

Introduction to Video Capture and Playback

What you will learn!

Capture and Playback



- Overview of Blackmagic capture and playback products
- Developing with the DeckLink SDK
- Finding the device via the DeckLink SDK
- Capture using the DeckLink SDK
- Playback using the DeckLink SDK
- Where to get additional information

Blackmagic Design Products



Blackmagicdesign

Blackmagic Design Products

Capture and Playback



- **DeckLink Cards:** For PCIe based computers
- **UltraStudio:** For Thunderbolt 3 computers
- **Intensity Pro:** Low cost PCIe consumer card
- **Intensity Shuttle:** Low cost USB 3.0 consumer device

DeckLink SDK

DeckLink SDK

Capture and Playback



- Provides API for all capture and playback products
- Based on Microsoft Component Object Model (COM)
- DeckLink SDK is natively C++
- COM Interop allows integration into .NET (C#, VB.NET)
- Cross platform, Mac OS X, Windows and Linux
- Apps built using older SDK will run on latest Desktop Video version

Finding a Device

Capture and Playback

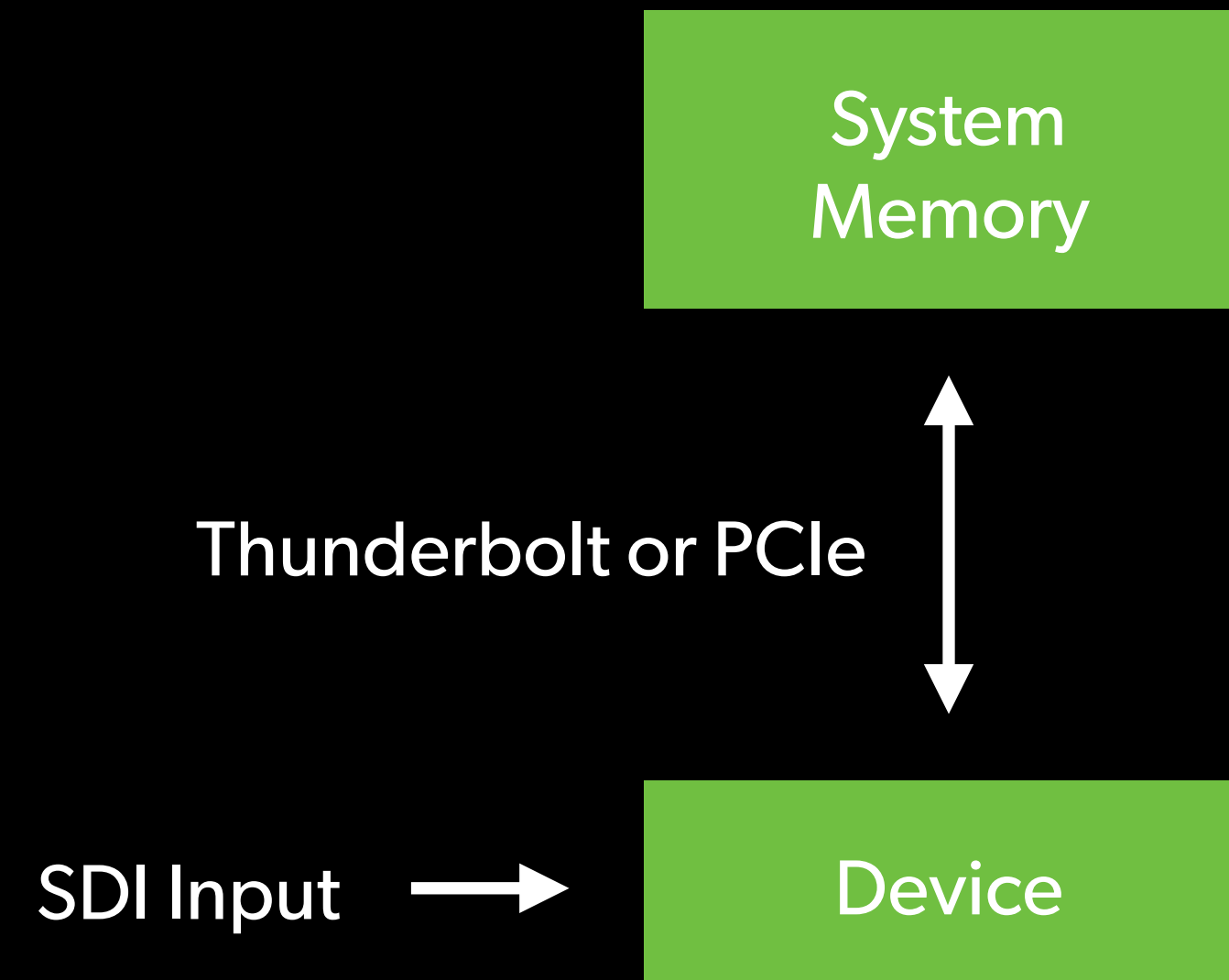
DeckLink API provides two ways to find a device

- IDeckLinkIterator
- IDeckLinkDiscovery

Video Capture

Video Capture

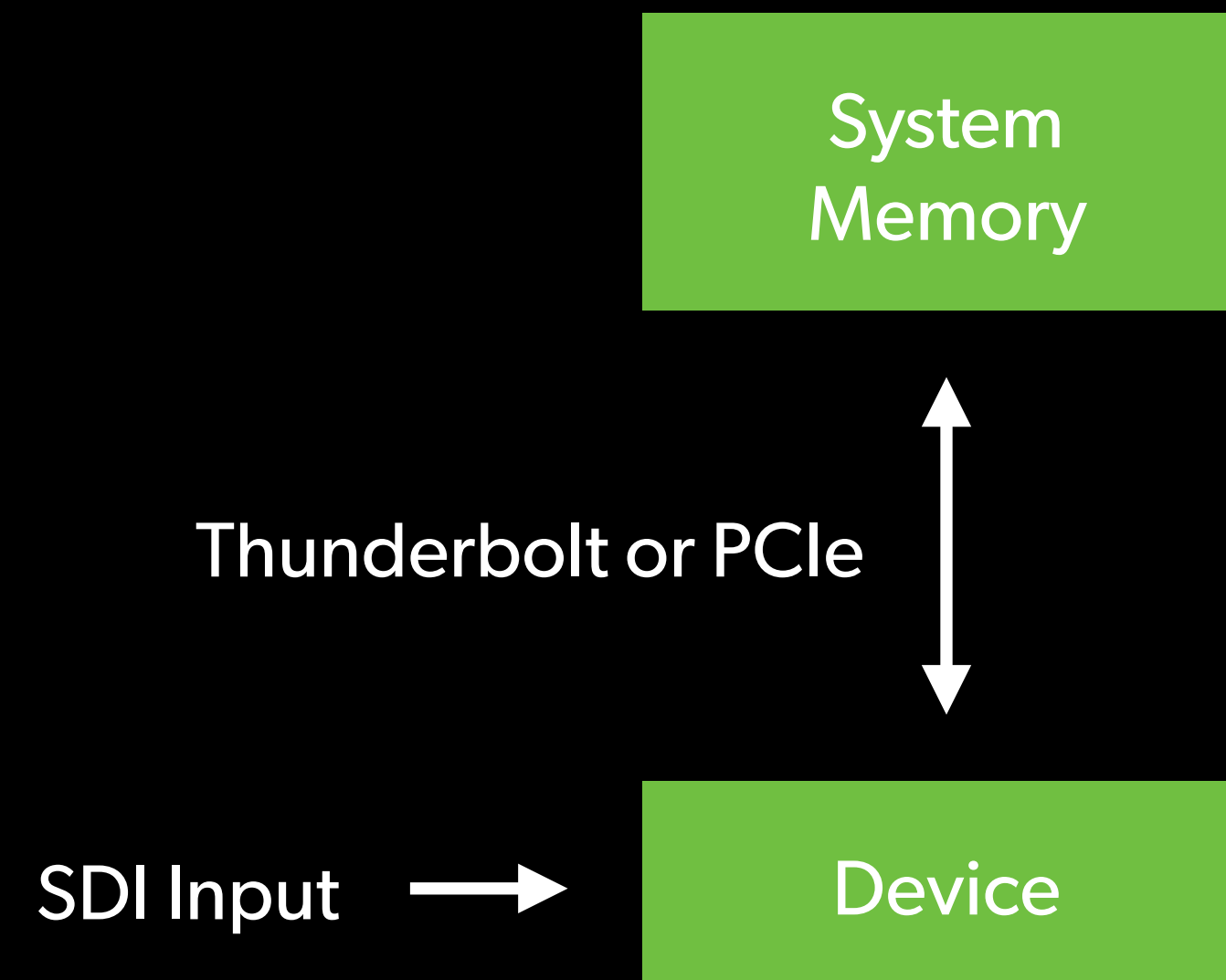
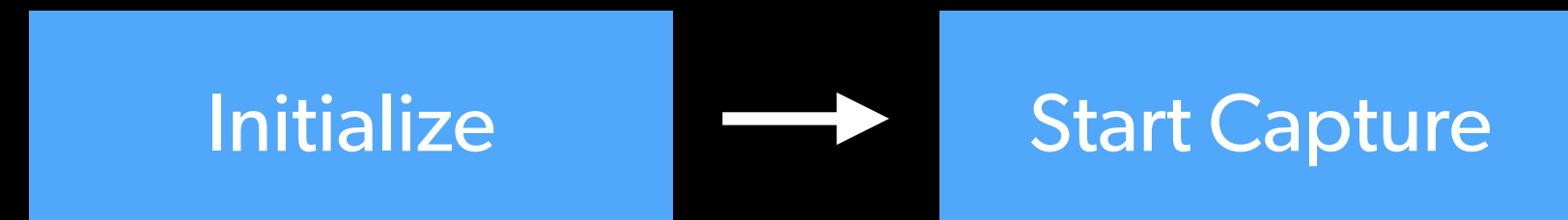
Initialize



Create input callback class

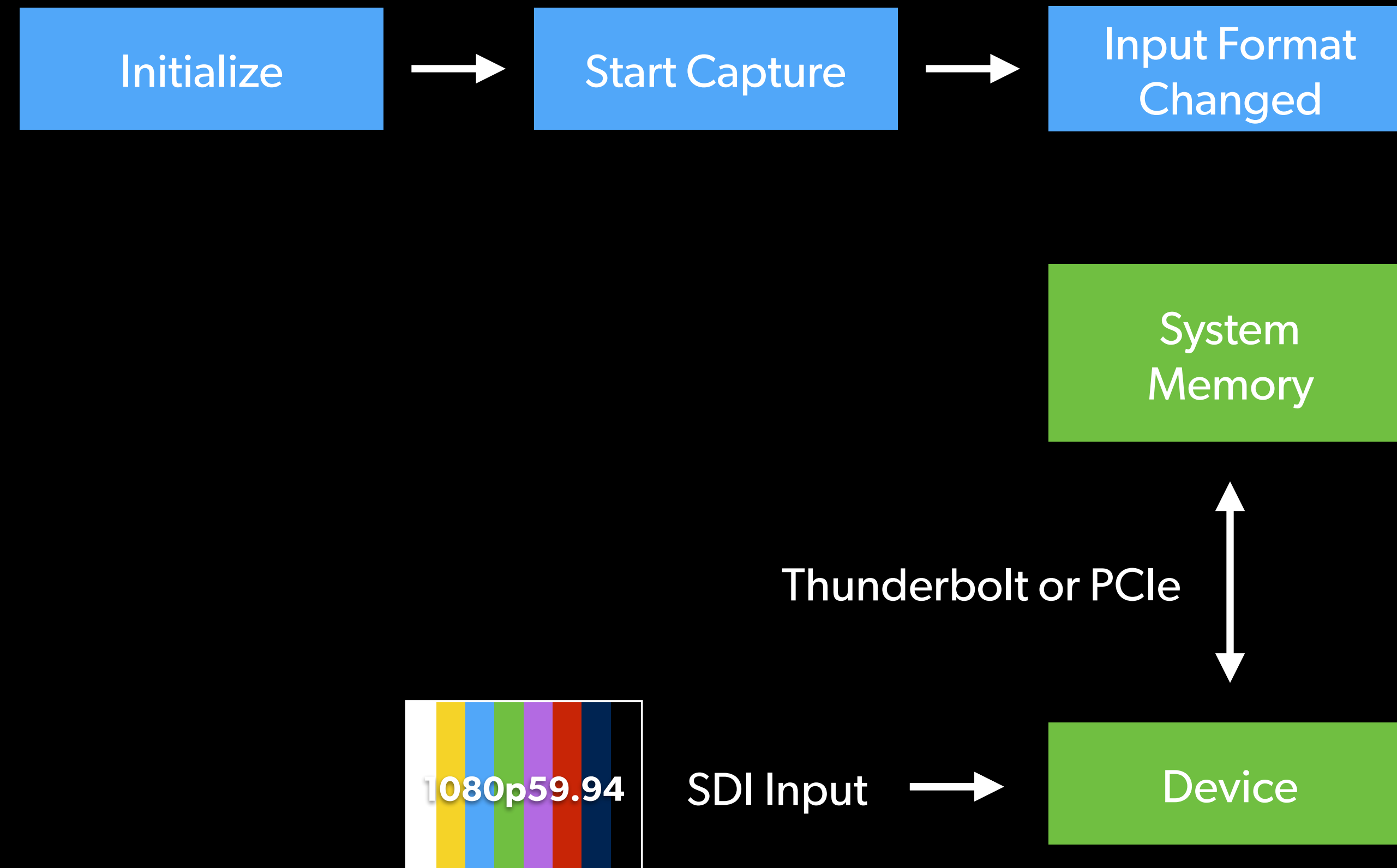
- Subclasses IDeckLinkInputCallback

Video Capture



- Query IDeckLinkInput from IDeckLink
- Register Input Callback Class
- Enable Video and Audio Input
- Start Input Streams

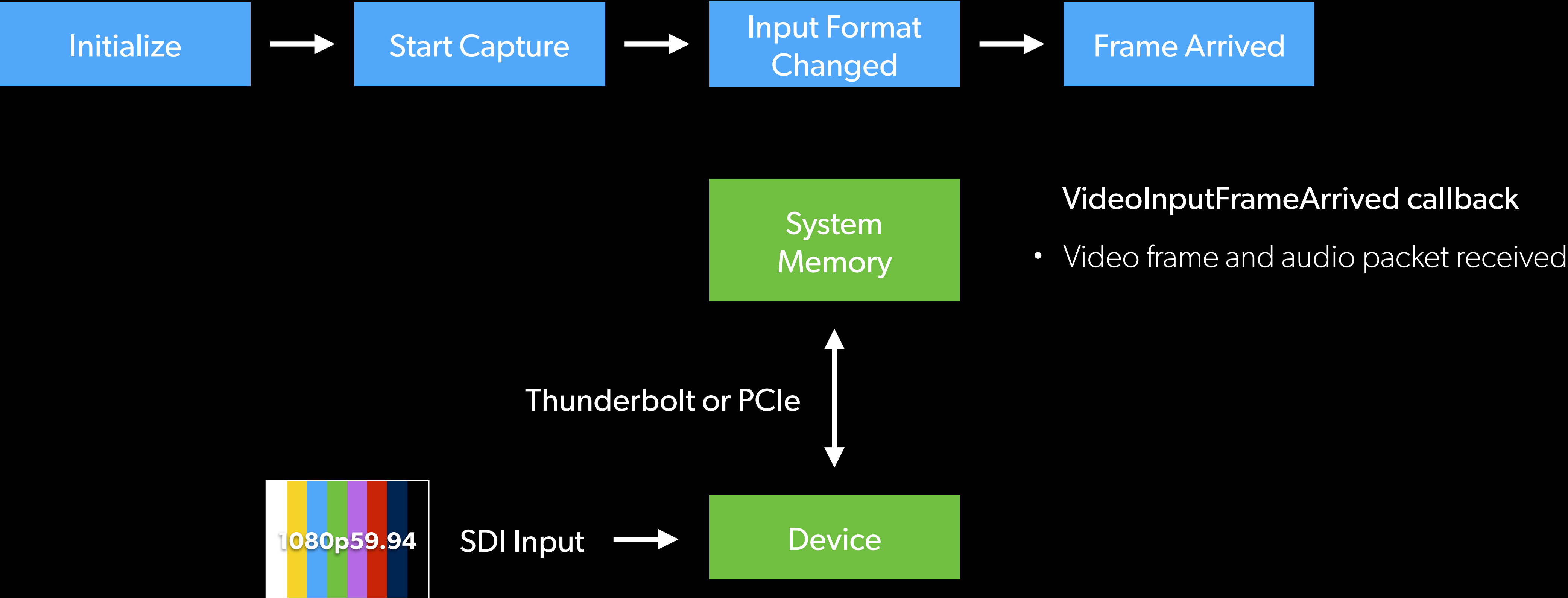
Video Capture



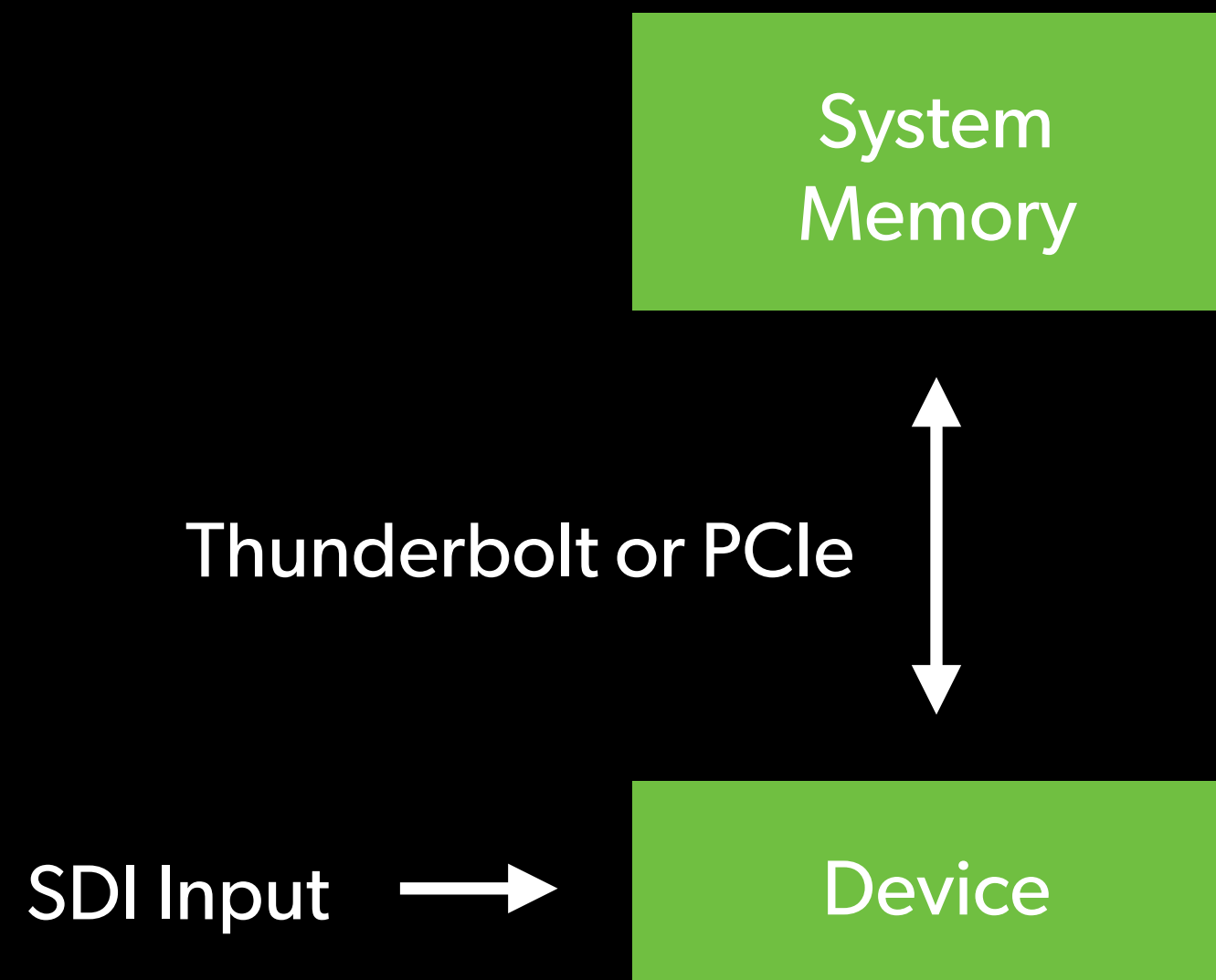
`VideoInputFormatChanged` callback

- Re-enable video input with detected mode and pixel format
- Restart input streams

Video Capture



Video Capture



Stop Capture

- Stop input video and audio streams
- Disable video and audio inputs

Video Playback

Video Playback

The DeckLink API features two methods for playback video



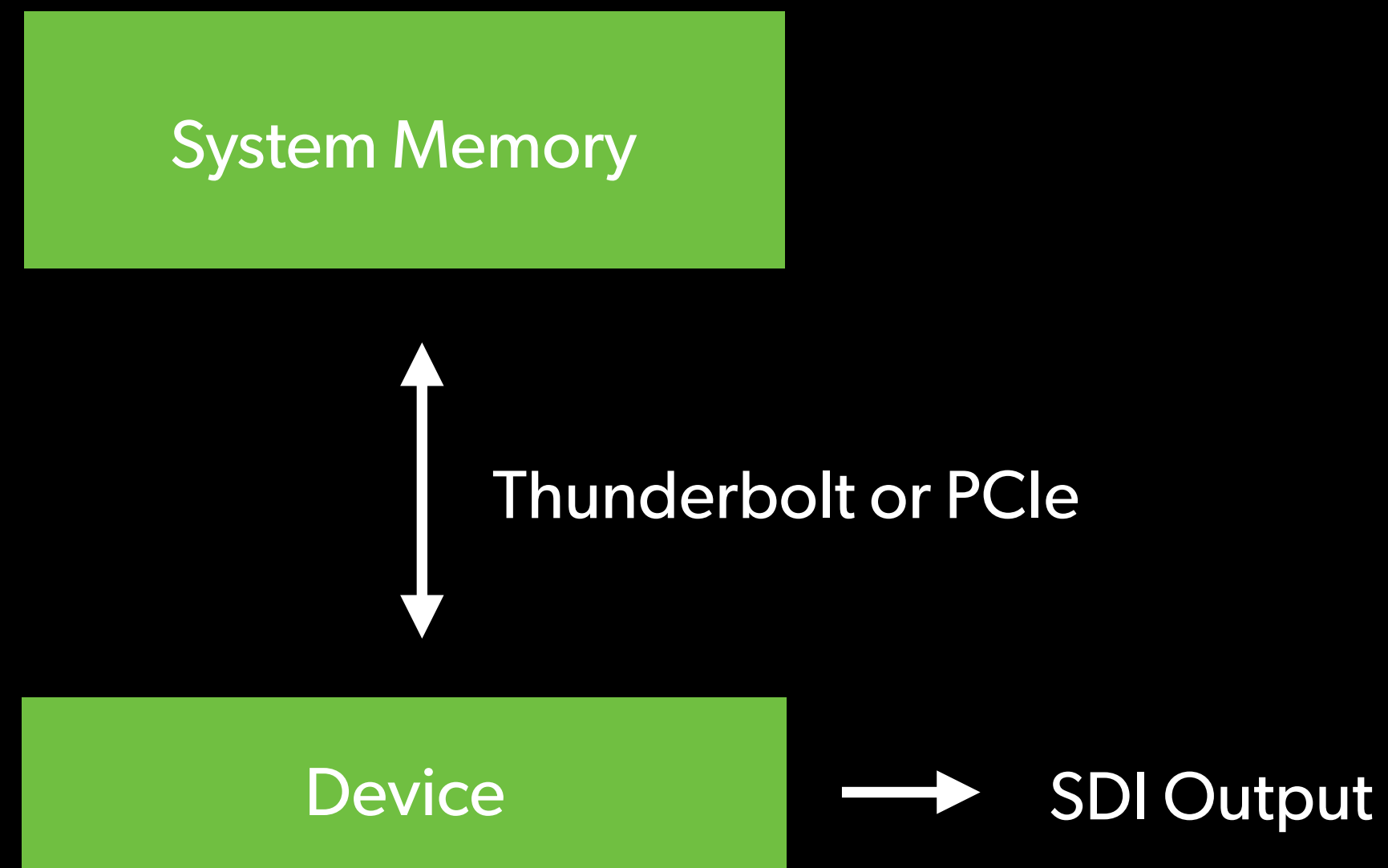
	ScheduleVideoFrame	DisplayVideoFrameSync
Number of frames	Multiple	Single
Latency	Deterministic	Variable
Preroll	2 Frame preroll required (3 frames on some older DeckLink products)	—
Completion Callback	IDeckLinkVideoOutputCallback:: ScheduledFrameCompleted	—
Out of order Scheduling	Supported	—

Scheduled Video Playback

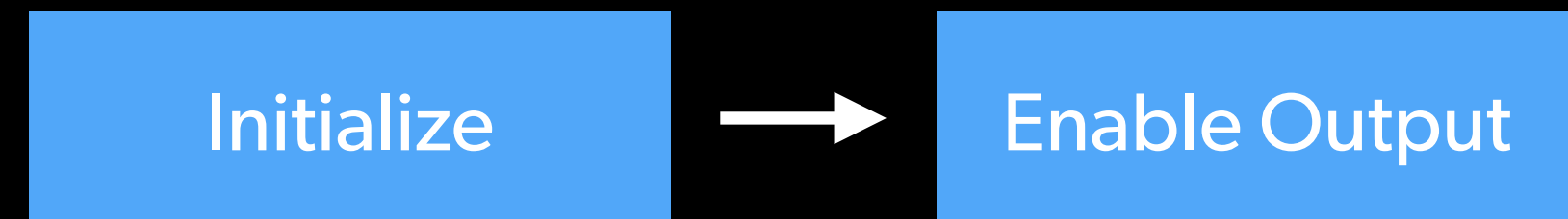
Initialize

Create output callback class for video and audio callbacks

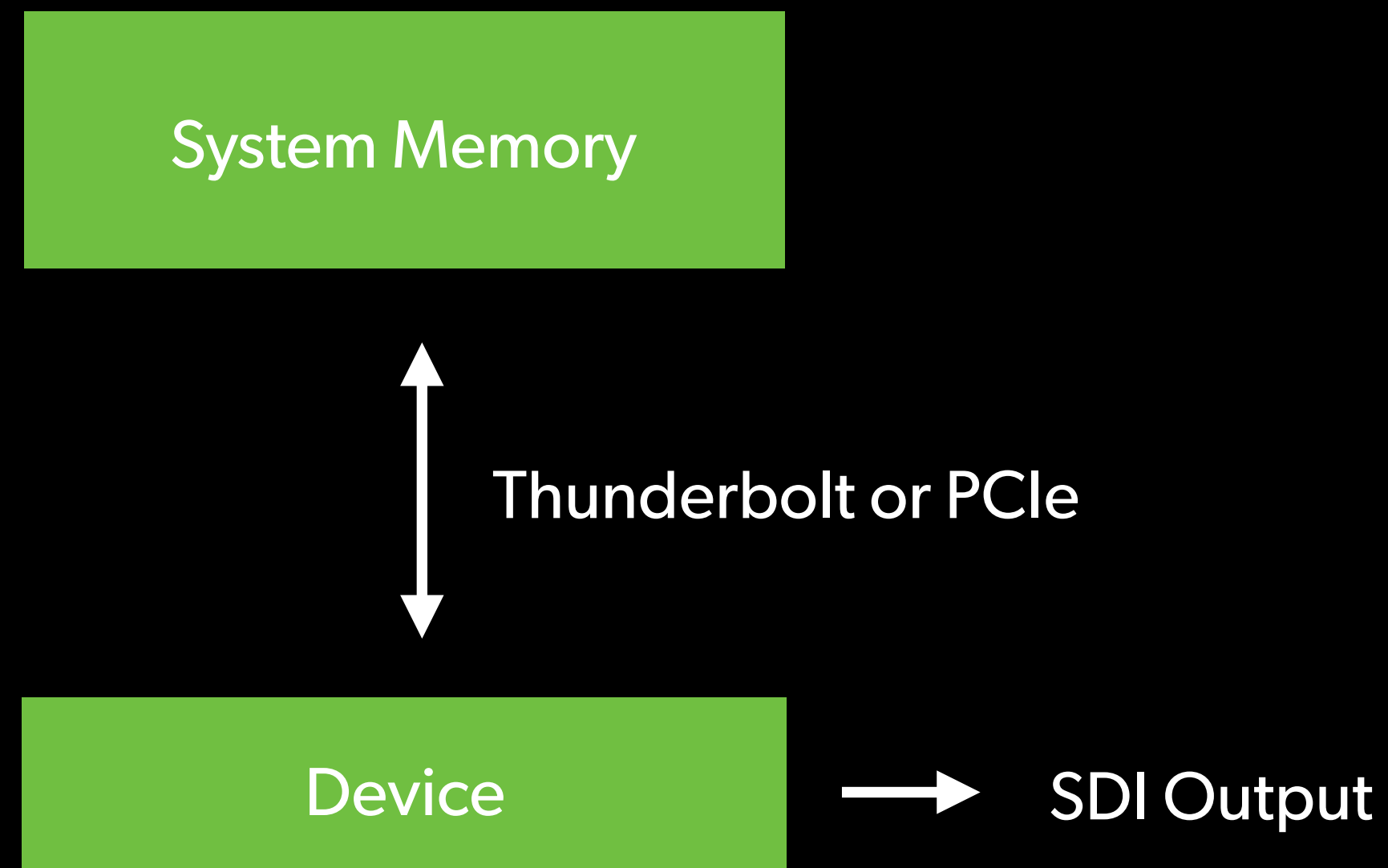
- Subclass IDeckLinkVideoOutputCallback and optionally IDeckLinkAudioOutputCallback



Scheduled Video Playback



- Query IDeckLinkOutput interface object from IDeckLink
- Enable video and audio output
- Register video and audio callbacks



Scheduled Video Playback



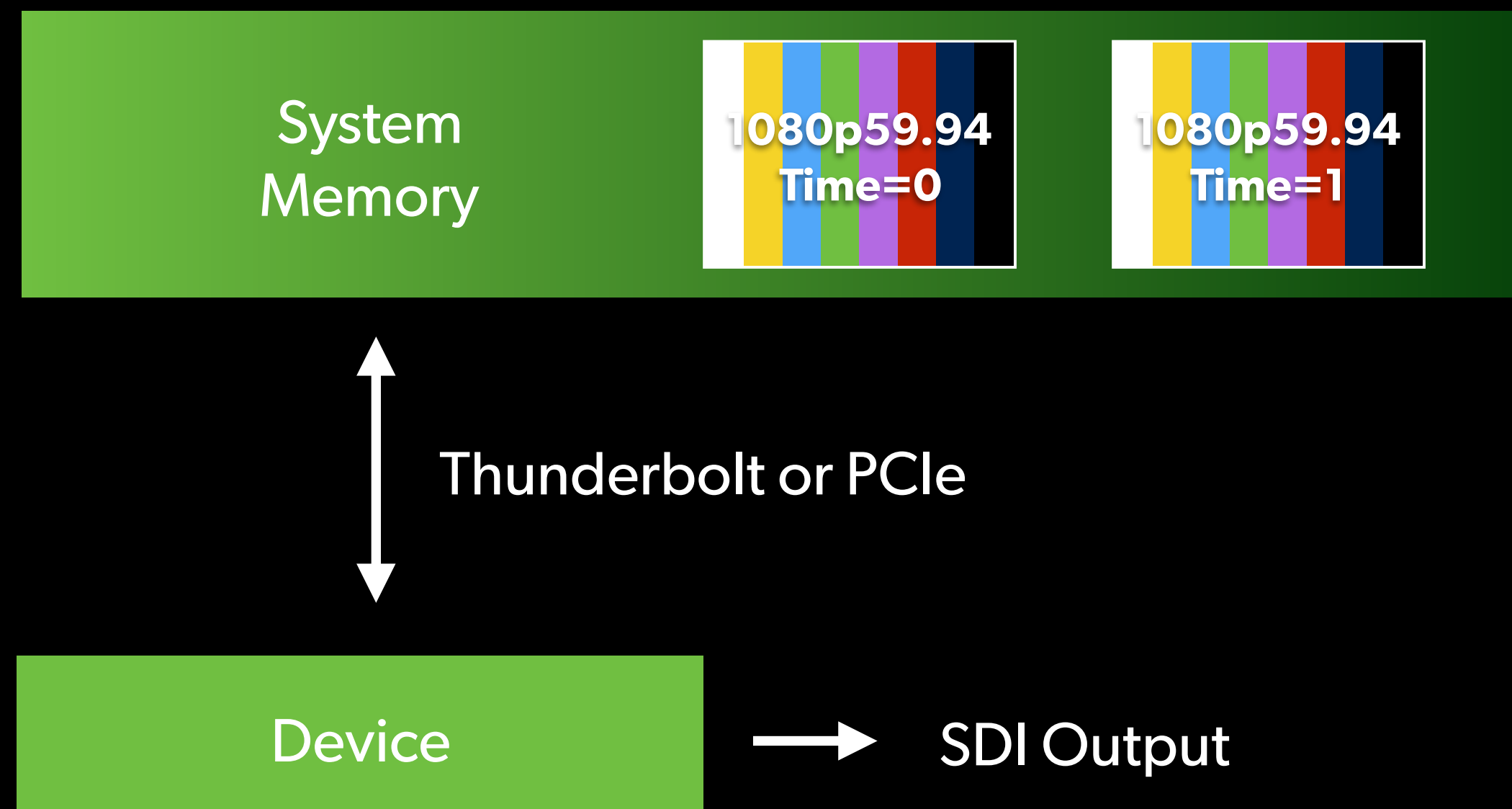
Preroll video frames

- Schedule by calling ScheduleVideoFrame

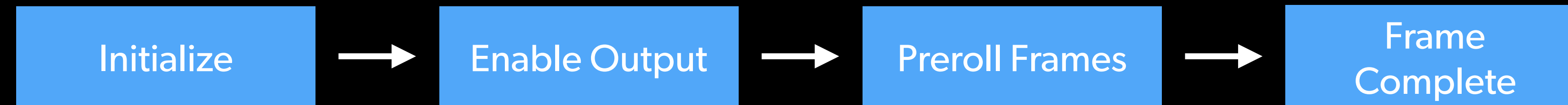
Preroll audio samples

- RenderAudioSamples callback will occur requesting more preroll audio samples
- When preroll complete, call EndAudioPreroll

Begin scheduled playback



Scheduled Video Playback

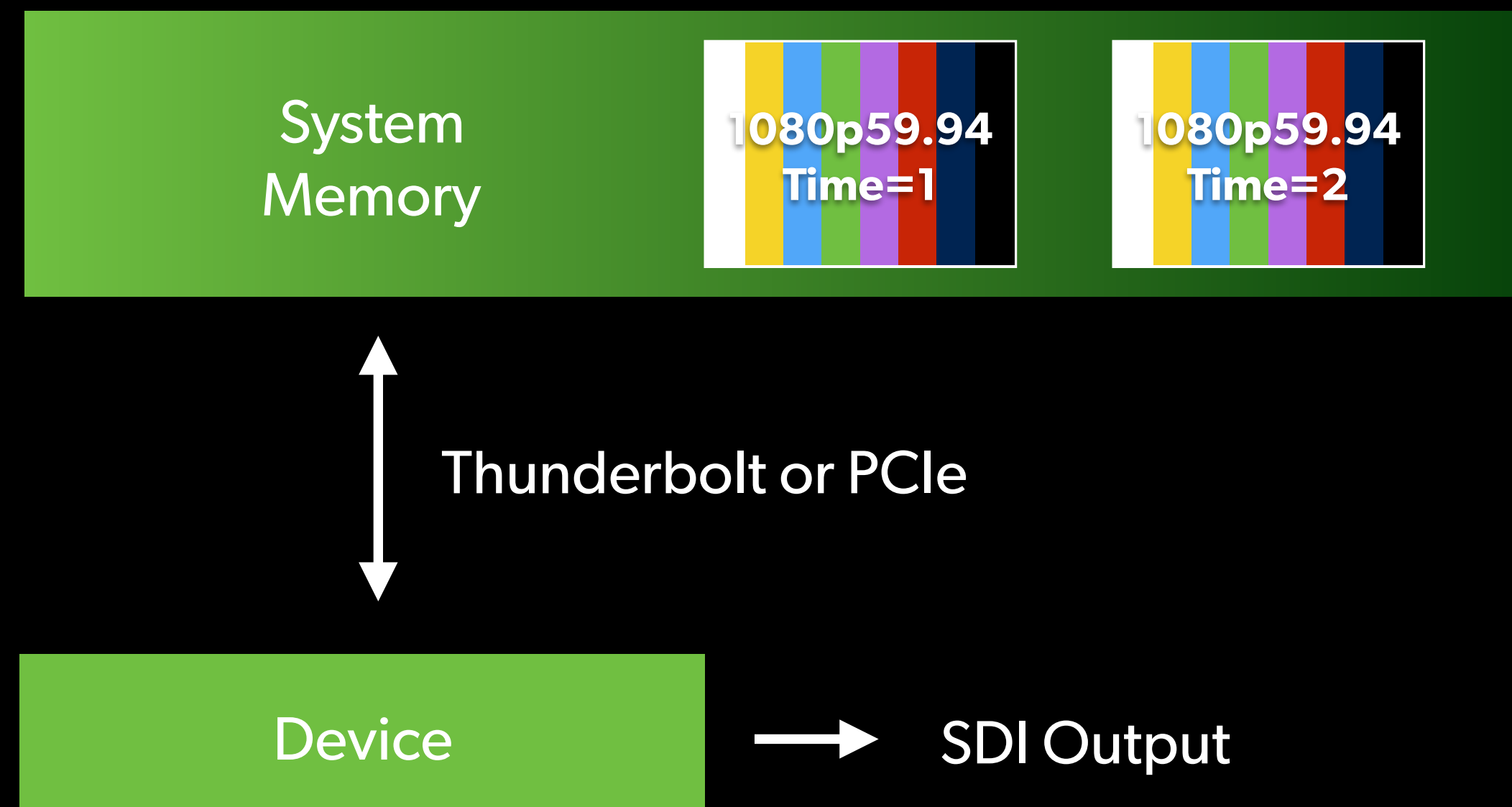


ScheduledFrameCompleted callback

- Video frame can be released
- Make further calls to ScheduleVideoFrame

RenderAudioSamples callback

- Schedule more audio samples

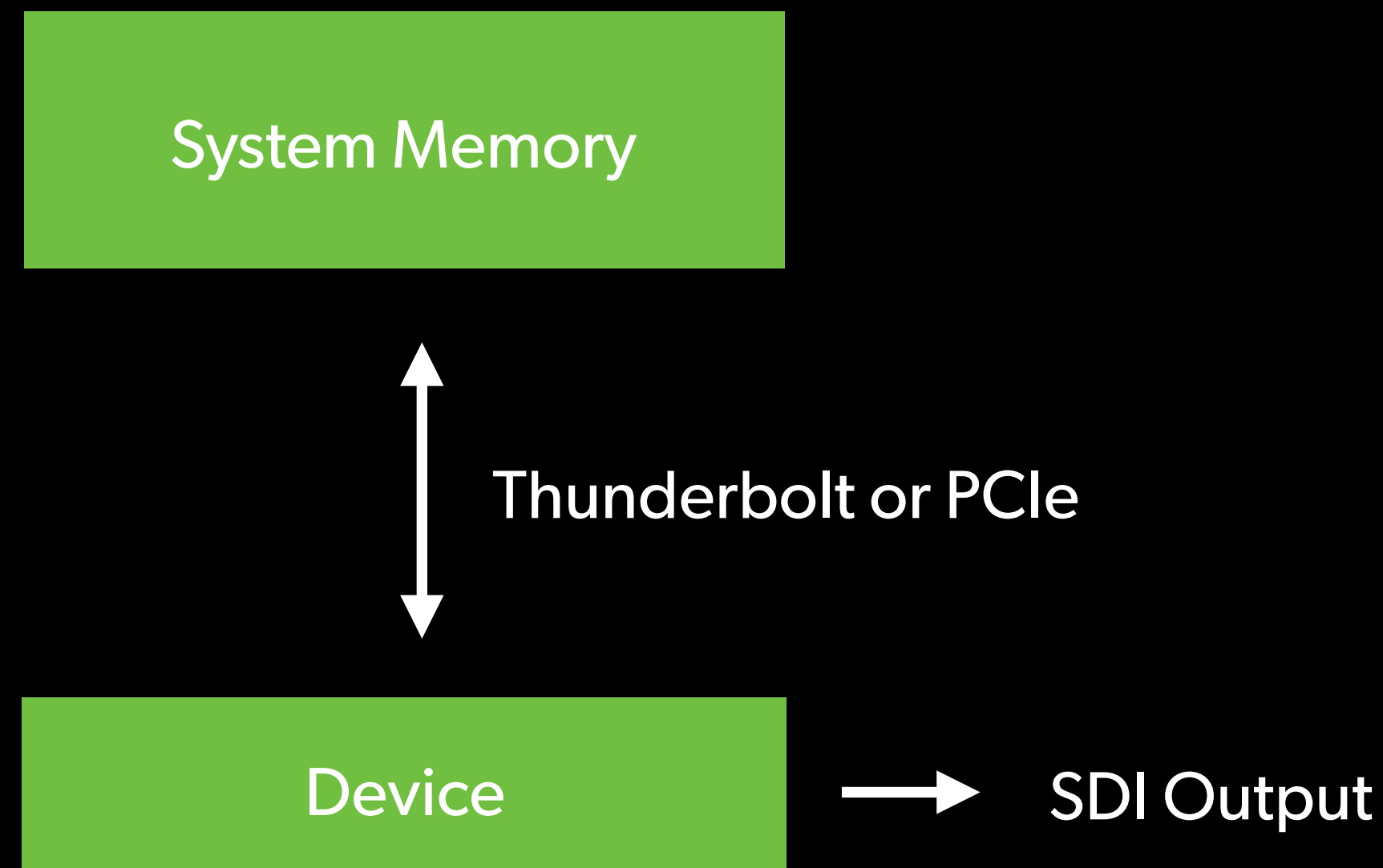


Scheduled Video Playback



Stop Playback

- Call StopScheduledPlayback
- When last scheduled frame is output, the application receives ScheduledPlaybackHasStopped callback
- Disable video and audio callbacks



Need more information?



- Blackmagic Design Developer Support website
 - <https://www.blackmagicdesign.com/developer/>
- Blackmagic Design Software Development forum
- Developer Support email - developer@blackmagicdesign.com

Blackmagicdesign

