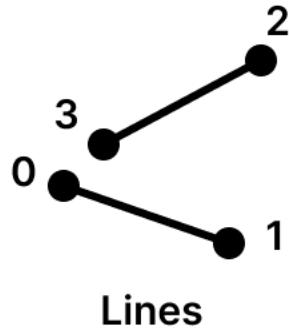


Affichage pour OpenGL



Types OpenGL

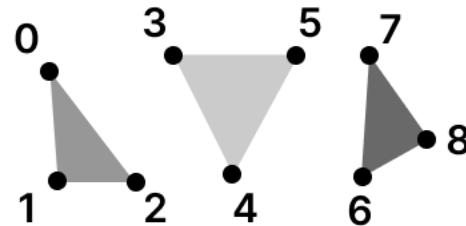
Types compatibles par 



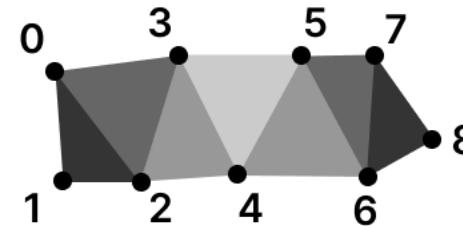
1/2

Types OpenGL

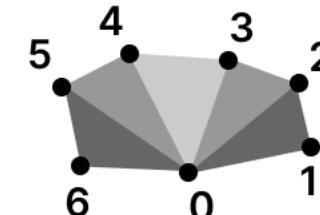
Types compatibles par 



Triangles



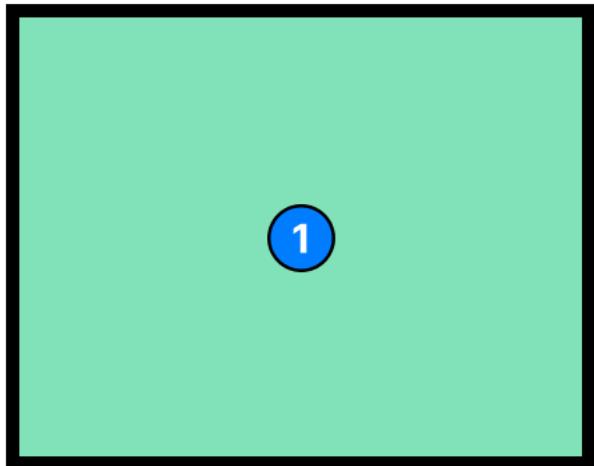
Triangle strip



Triangle fan

2/2

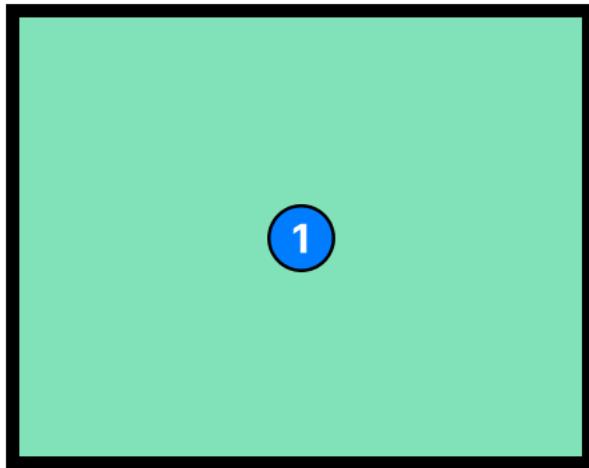
Types OpenGL



Un rectangle

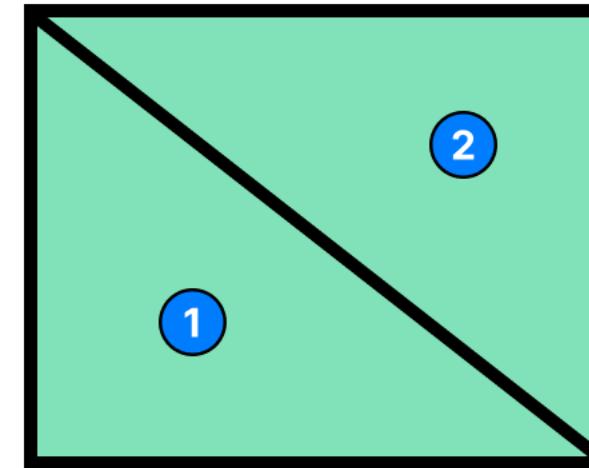
est en réalité
(pour OpenGL)

Types OpenGL



Un rectangle

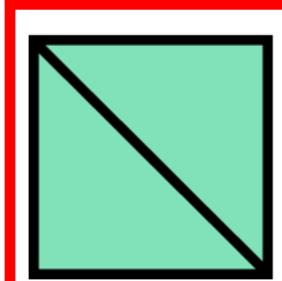
est en réalité
(pour OpenGL)



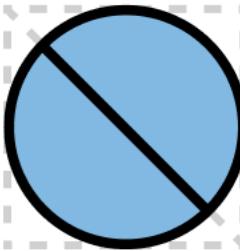
Deux triangles

Représentation des formes

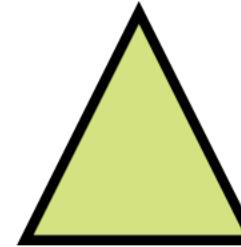
Representation en triangles/lignes



Rectangle
deux triangles



Rond
deux triangles



Triangle
un triangle



Ligne
une ligne



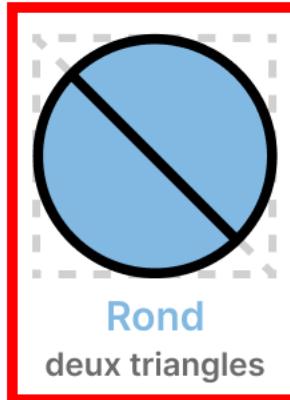
Chemin
plusieurs lignes

Représentation des formes

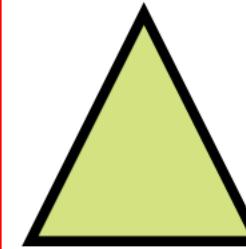
Representation en triangles/lignes



Rectangle
deux triangles



Rond
deux triangles



Triangle
un triangle



Ligne
une ligne



Chemin
plusieurs lignes

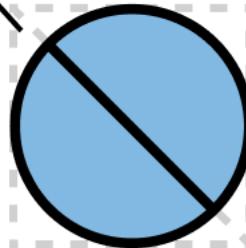
Représentation des formes

Representation en triangles/lignes

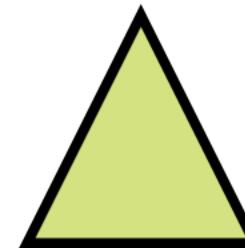
Grâce au shader



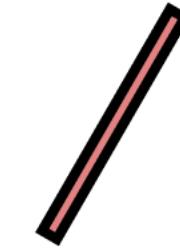
Rectangle
deux triangles



Rond
deux triangles



Triangle
un triangle



Ligne
une ligne



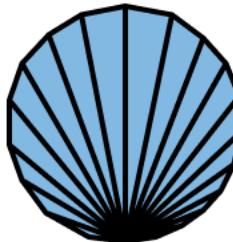
Chemin
plusieurs lignes

Représentation des formes

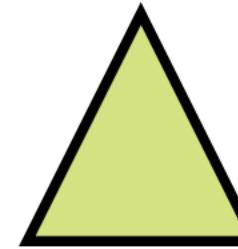
Representation en triangles/lignes



Rectangle
deux triangles



Rond
plusieurs triangles



Triangle
un triangle



Ligne
une ligne



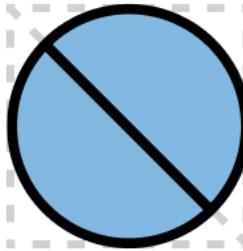
Chemin
plusieurs lignes

Représentation des formes

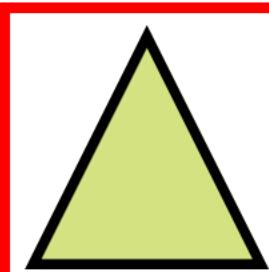
Representation en triangles/lignes



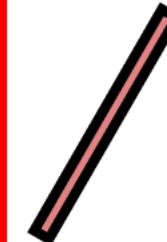
Rectangle
deux triangles



Rond
deux triangles



Triangle
un triangle



Ligne
une ligne



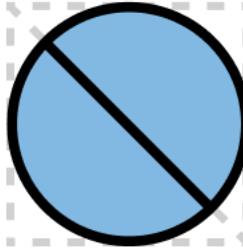
Chemin
plusieurs lignes

Représentation des formes

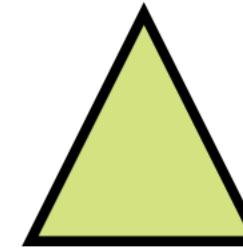
Representation en triangles/lignes



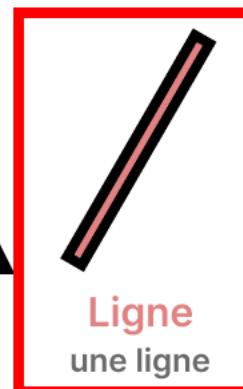
Rectangle
deux triangles



Rond
deux triangles



Triangle
un triangle



Ligne
une ligne



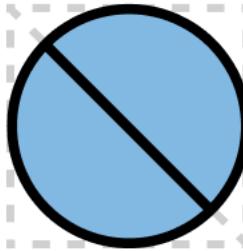
Chemin
plusieurs lignes

Représentation des formes

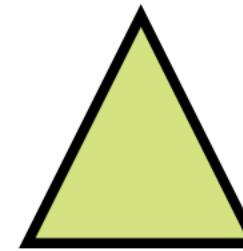
Representation en triangles/lignes



Rectangle
deux triangles



Rond
deux triangles



Triangle
un triangle

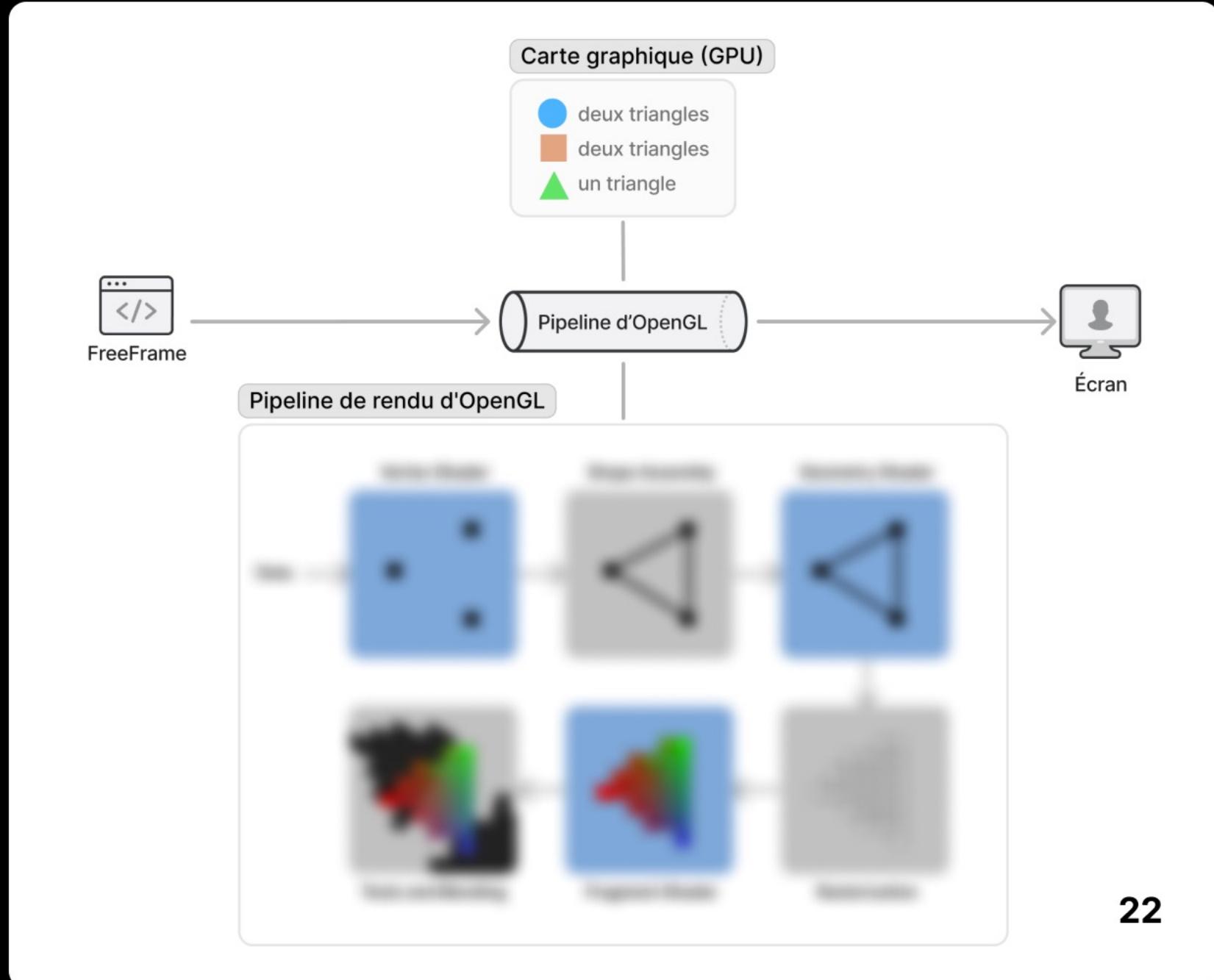


Ligne
une ligne

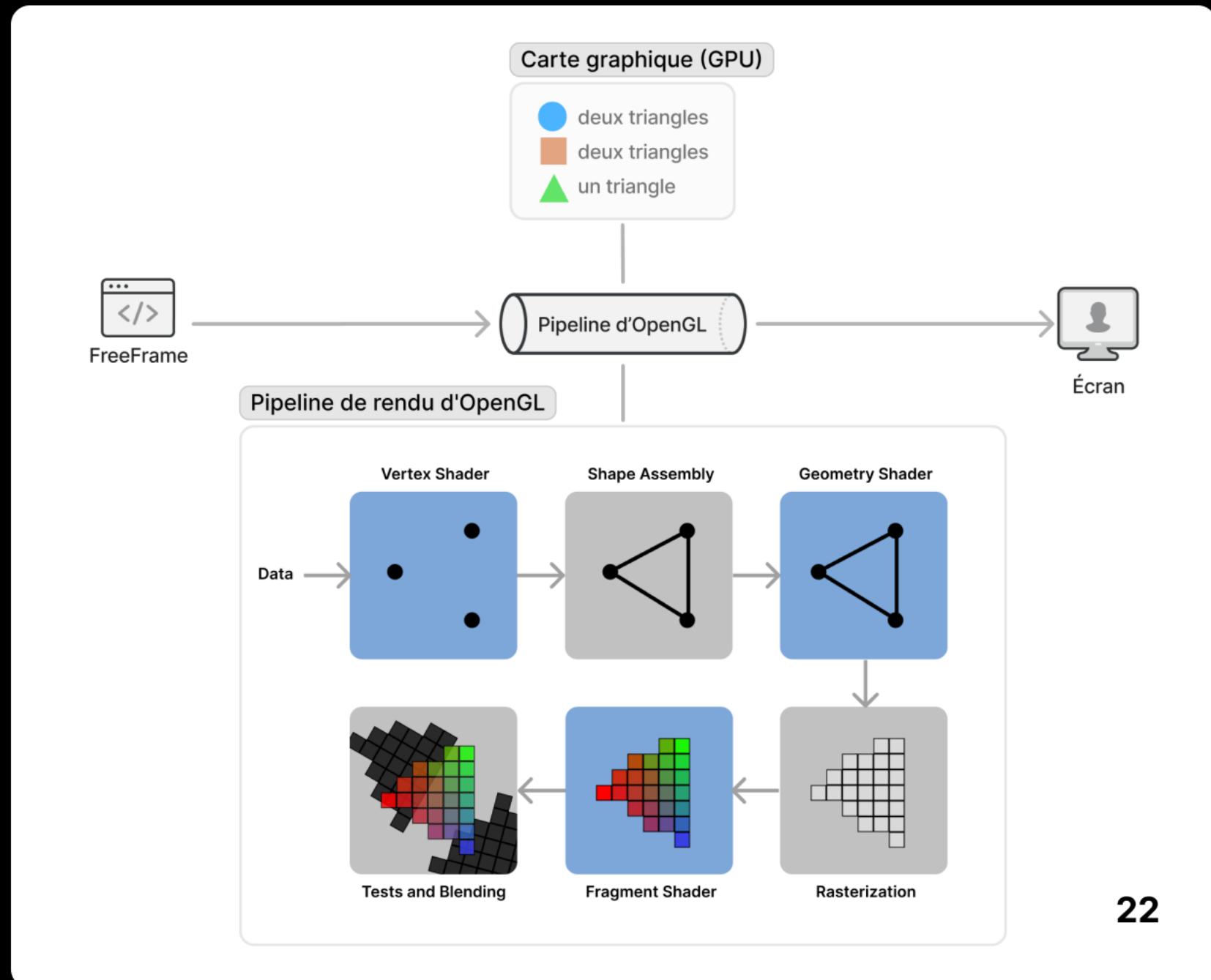


Chemin
plusieurs lignes

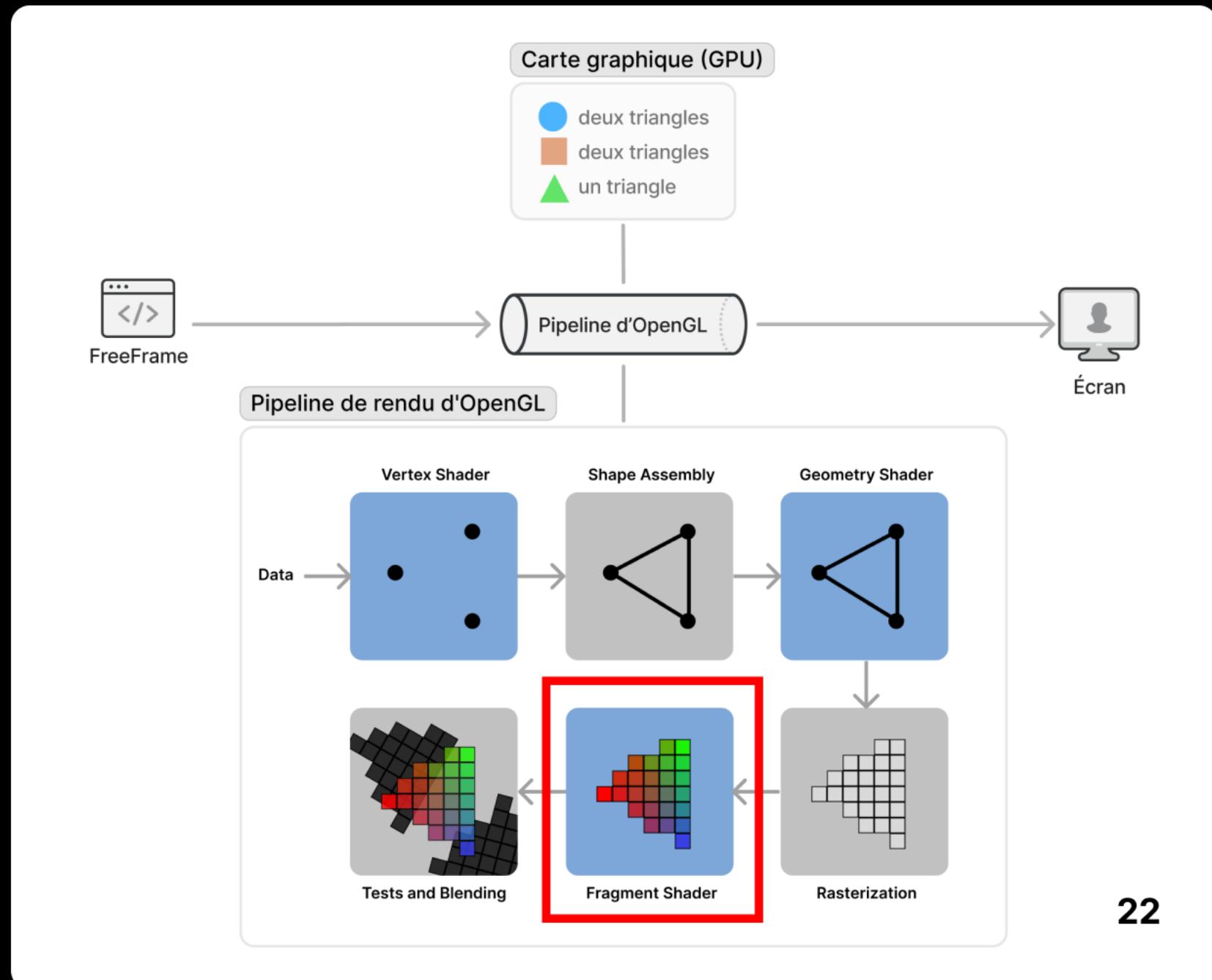
Pipeline



Pipeline

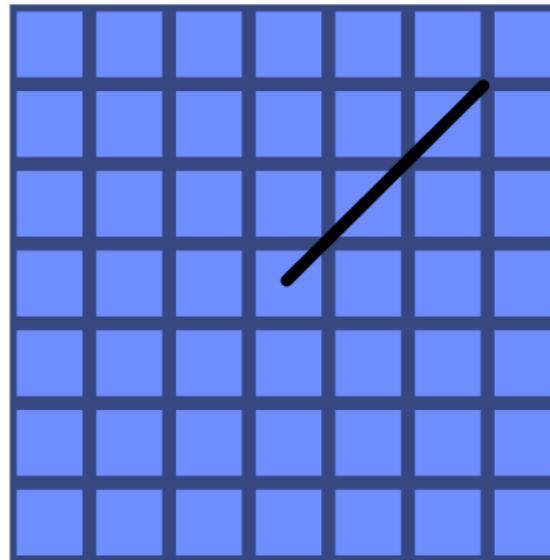


Pipeline



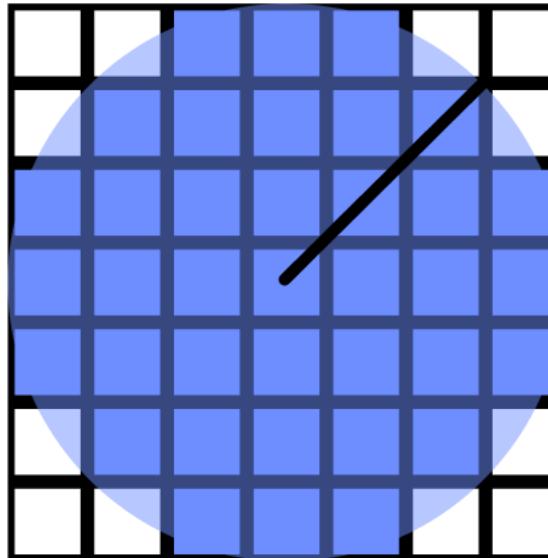
Affichage d'un rond

Calcul de la distance

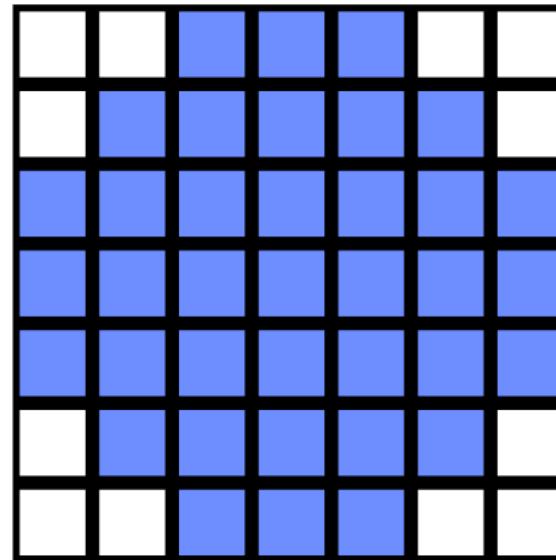


Affichage d'un rond

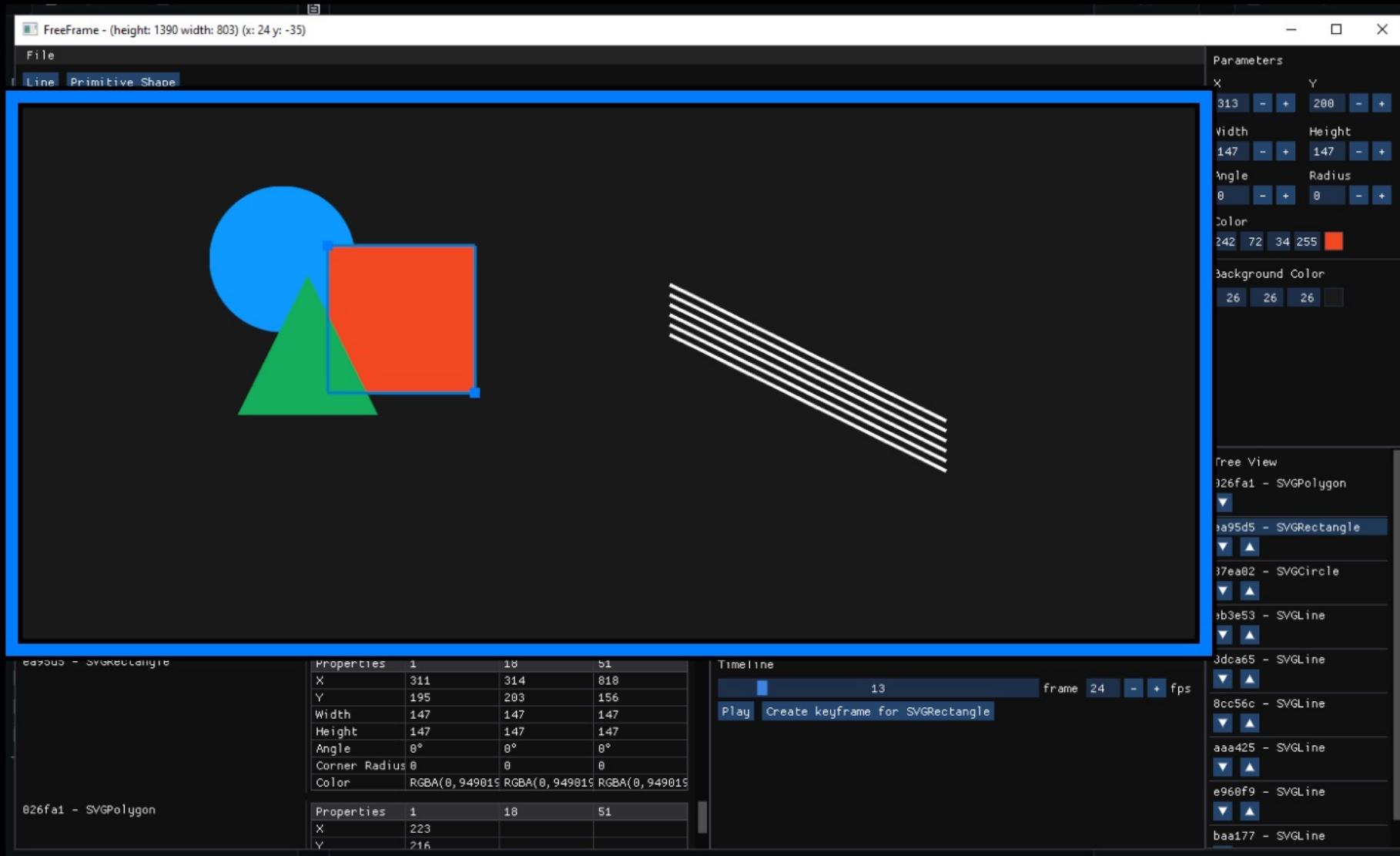
Calcul de la distance



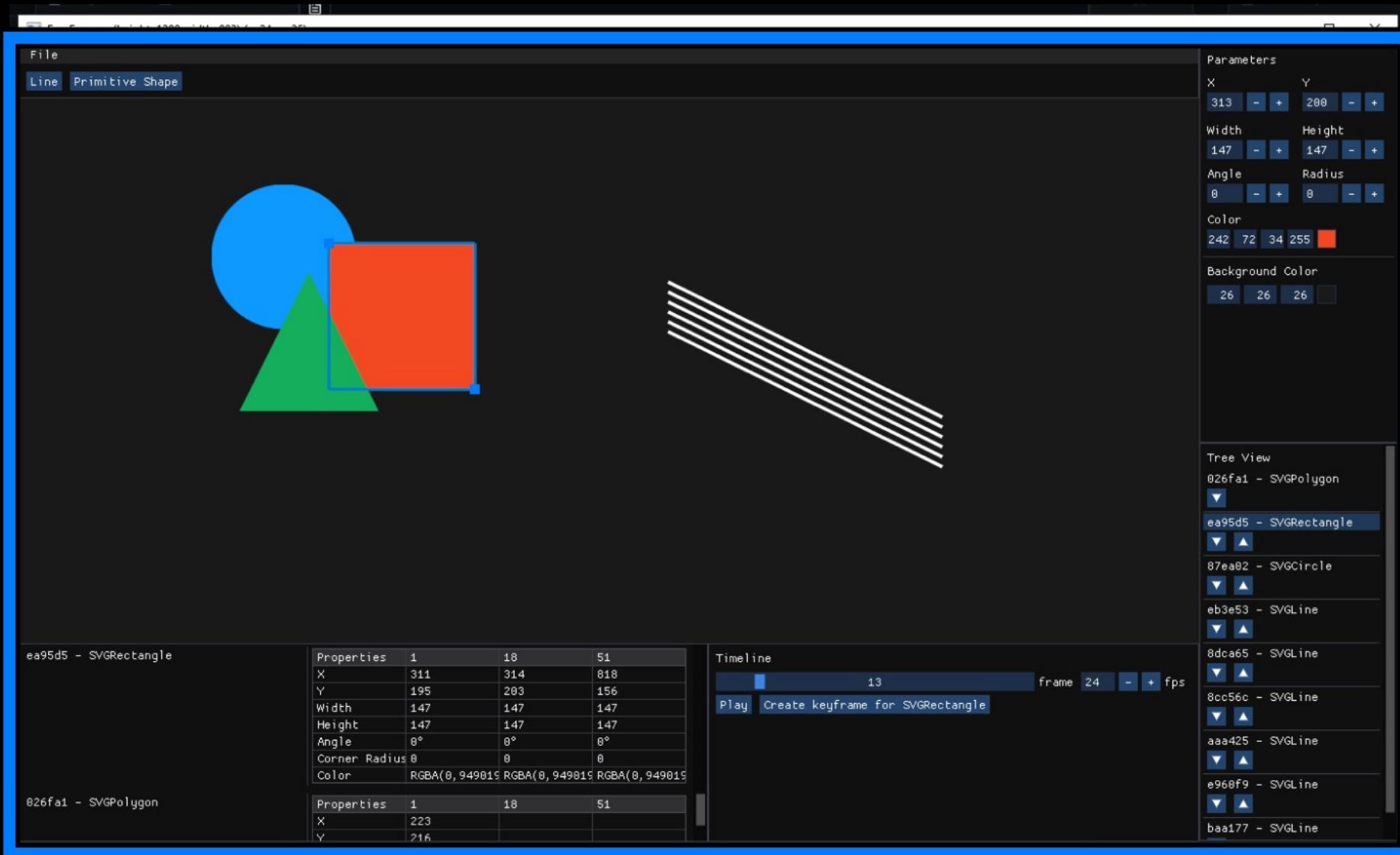
Affichage d'un rond



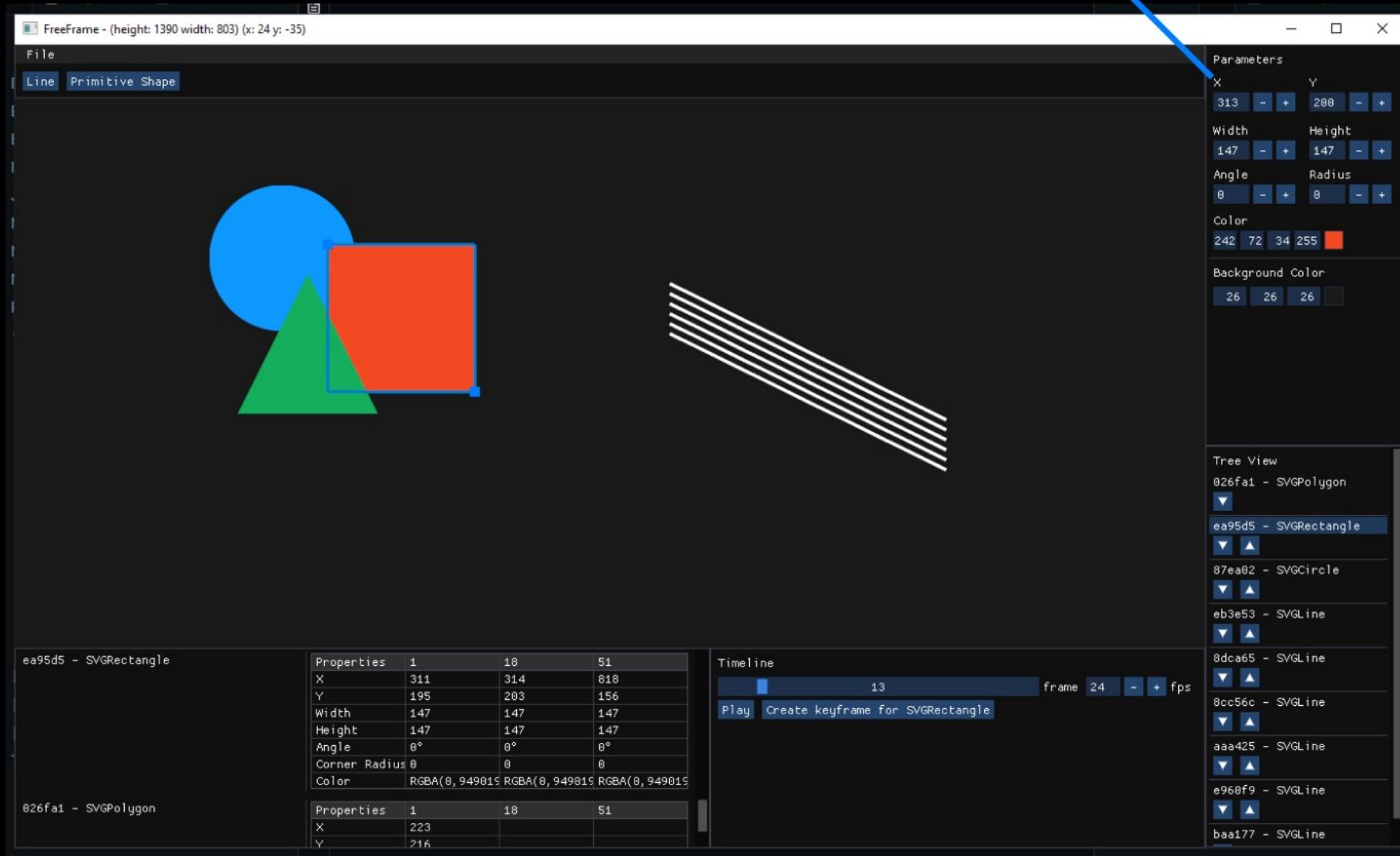
Interface



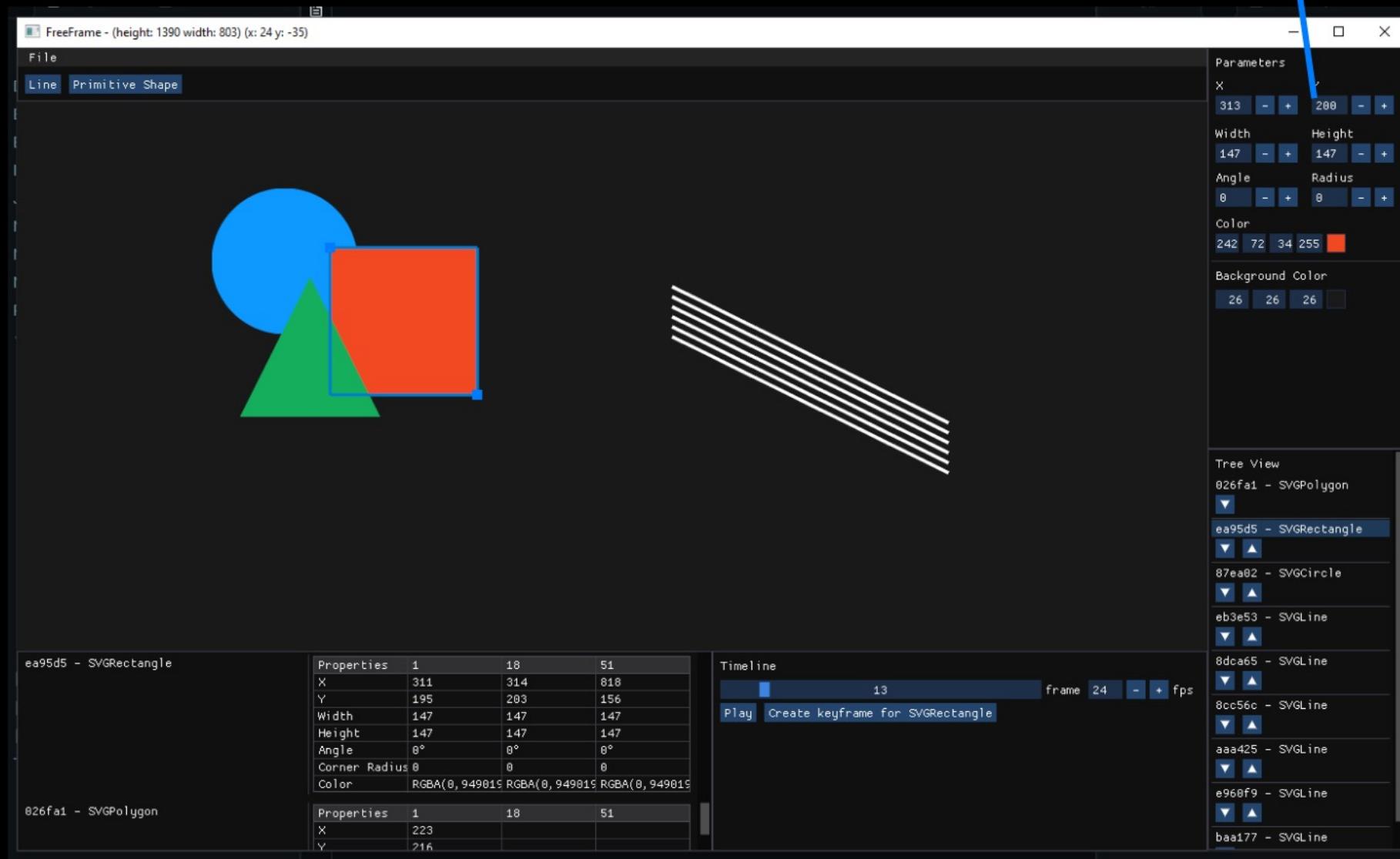
Interface



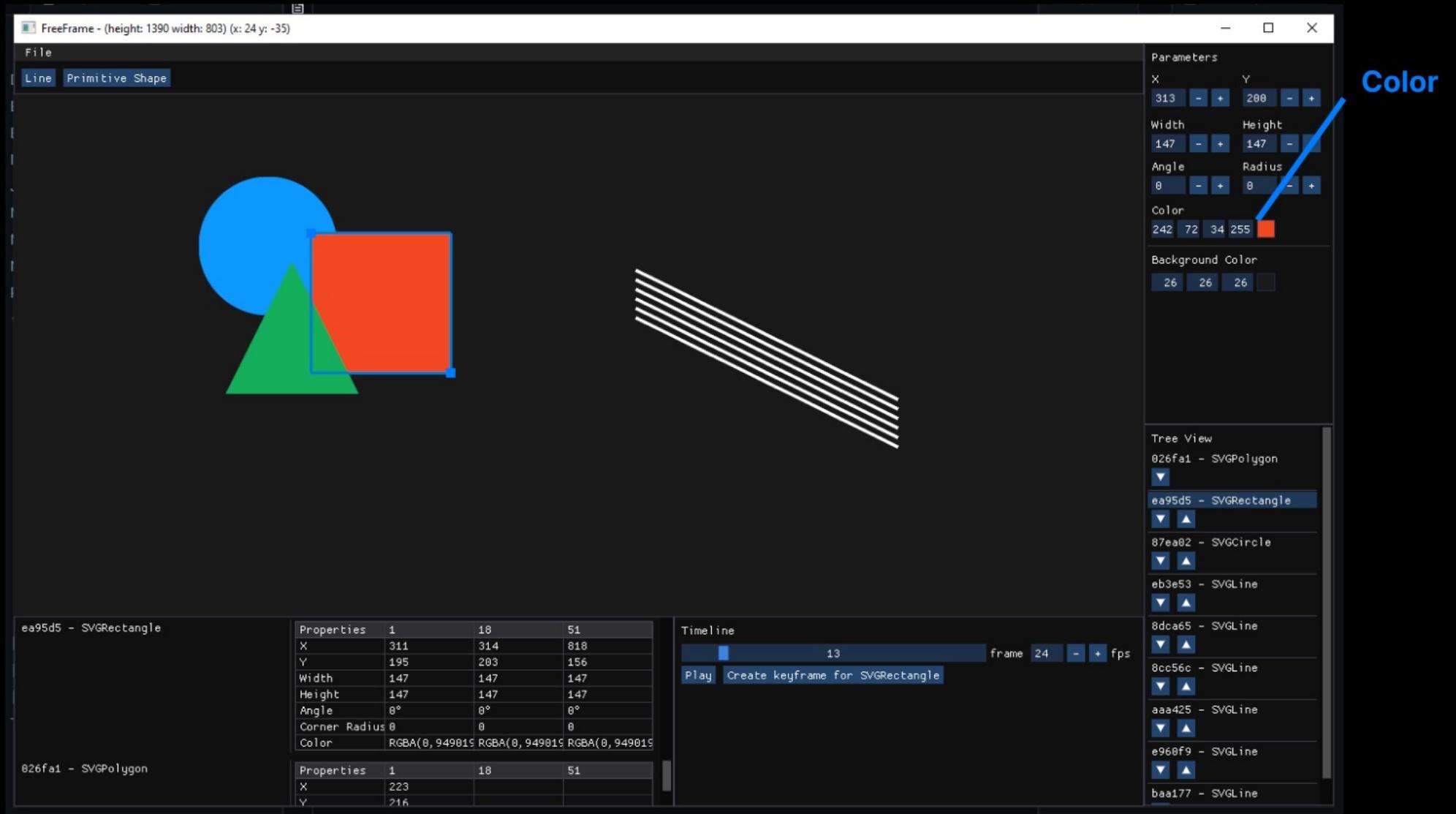
Interface



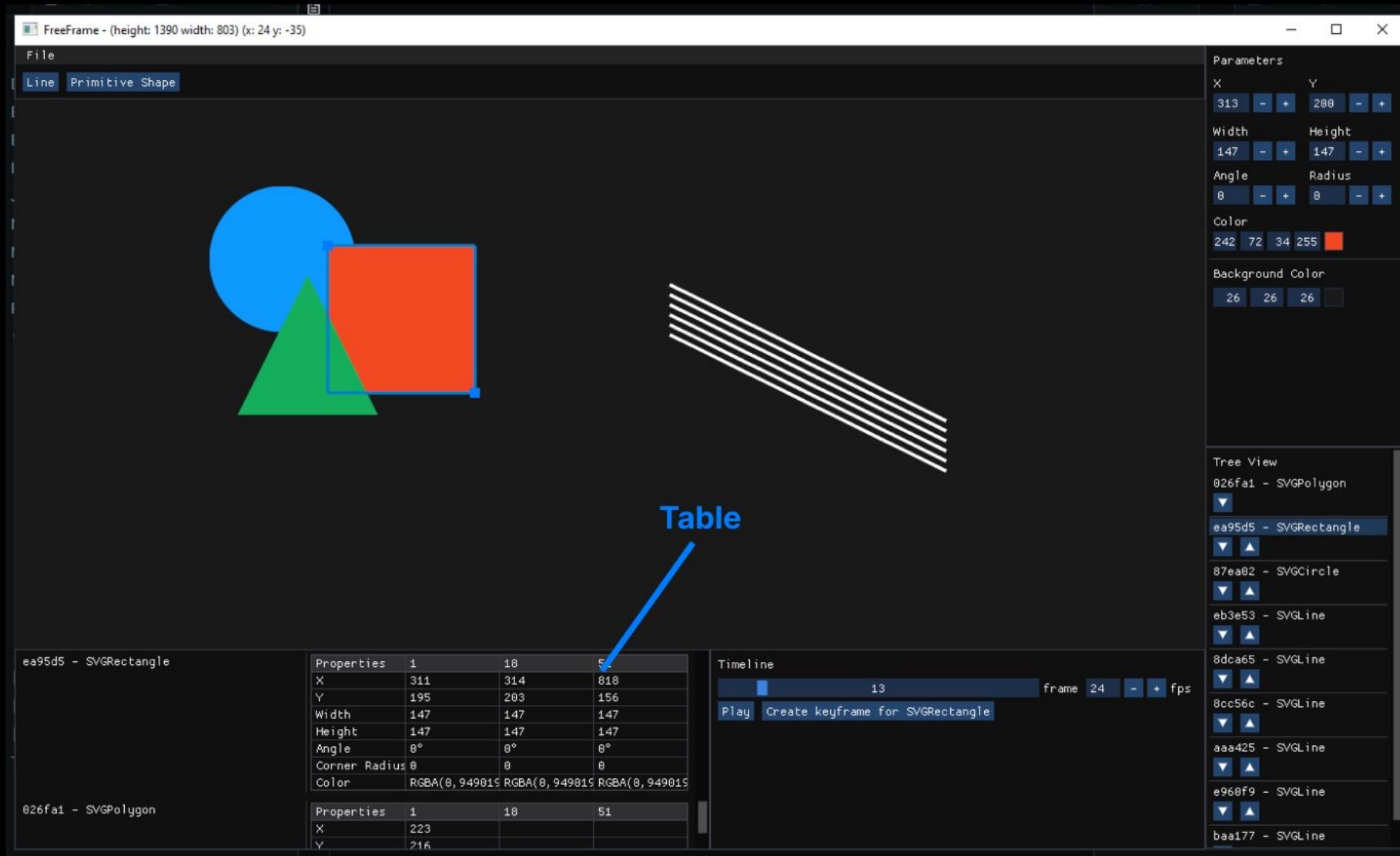
Interface



Interface

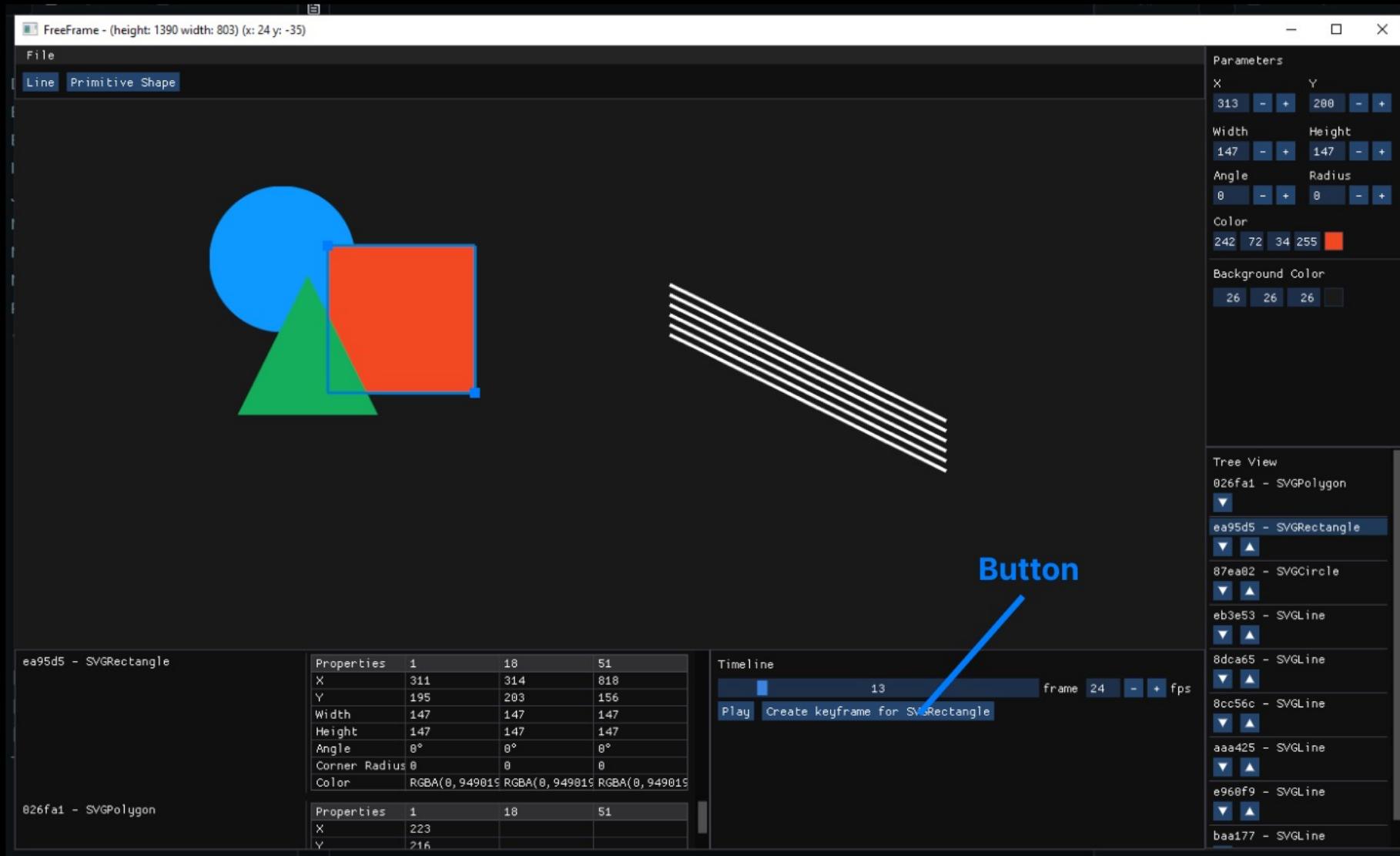


Interface

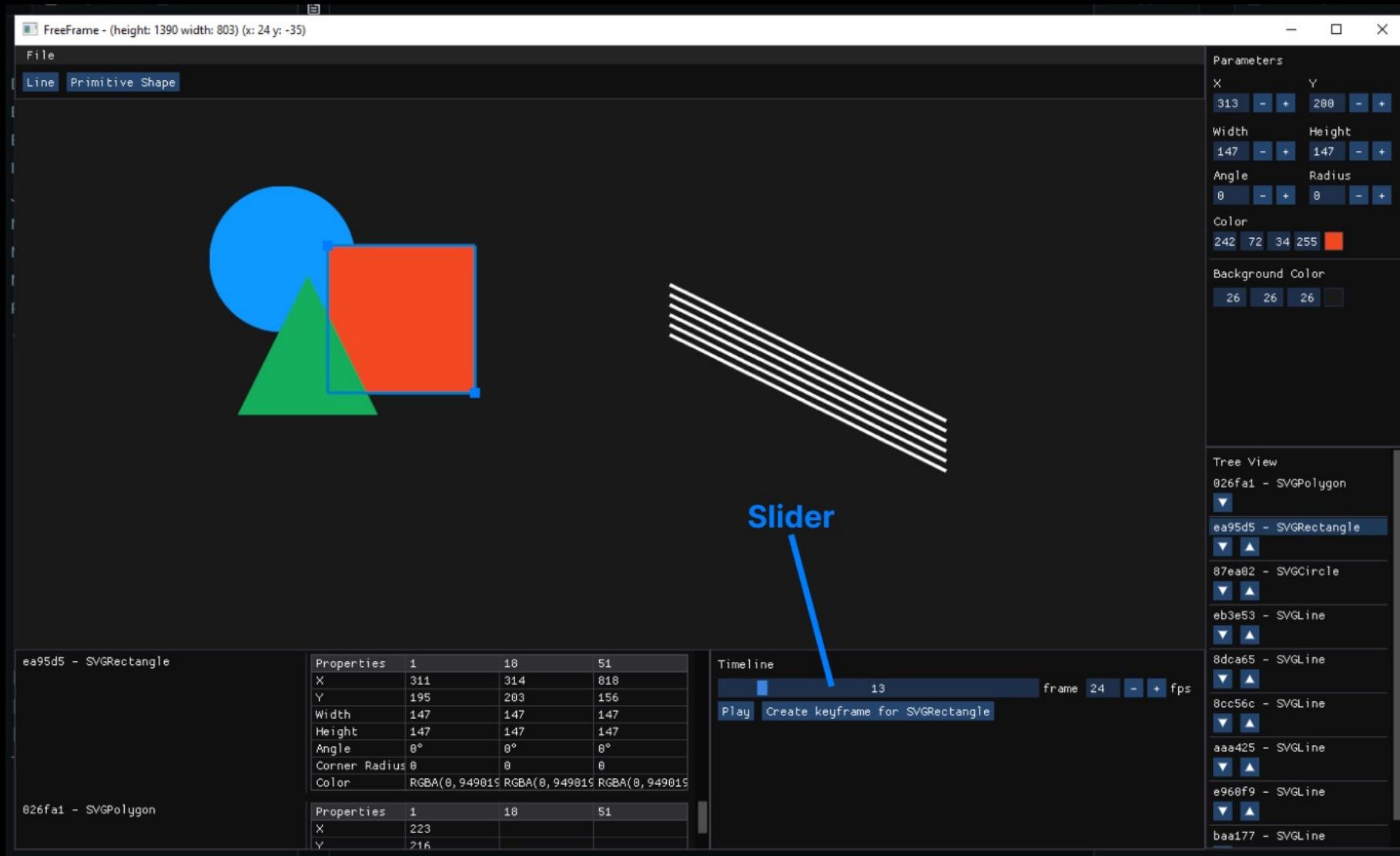


Table

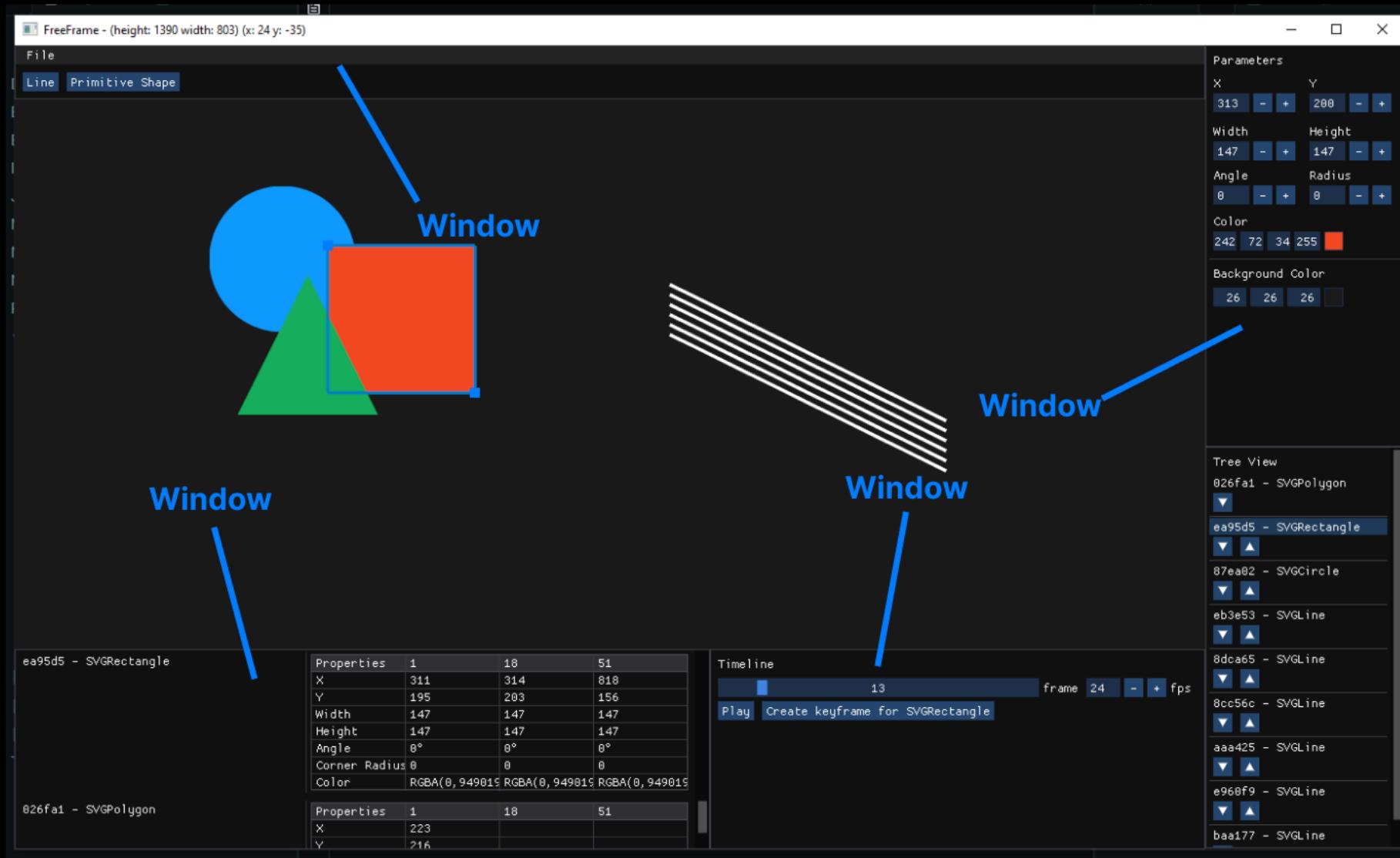
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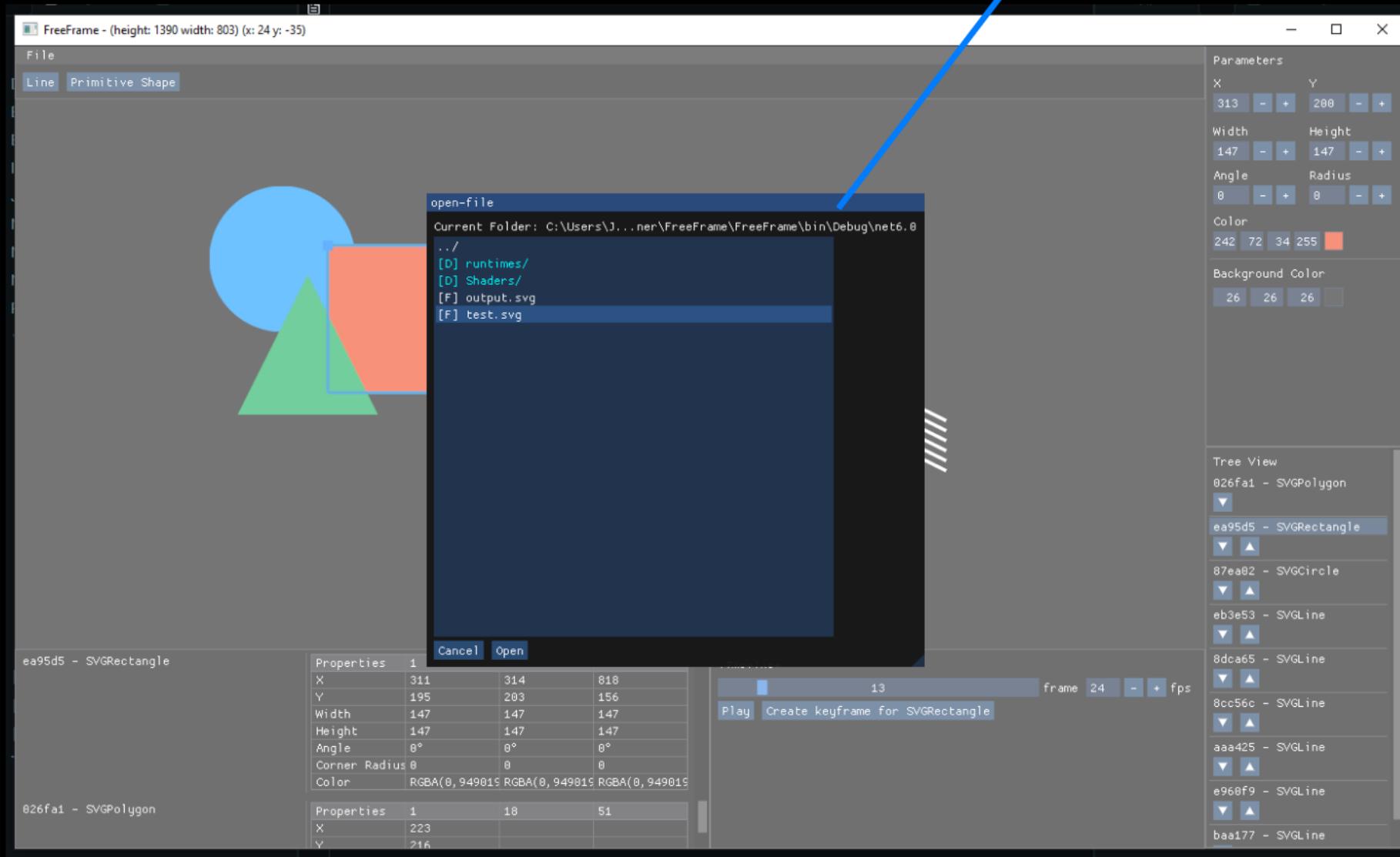
Interface



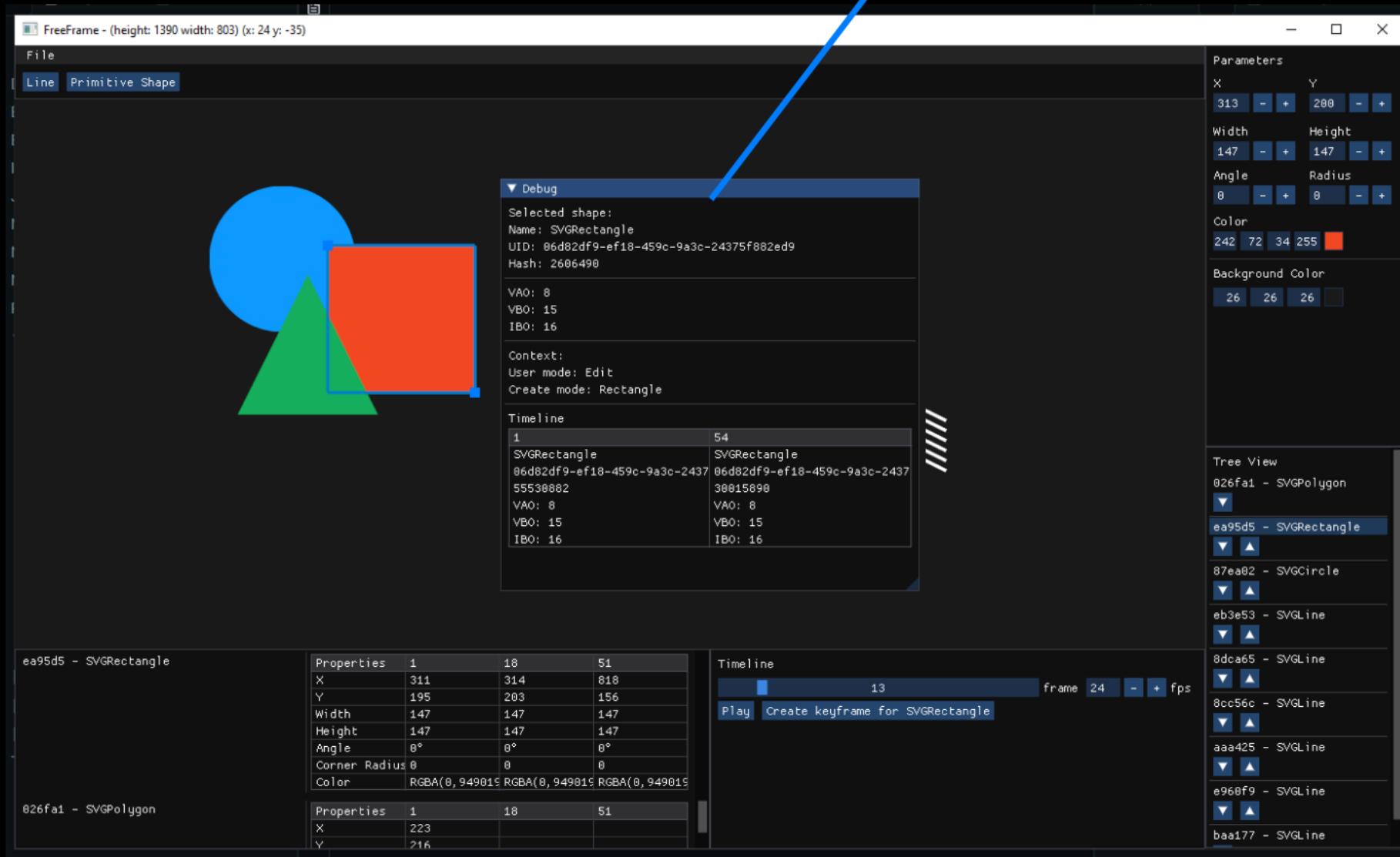
Interface



Interface

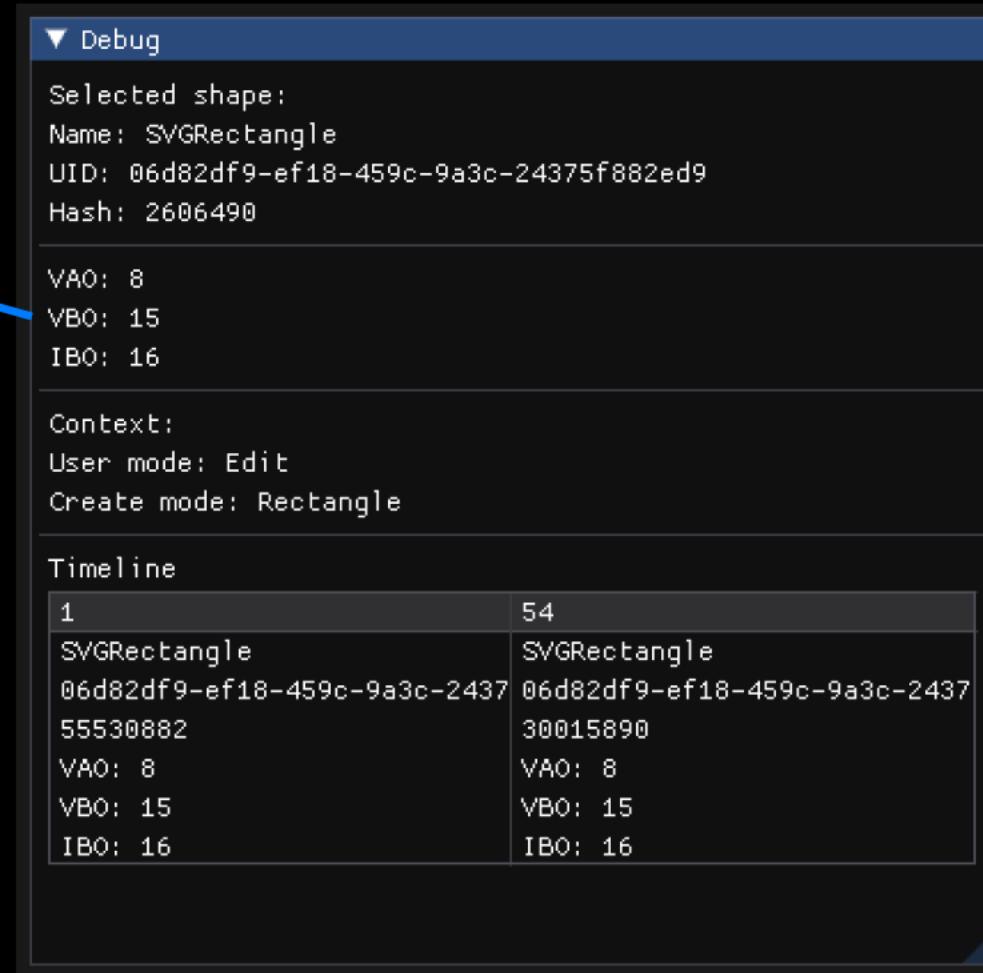


Interface



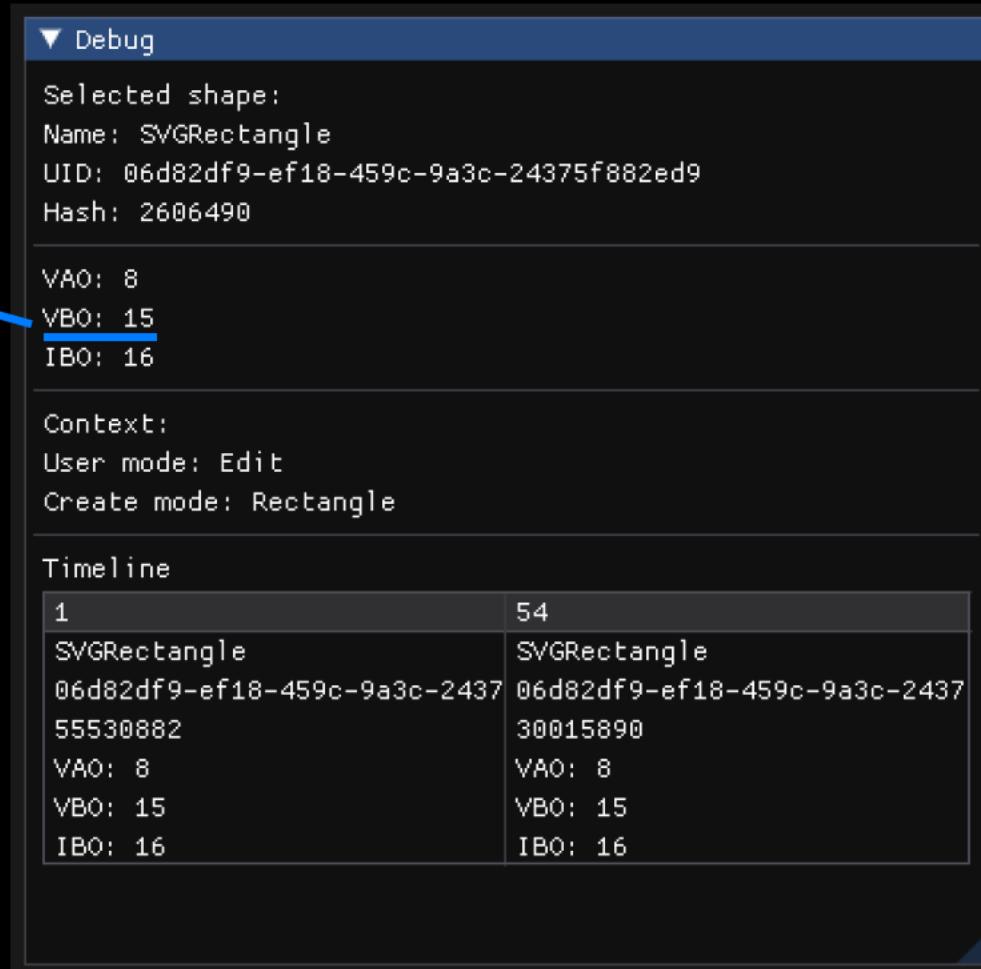
Outil de debug

Identifiants d'OpenGL



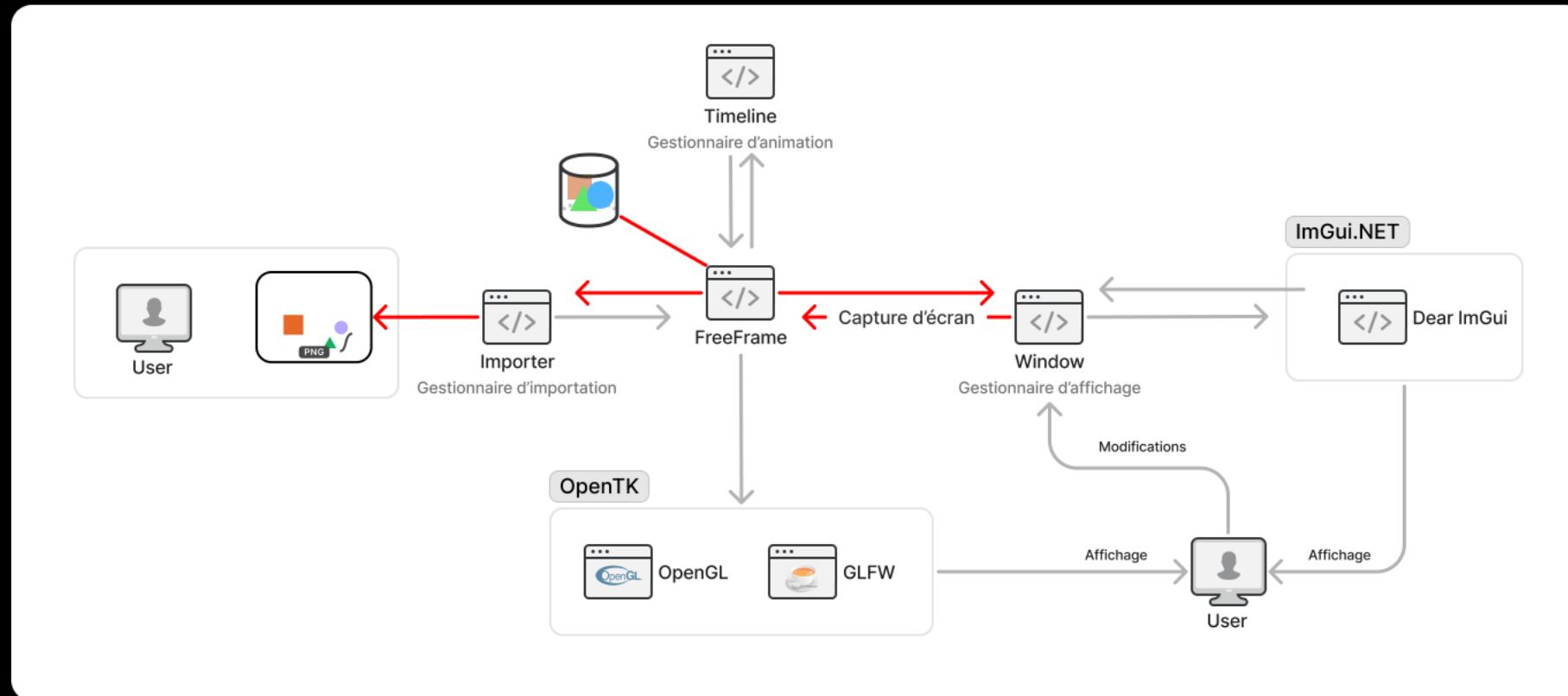
Outil de debug

Identifiants d'OpenGL

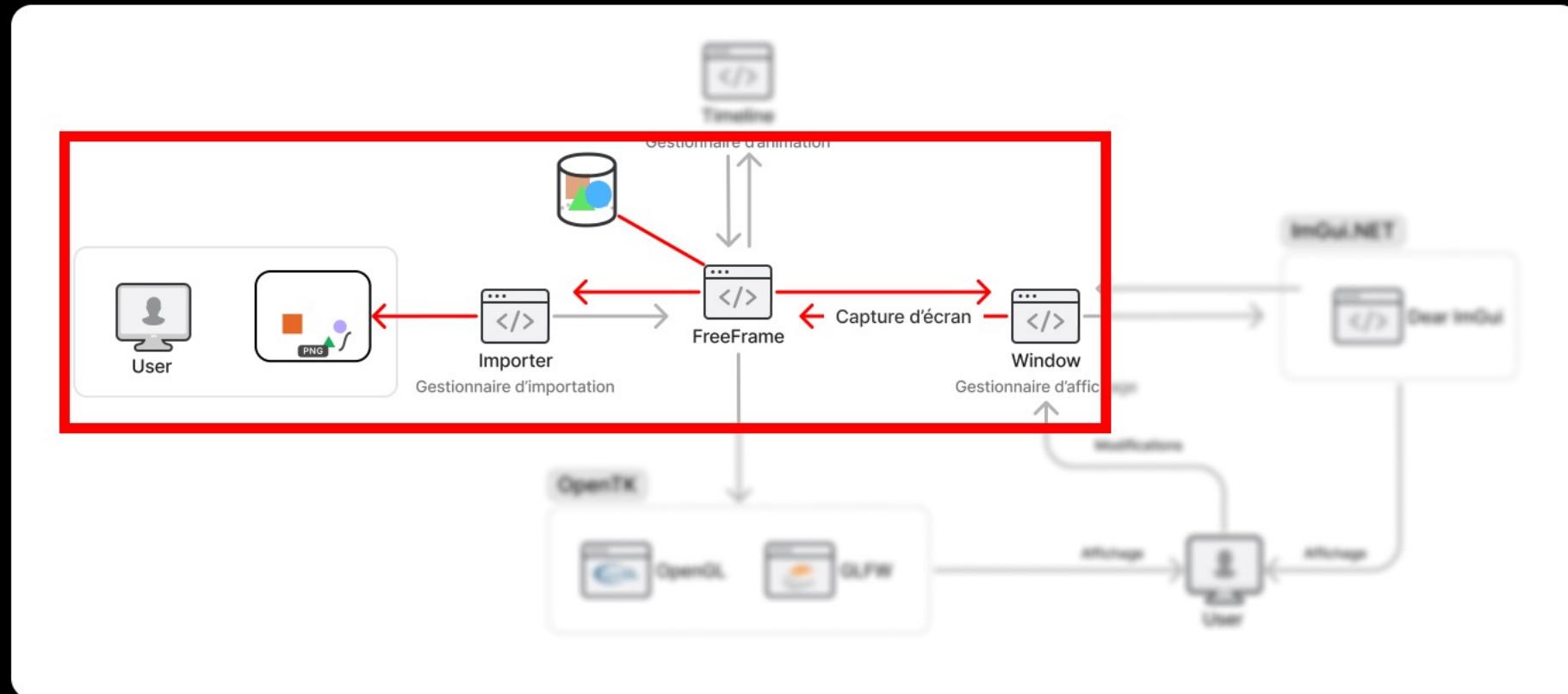


```
DebugSeverityNotification
DebugTypeOther | Buffer detailed
info: Buffer object 15 (bound to
GL_ELEMENT_ARRAY_BUFFER_ARB, usage
hint is GL_STATIC_DRAW) will use
VIDEO memory as the source for
buffer object operations
```

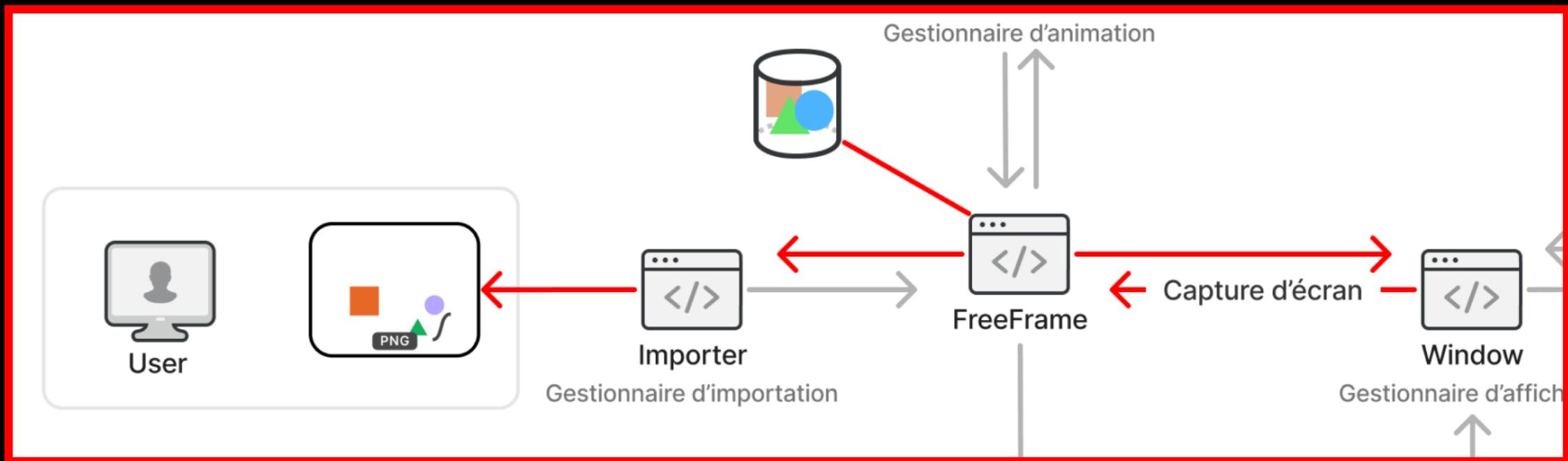
Exportation PNG



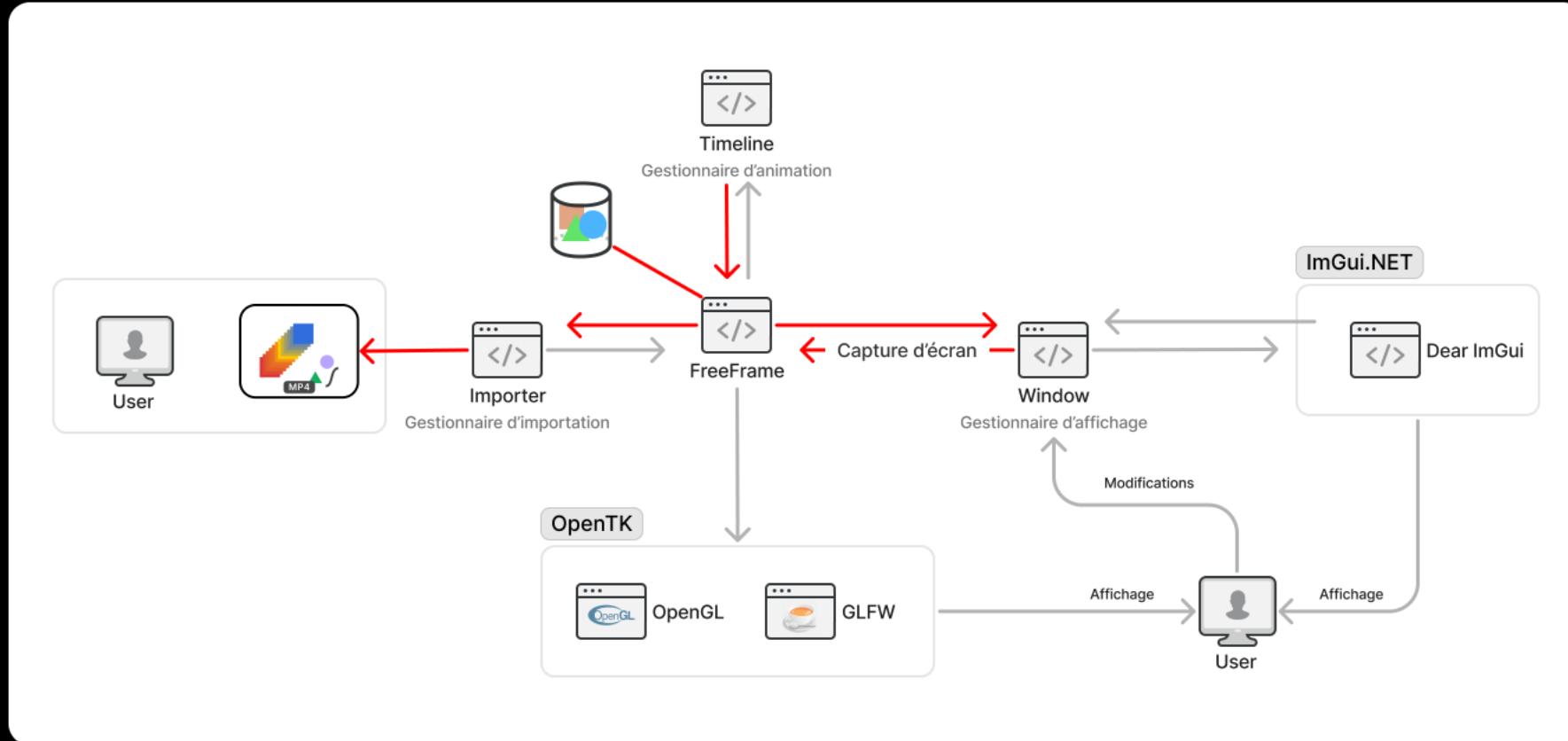
Exportation PNG



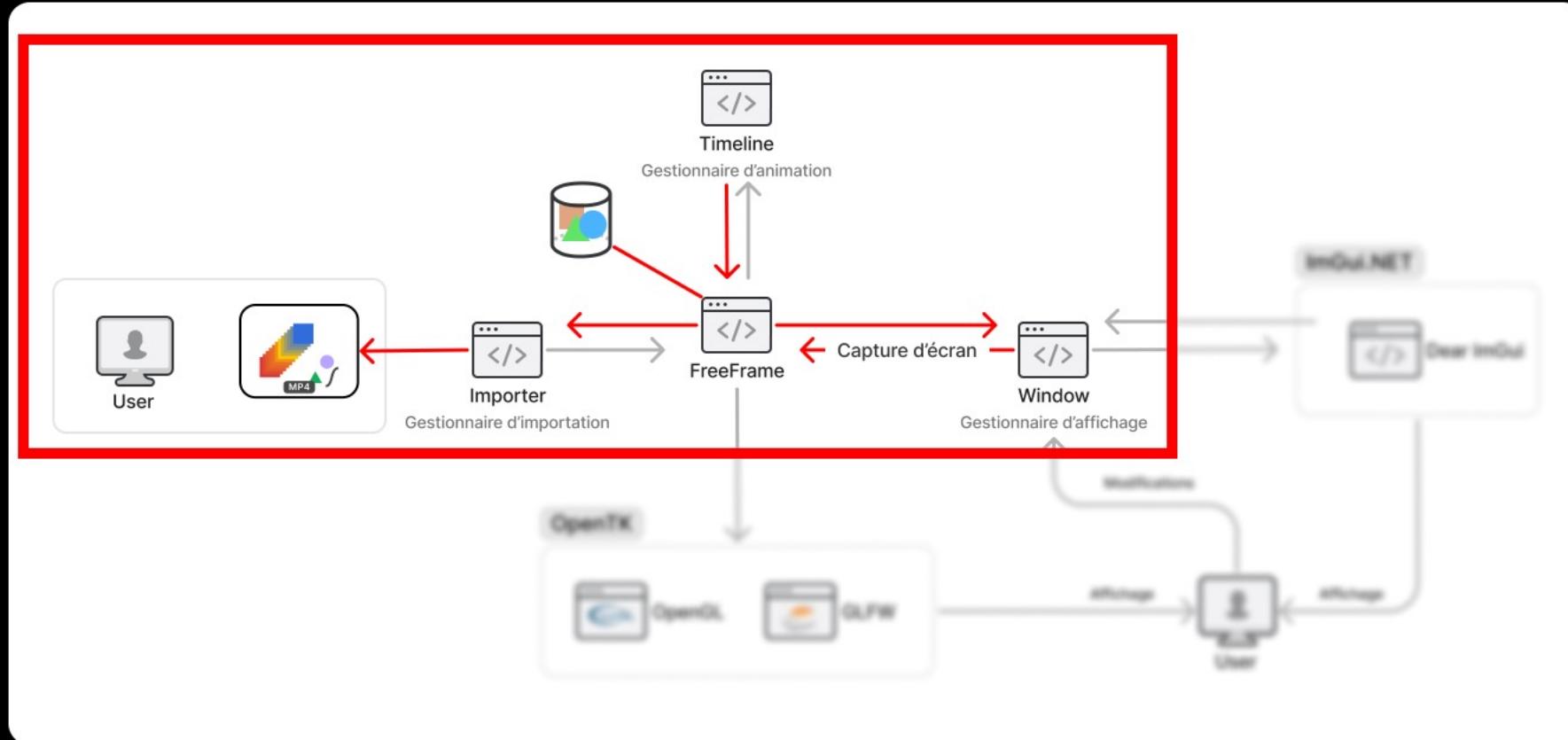
Exportation PNG



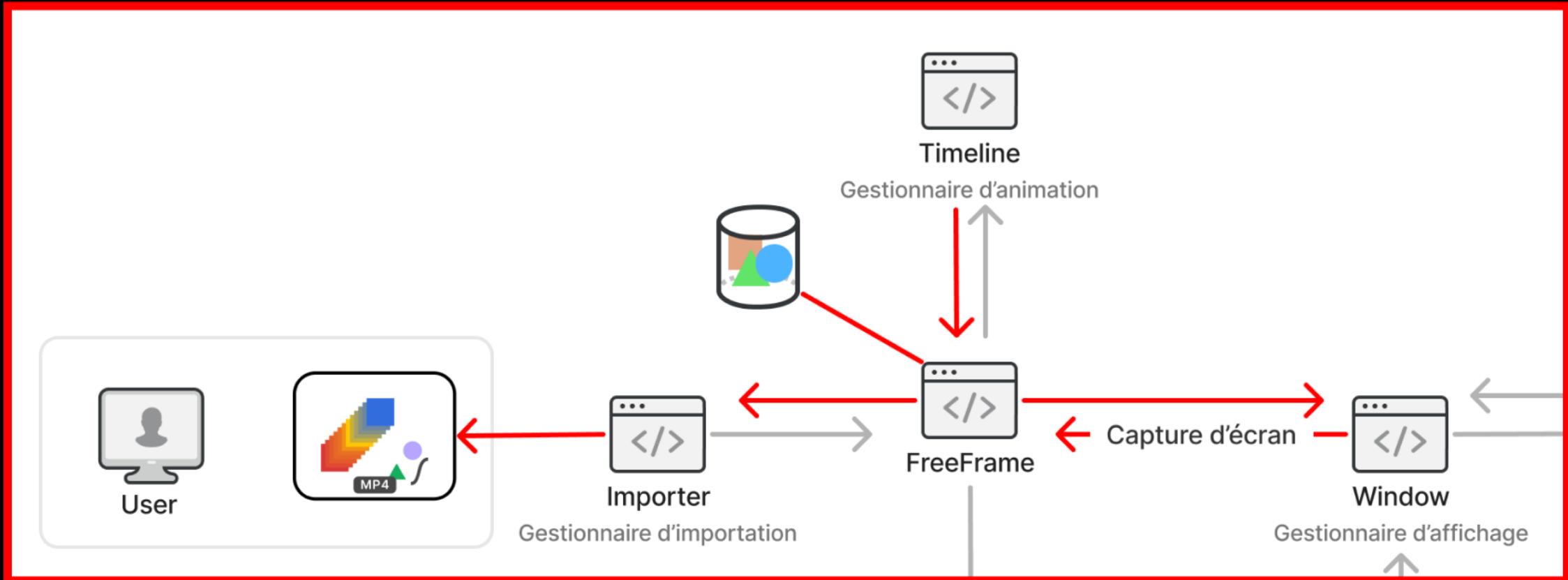
Exportation MP4



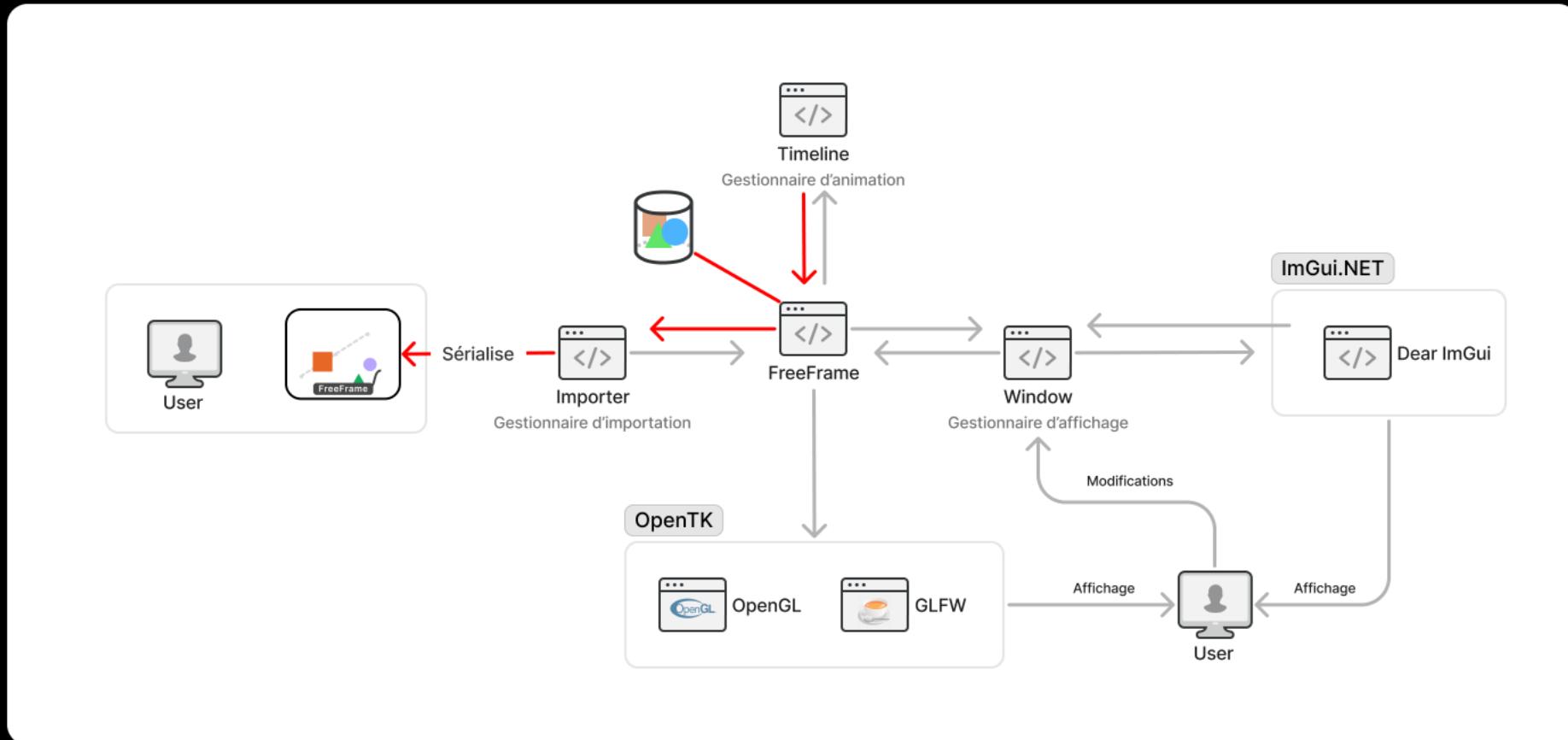
Exportation MP4



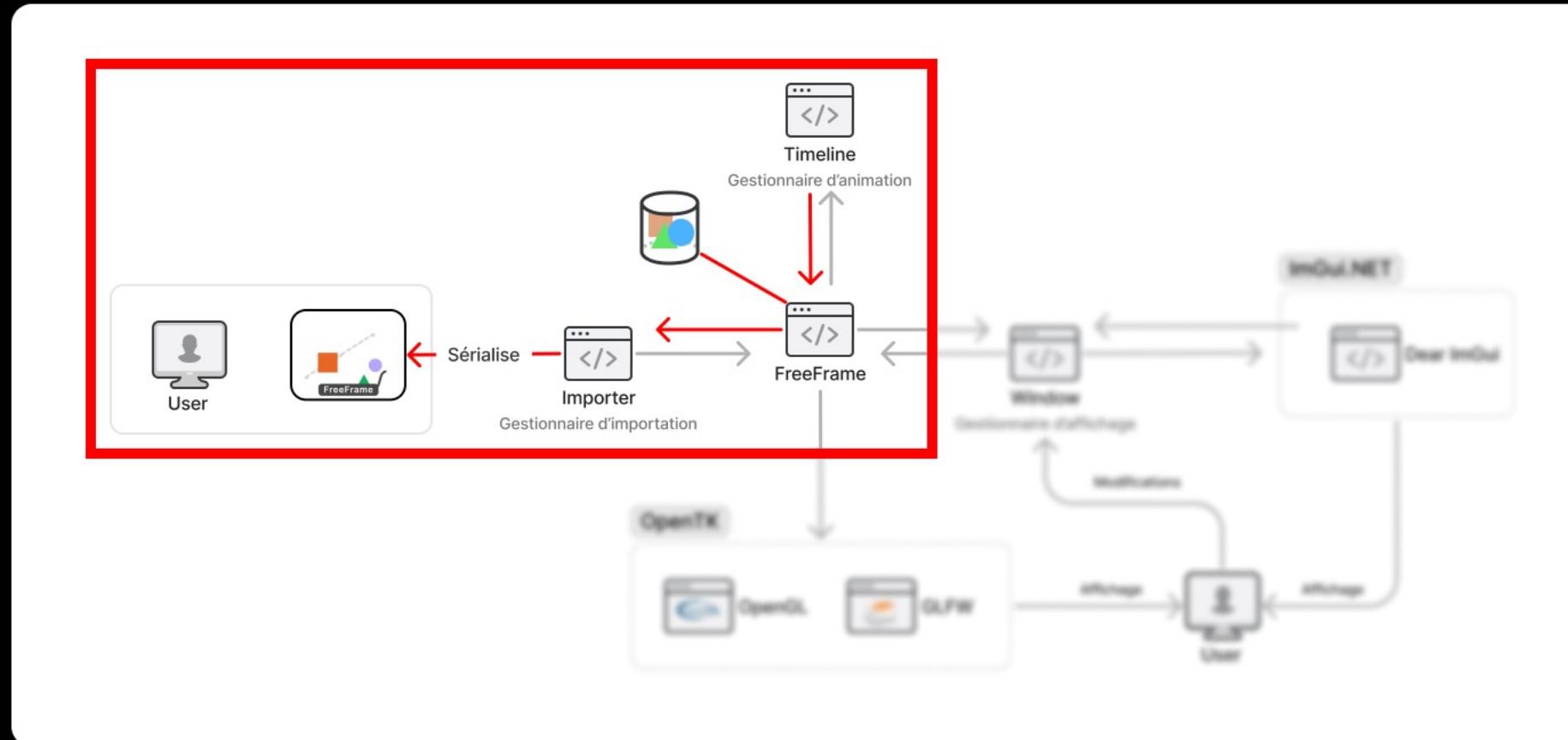
Exportation MP4



Exportation FreeFrame

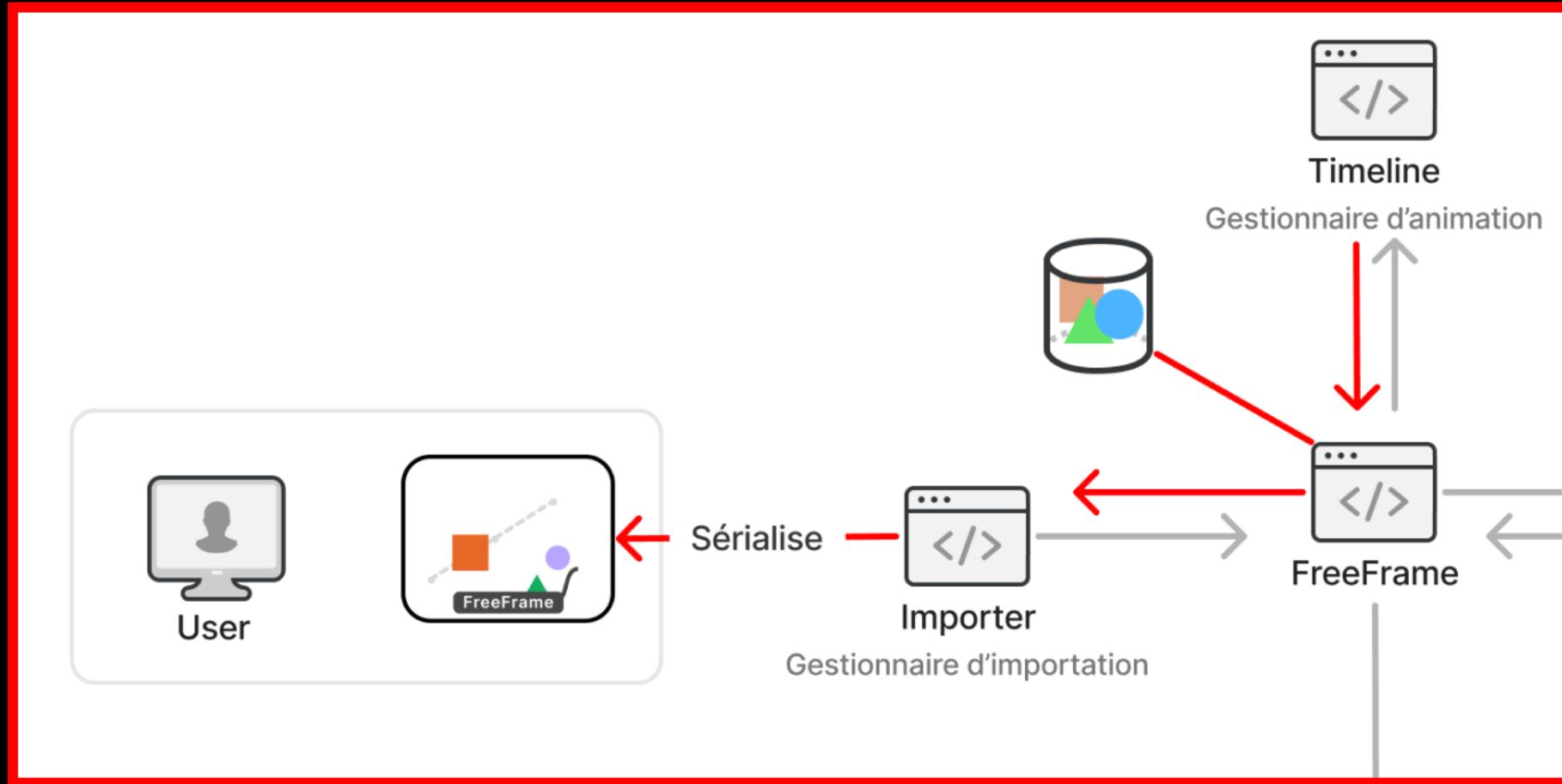


Exportation FreeFrame



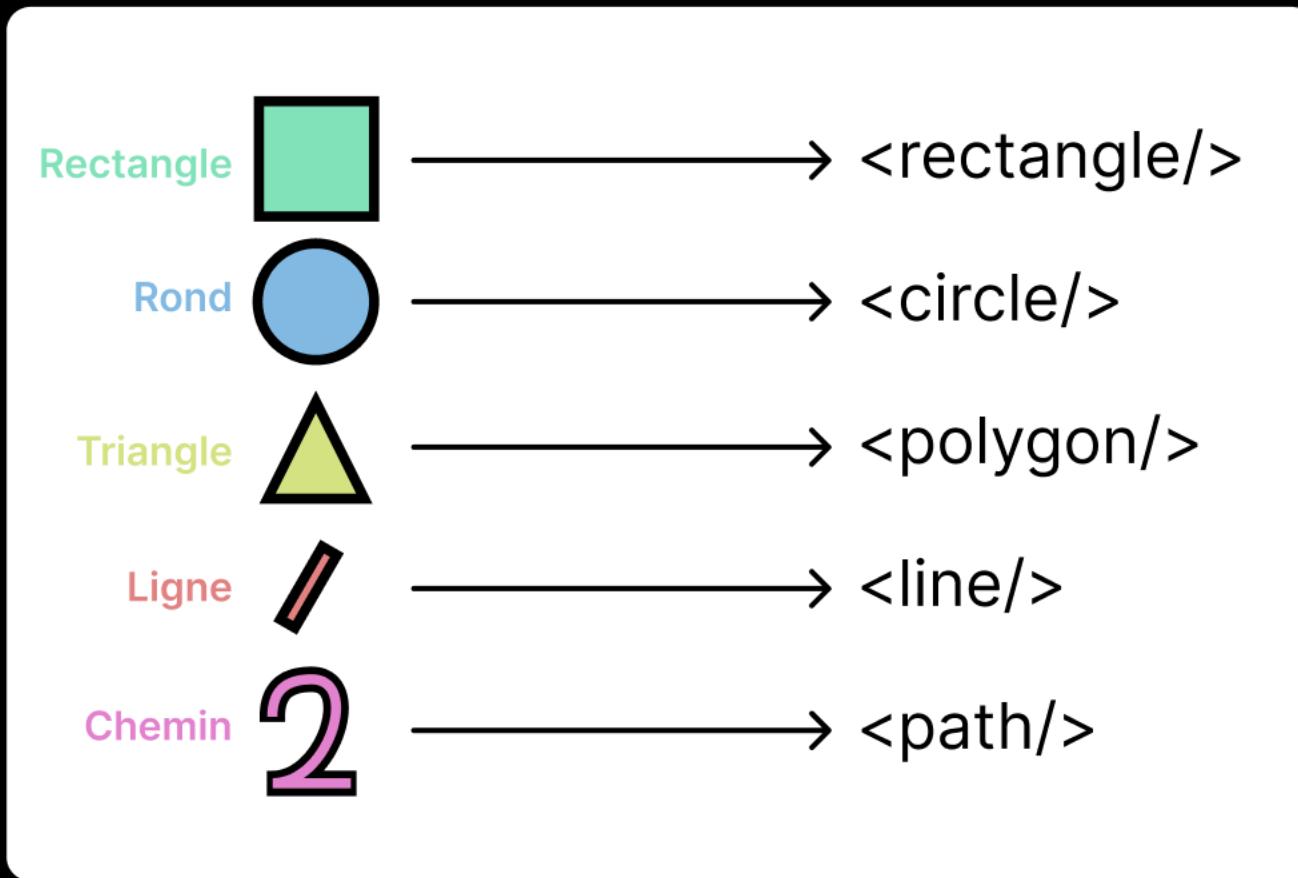
Newtonsoft JSON.NET

Exportation FreeFrame

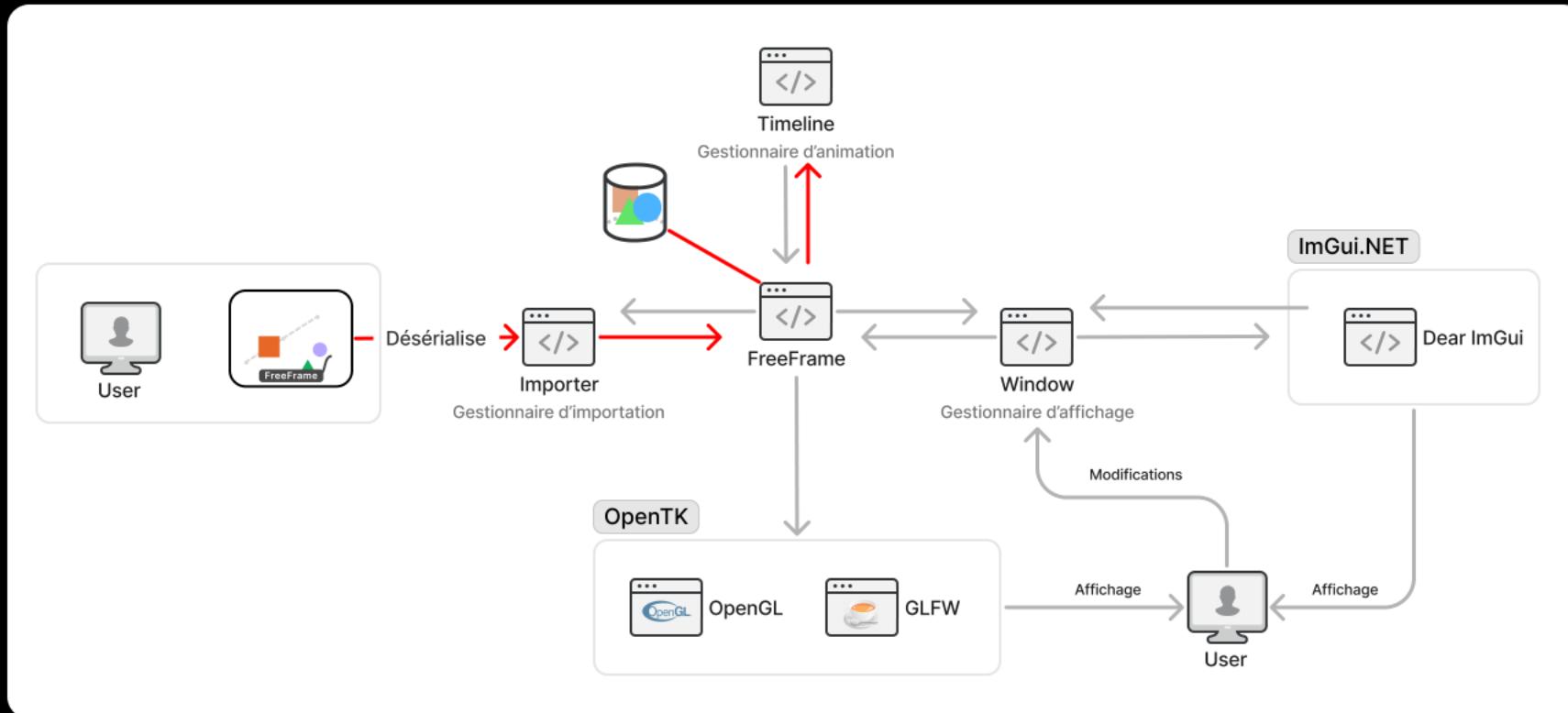


Newtonsoft JSON.NET

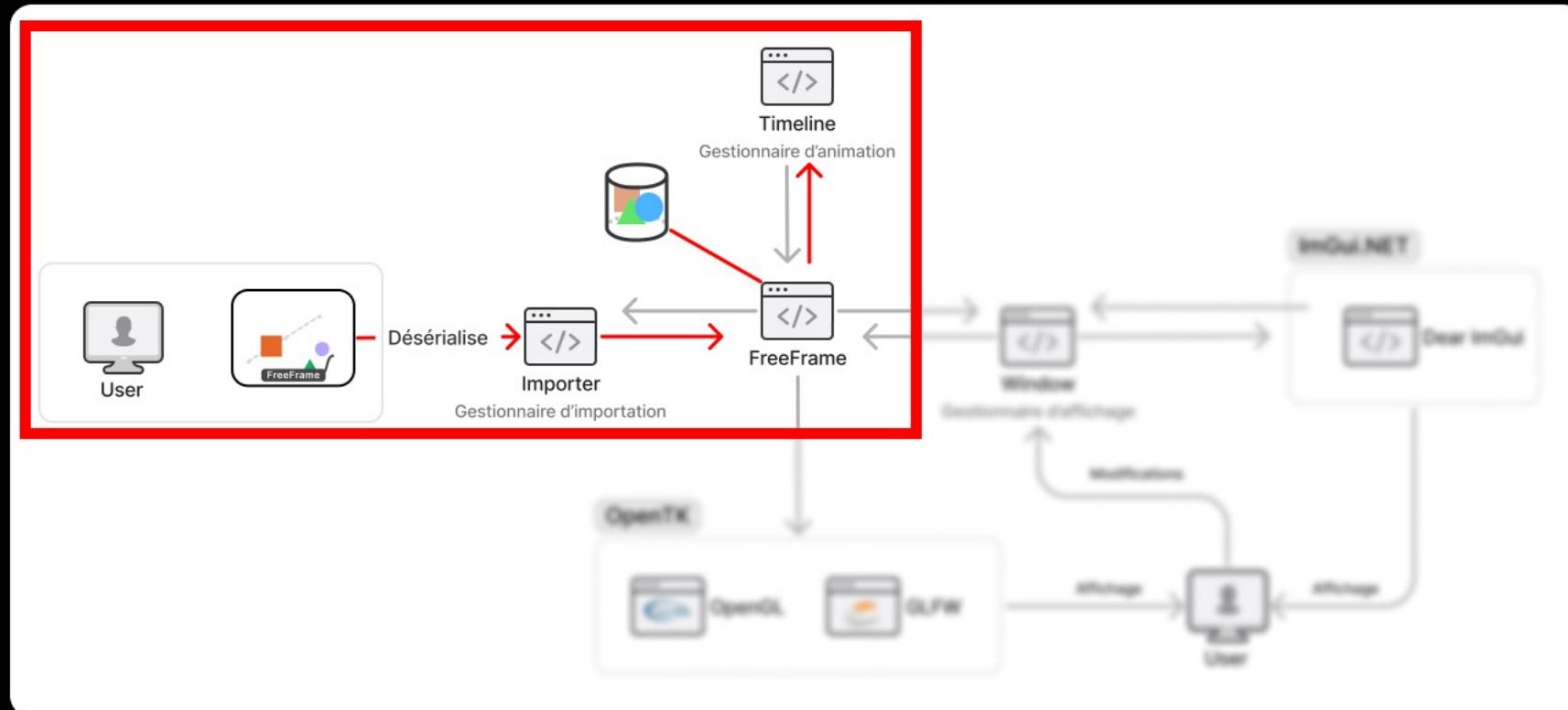
Exportation SVG



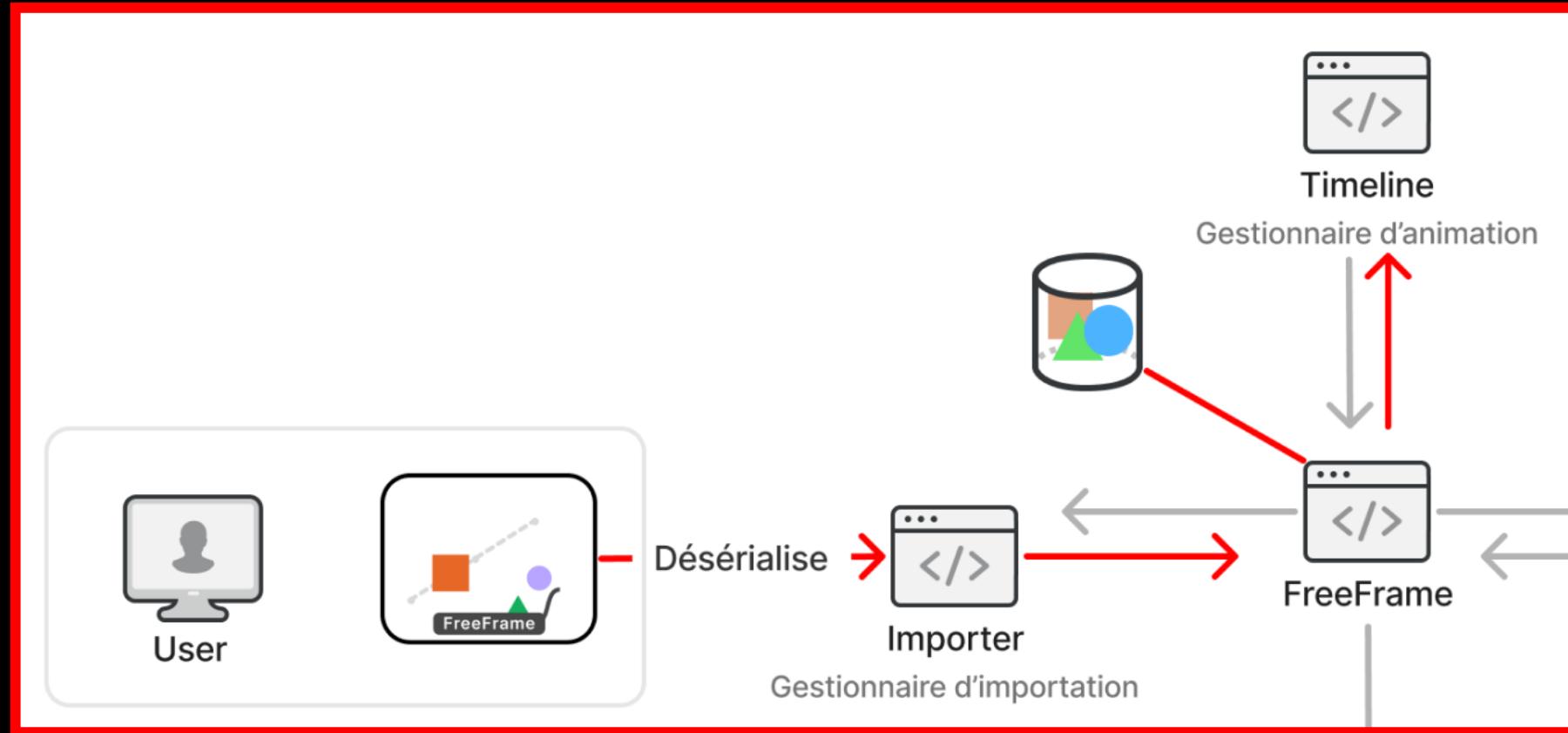
Importation FreeFrame



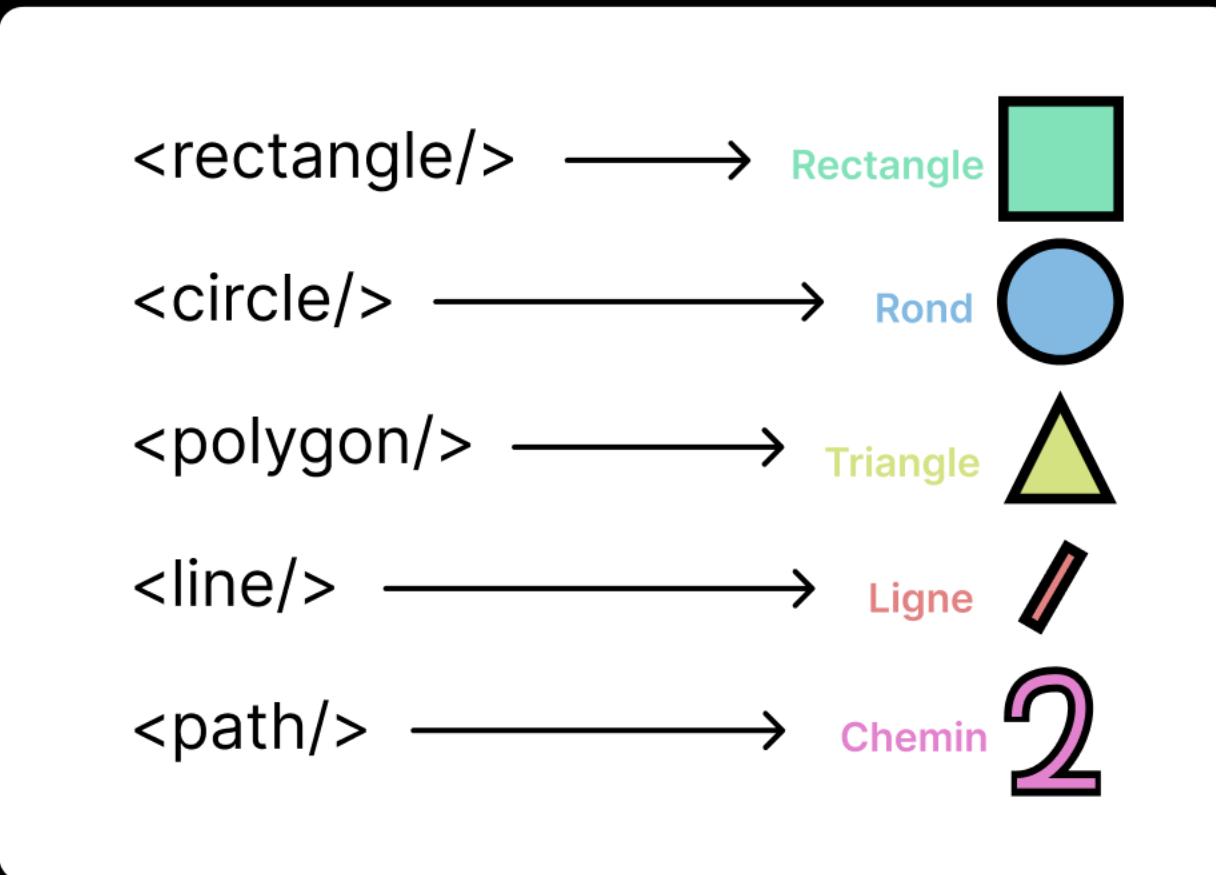
Importation FreeFrame



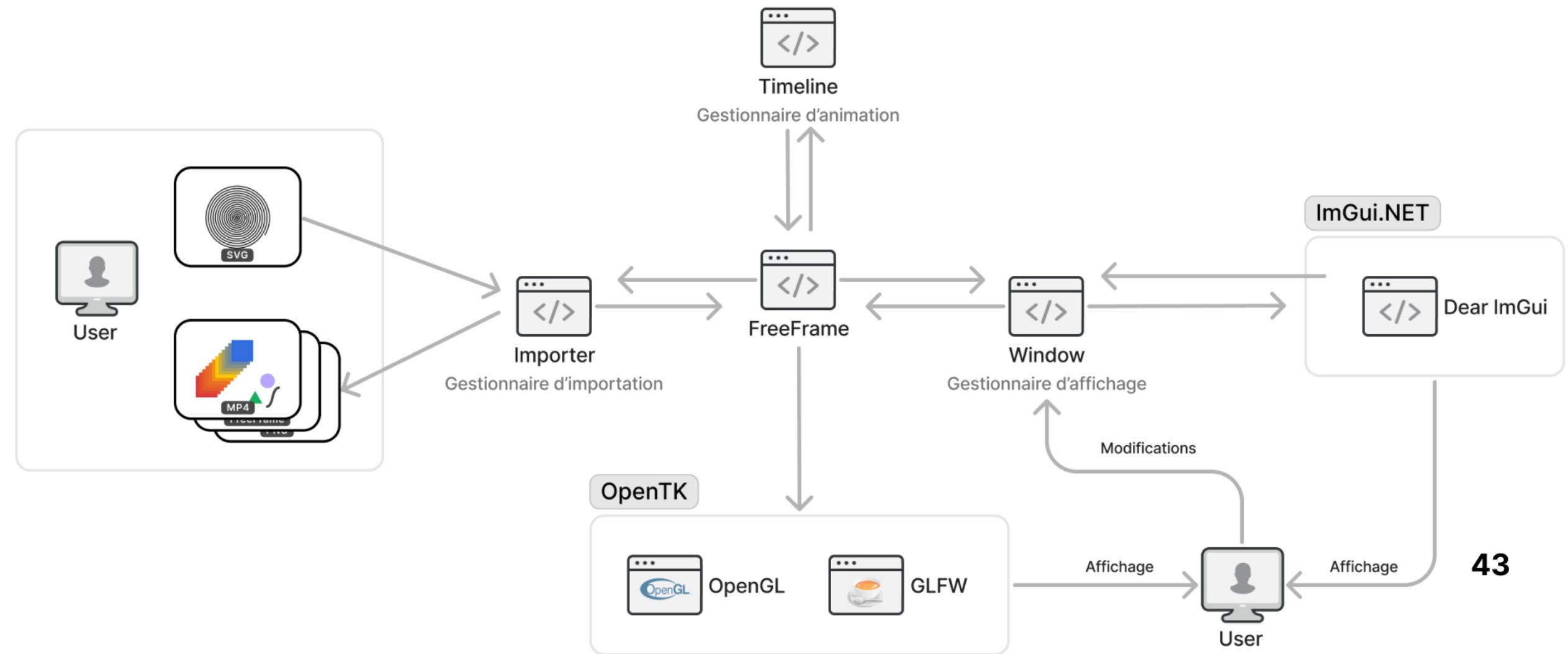
Importation FreeFrame



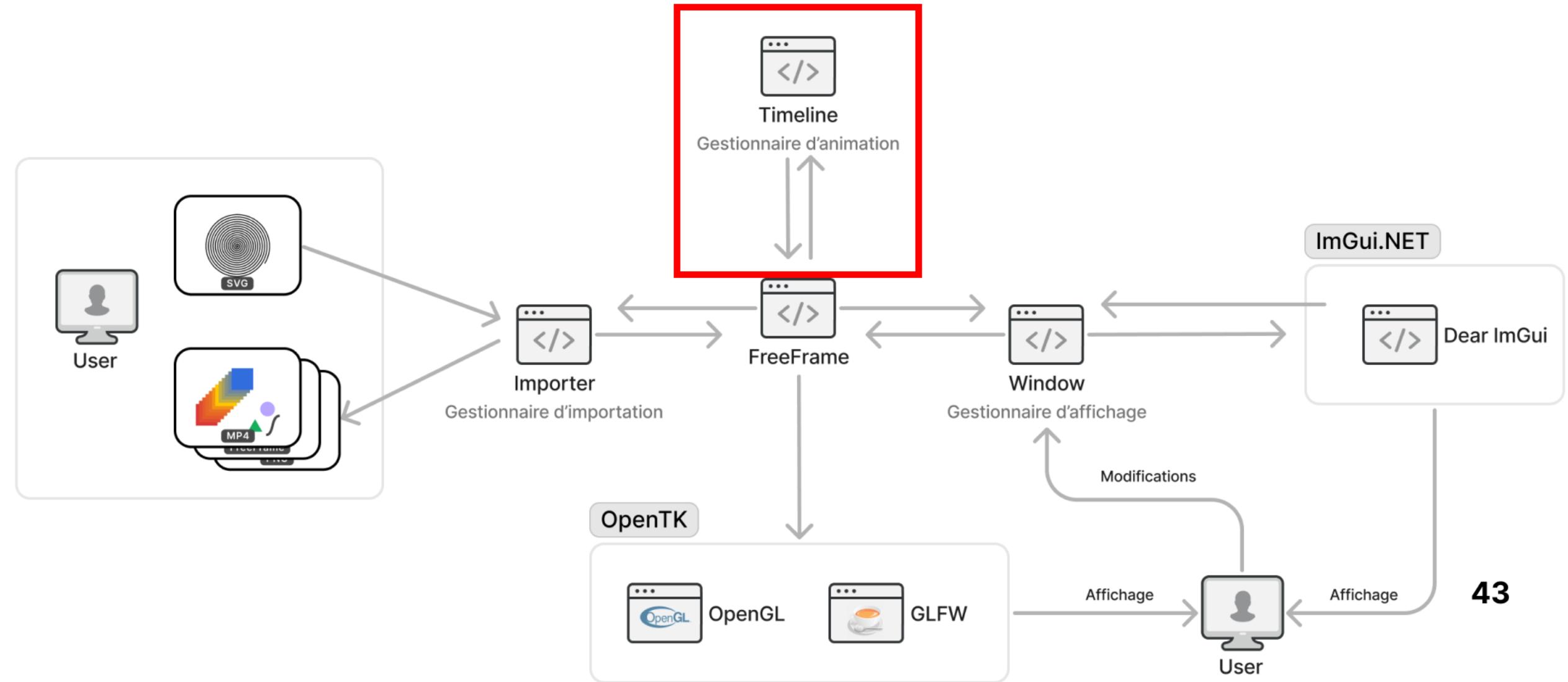
Importation SVG



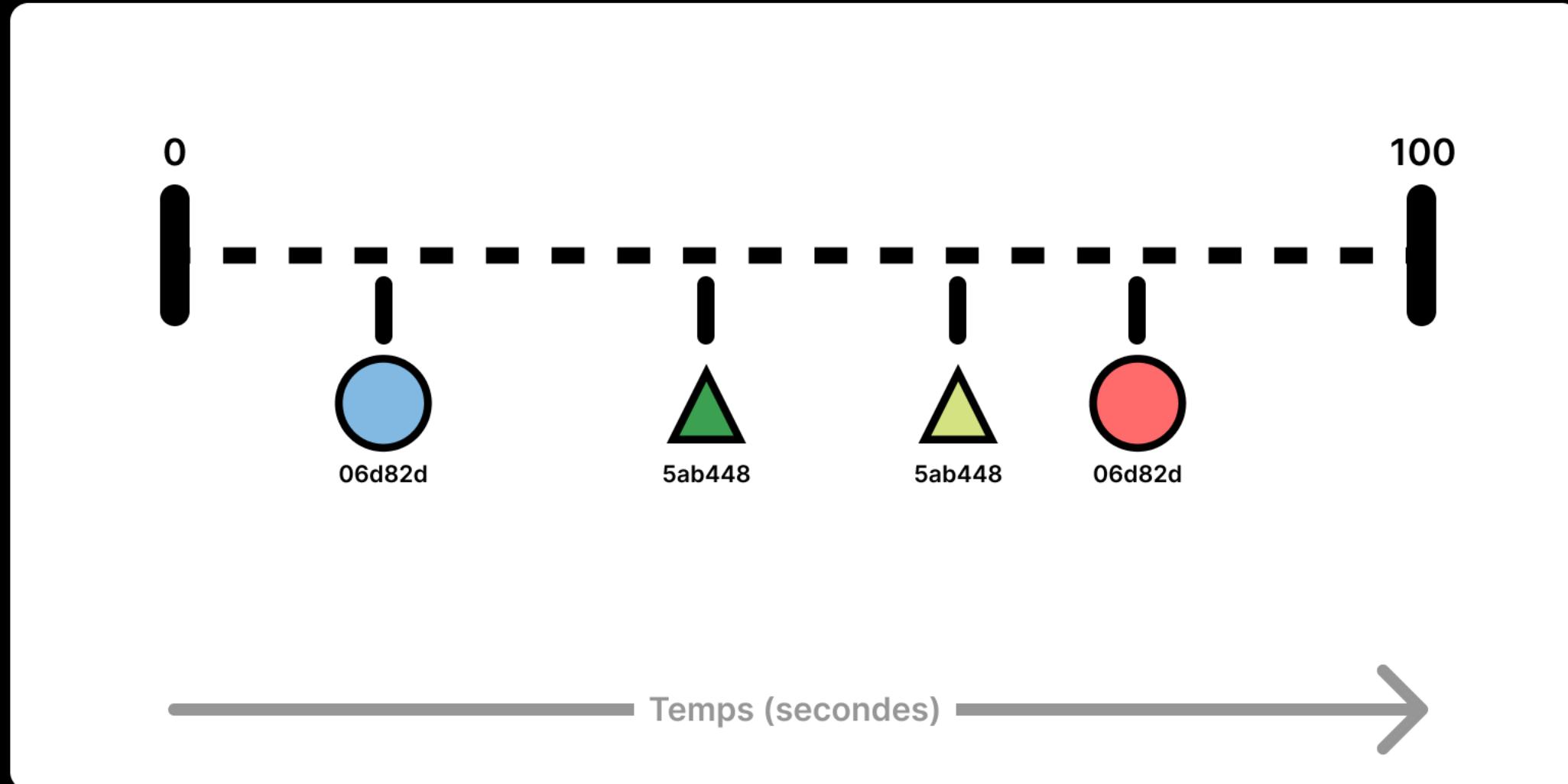
Animation/Timeline



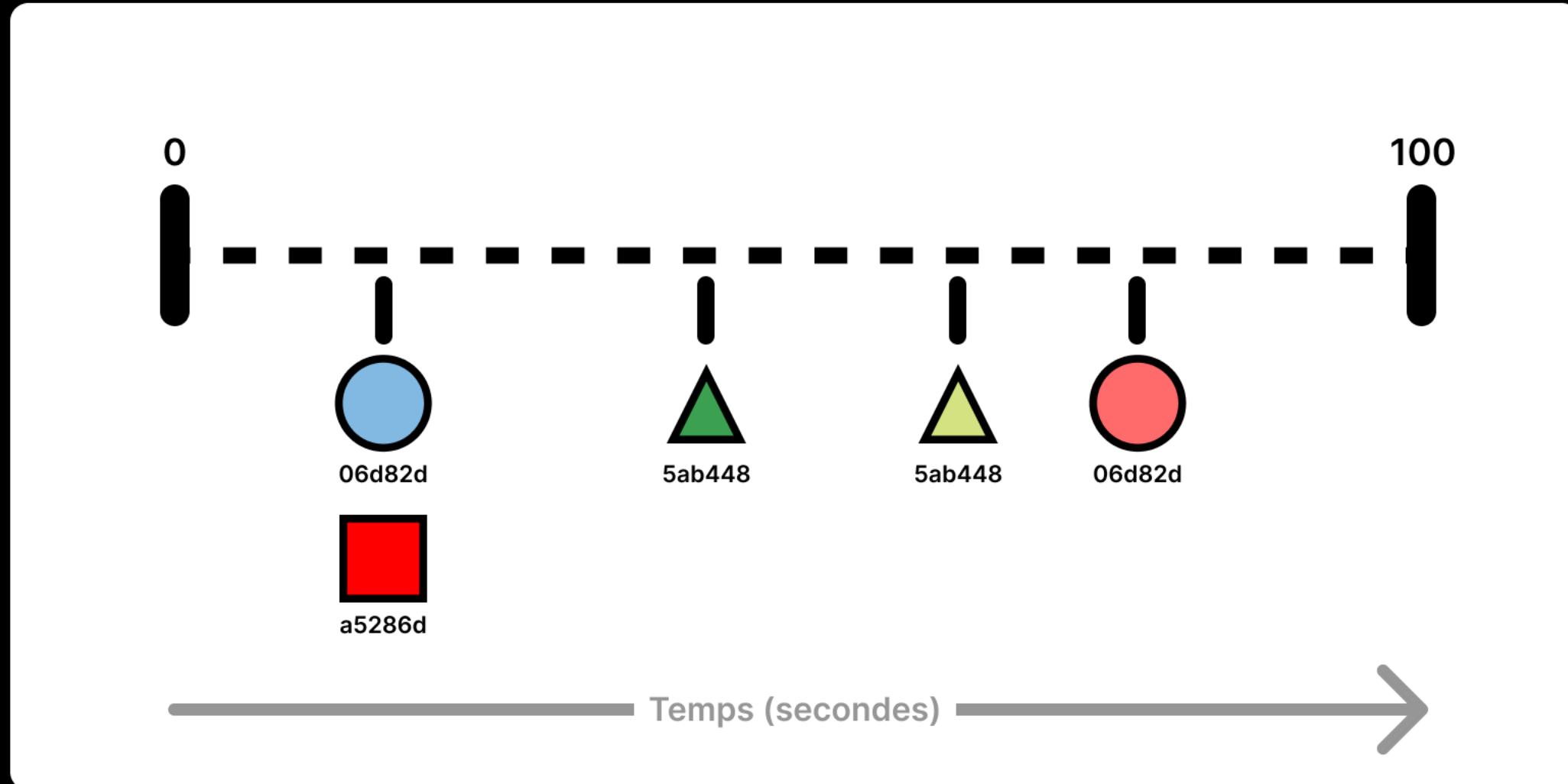
Animation/Timeline



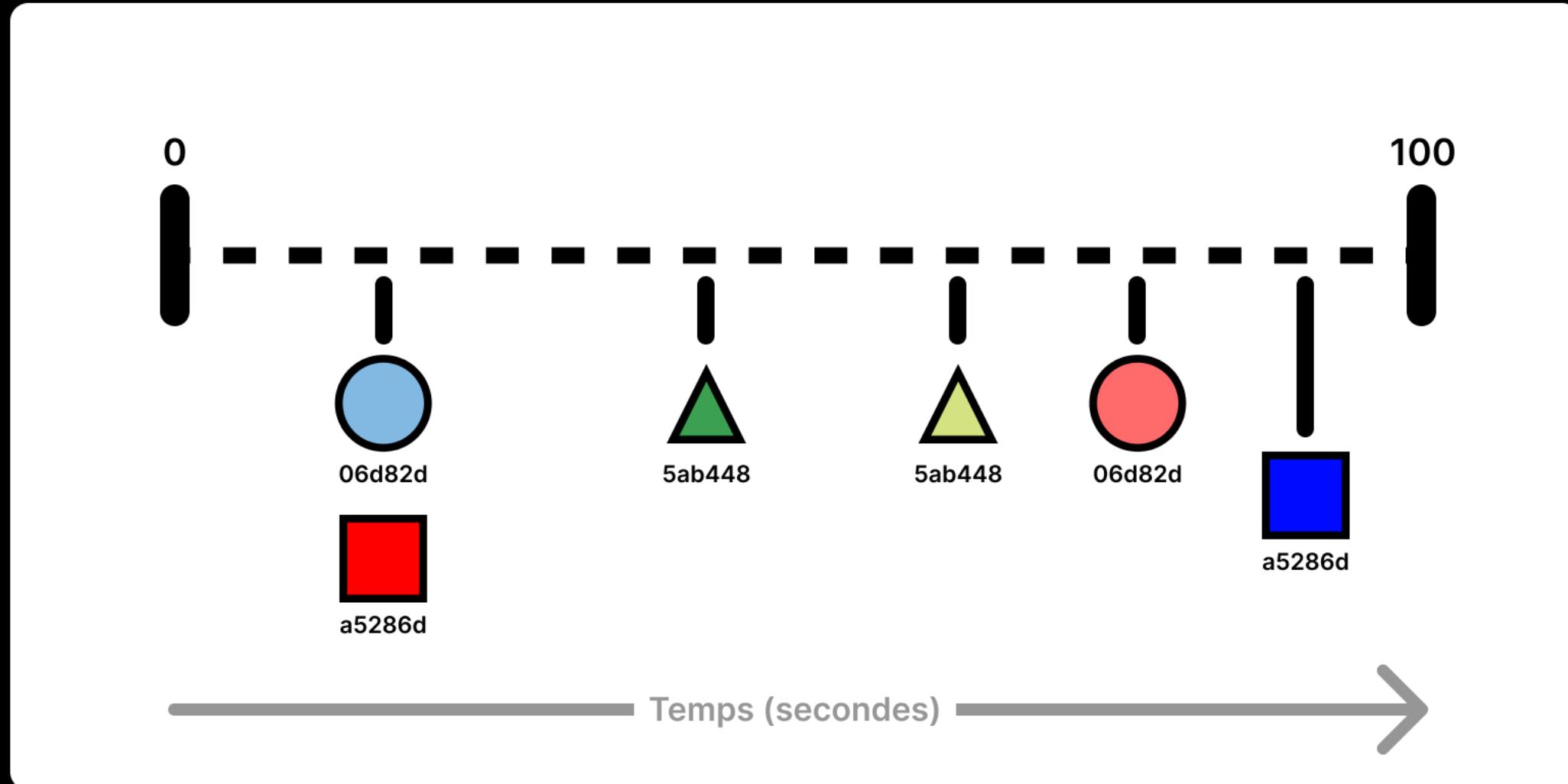
Animation/Timeline



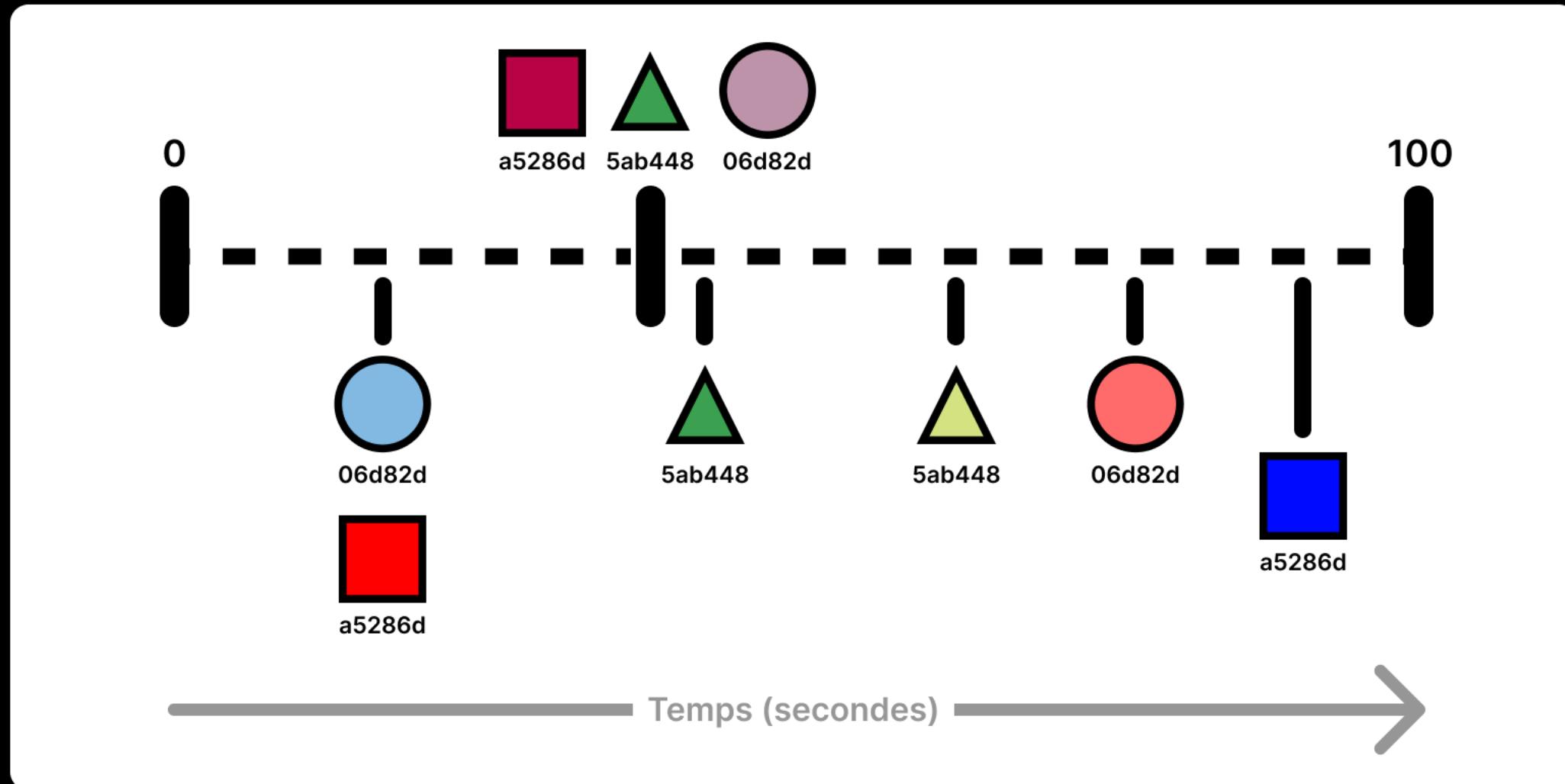
Animation/Timeline



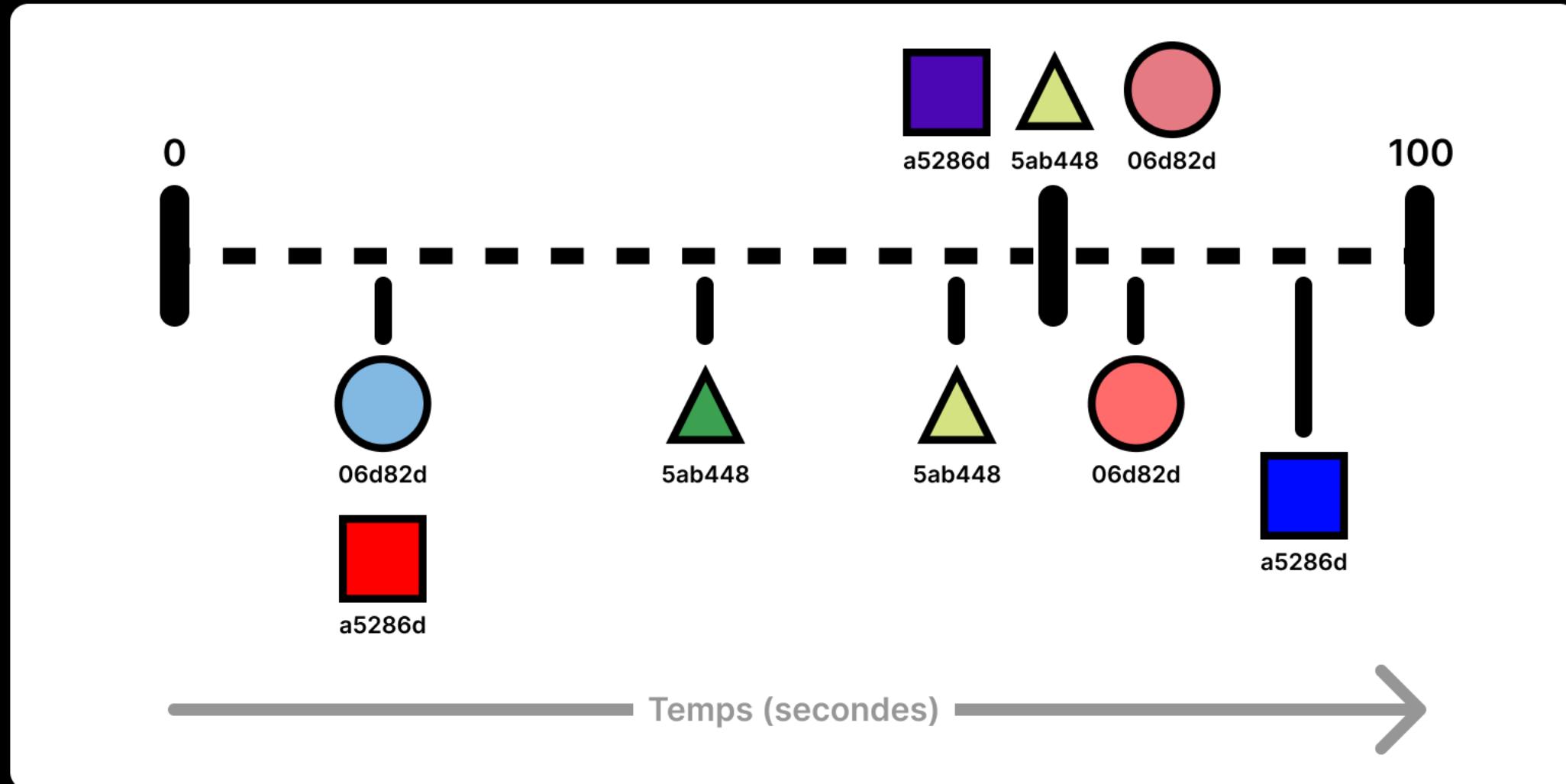
Animation/Timeline



Animation/Timeline



Animation/Timeline



Améliorations possibles

- Que les formes soient construites à partir de lignes et de courbes de Bézier
- Augmenter le champ des formes compatibles SVG
- Améliorer l'Open Source
- Résoudres problèmes
 - Entrée du texte
 - Export en GIF

Conclusion

- Objectifs atteints
- Apprentissage en infographie (computer graphics)
- Satisfait du résultat

Questions ?