Chameleo Internals

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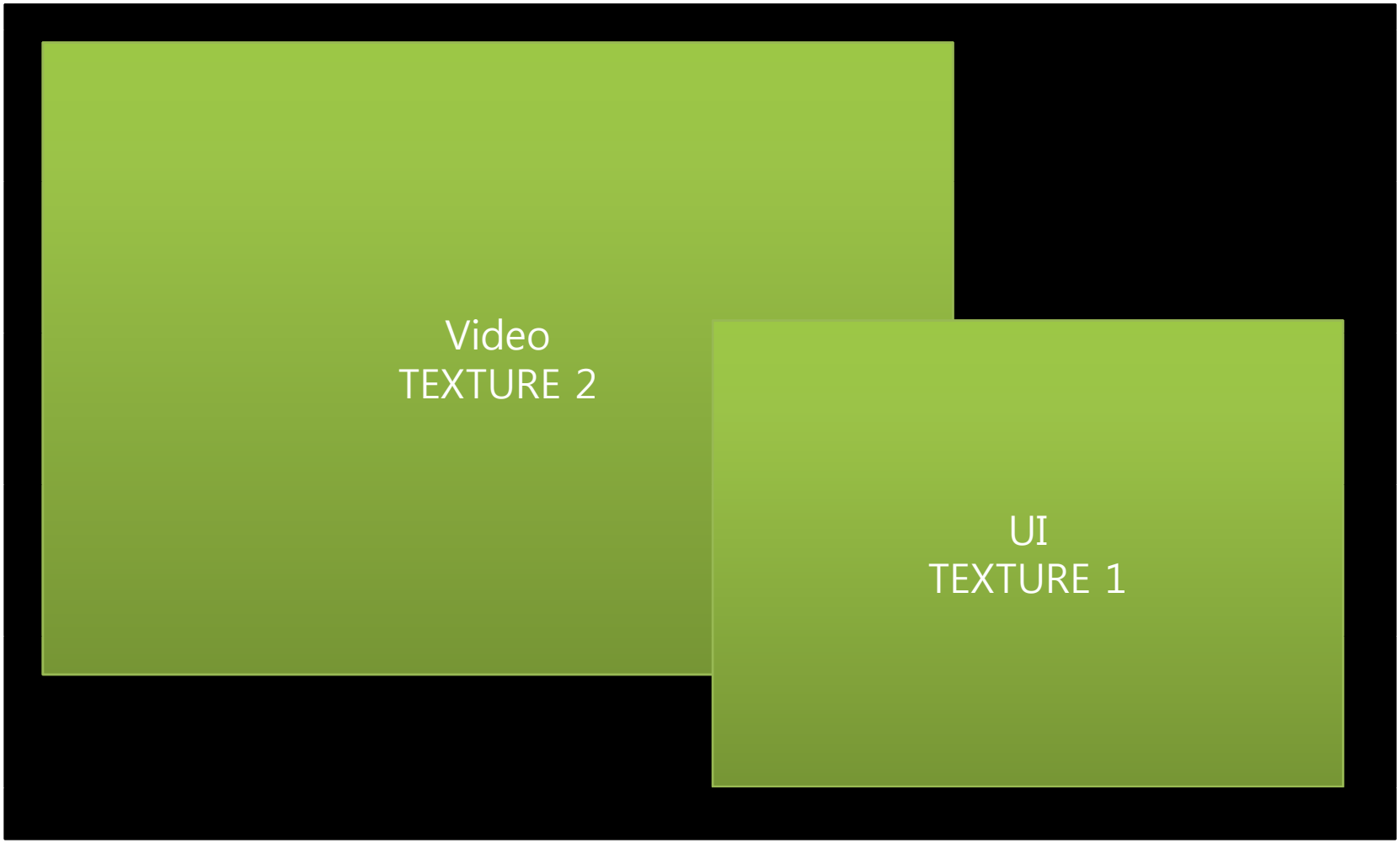
RENDERING

Rendering

- OpenGL-based
  - UI components of Chameleo such as video and UI widgets are all textures
  - Each texture has its position in 3D coordinate system
  - Scaling, rotation and transparency becomes trivially simple
- Windows port will use DirectX instead

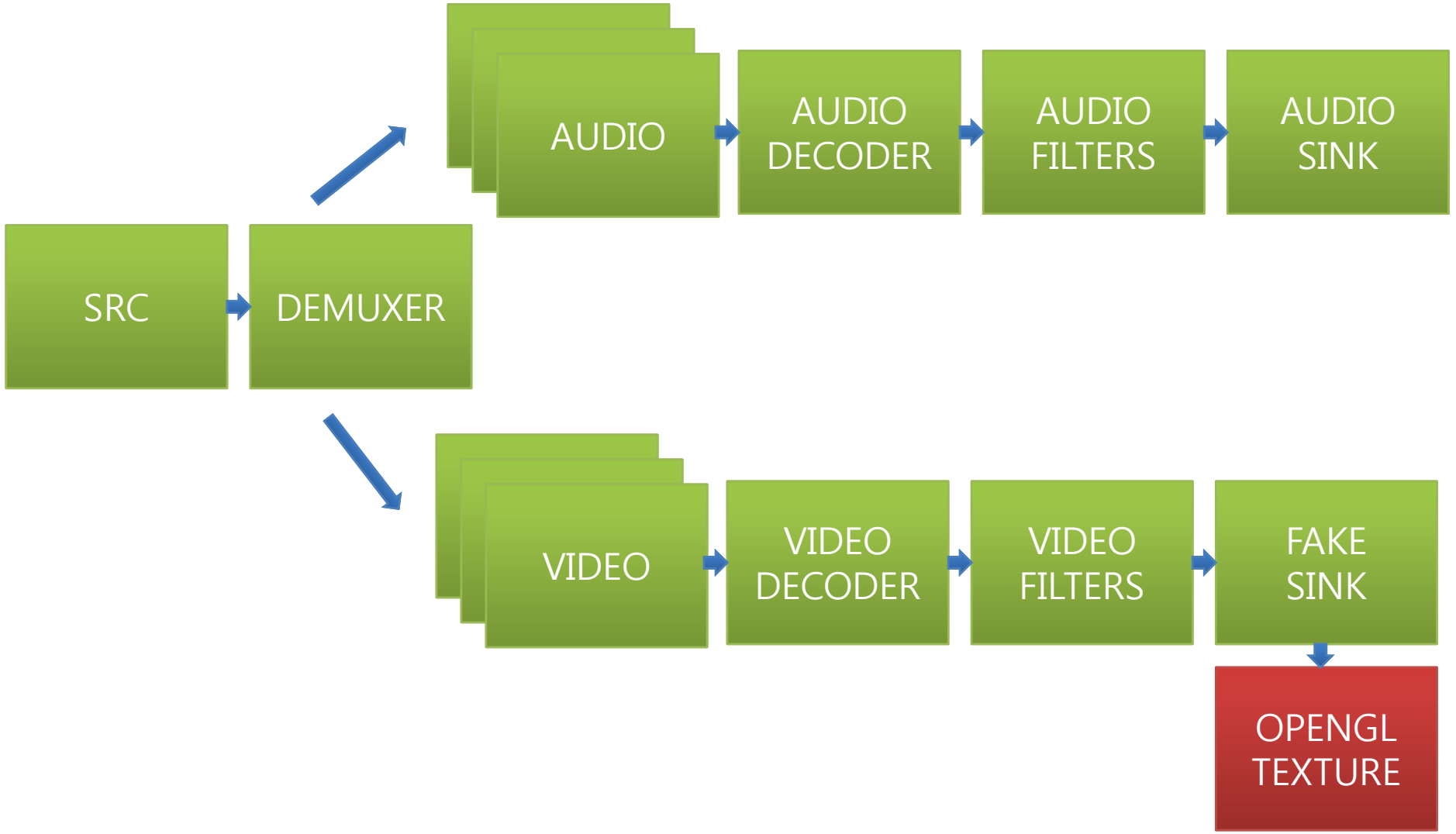
Rendering (Continued)



Video Rendering

- GStreamer
  - Use GStreamer to decode and play video
  - Custom video plug-in such as video decoders and filters can be added easily
  - Use GstFakeSink to redirect decoded video frames to OpenGL texture
- DirectShow
  - Optionally used for Windows

Video Rendering
(Chameleo Main Video Pipeline)



GUI Rendering

- GLUX(Open**GL** **U**ser E**x**perience)
  - API
    - Similar to GTK+
    - Provide widgets such as Button, Label and Image
  - Graphics
    - 2D vector graphics
    - Use SVG (Scalable Vector Graphics)
    - Use cairo and librsvg
  - Rendering
    - Generate textures to render in OpenGL

Extending Chameleo

PLUG-INS

Plug-ins

1. Video plug-in
2. Chameleo plug-in
3. Web plug-in

Video Plug-in

- GStreamer plug-ins
- Video Plug-in can add
  - Visual effects
  - Metadata processing
  - Video/Audio analysis
- Example
  - gst-puid – Use audio fingerprints to retrieve metadata

Chameleo Plug-in

- Extend the functionality of Chameleo
- Chameleo uses a plug-in architecture similar to Eclipse
- Python API

- Examples
  - Channel
  - Video Widget

Web Plug-in

- Use WebKit as its engine
  - Custom JavaScript objects to control video playback and metadata processing
- HTML+CSS+JavaScript
  - Reuse existing web widgets and desktop widgets

METADATA

Metadata

- Types of Video Metadata
  - Metadata
    - General description of video such as title, summary, creator and tags
  - Timed-Metadata
    - Subtitle
    - Tag
  - Timed-Positional-Metadata
    - Object tracking

Metadata

- Format
  - Based on ATOM 1.0 with additional video metadata specification (additional XML namespaces)
  - Can be saved in a file or in the server
- Framework
  - Provide APIs to make creation and management of metadata easy
  - Make collaboration on metadata possible