



# GPU TECHNOLOGY CONFERENCE

## Cinnafilm Lance Maurer - CEO Who Will Save Image Quality?

GTC, San Jose Convention Center, CA | Sept. 20-23, 2010

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## Progression: Film /TV to File-Based Media



- Advances in film and television technologies meant improvements in speed and quality with every new technological development
- File-based media is the first media where trade-offs of features/functionality for quality is becoming a normal occurrence

The next generation of video creators and consumers either will understand the value of image quality, or the concerns for it will simply go away.



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## What Is Pixel Strings?

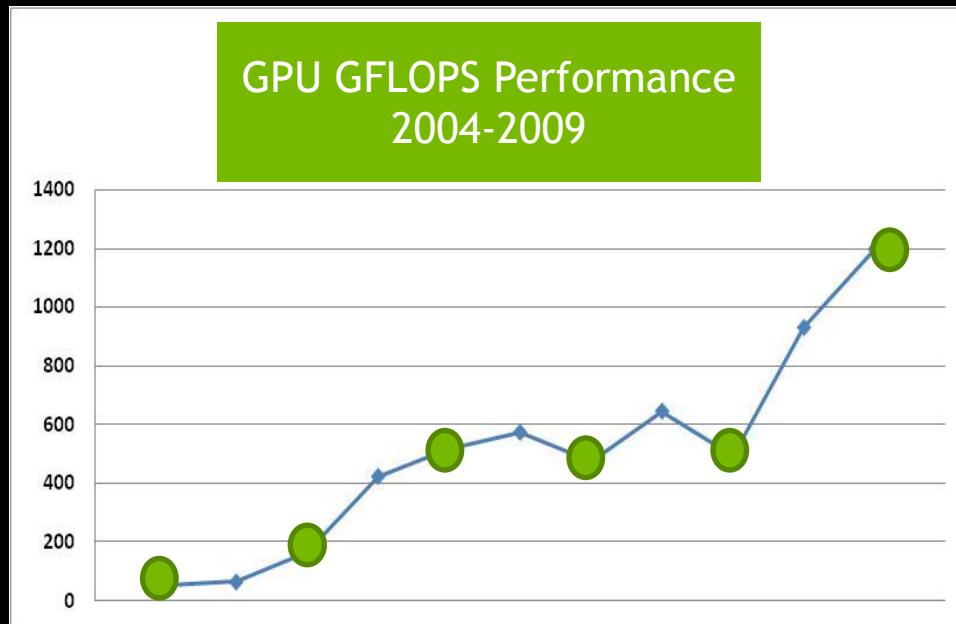
- Streaming Cache Management Engine that enables:
  - Full motion analysis of moving images with instant interactivity for top shelf image optimization and conversion
  - 1/8<sup>th</sup> pixel accuracy for motion mapping /detection, up to 4K images
- Current Applications - “*Dark Energy*” software
  - Noise/grain reduction and removal
  - Artifact removal
  - Frame rate/standards conversion/retiming
  - Film grain simulation
  - Market proven and in use worldwide today





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## Cinnafilm Engineering: Experts in GPU Exploitation



- 2004 Begins GPU Computing research
- 2005 Determines NVIDIA GPU processing capacity will dramatically outpace CPU + RAM, ports code to multi-threaded NVIDIA platform
- 2006 Breaks the real-time barrier for HD video processing
- 2007 Cinnafilm incorporated
- 2008 Develops image-optimization technology
- 2009 Ports technology to CUDA, **ARRI** OEM's technology
- 2010 Cinnafilm partners with industry leading companies **Harmonic** and **Quantel**

# Pixel Strings at work:

Motion  
Vector  
Mapping



## “Convert”

Frame rate  
conversion and  
retiming

- *25p source*
- *29.97 conversion*

Typical  
temporal  
processing

‘AFRIKA, MON AMOUR’

## EMERGING COMPANIES SUMMIT

Applying  
Dark Energy  
motion estimation

ARRIFLEX **D-20**

## “Texture Control”

(Grain/Noise  
+  
FilmSim  
+  
Artifact Remove)



No loss of image detail

Complete control of denoise process



## Pixel Strings SDK: Power for hire

- **Create:** Migrate your processing filters to our powerful platform as plug-ins, Define new custom data types
- **Leverage:** Cinnafilm's existing filters (file I/O support, motion vector creation, noise filtering, etc.) and engineering expertise
- **Combine:** GPU filters (CUDA) and CPU filters (C++) in same pipeline
- **Perform:** Extensive cache management for blazing fast interactive performance
- **Visualize:** GUI makes rapid prototyping of high performance filters easy
- **Deliver:** Combine our solutions with yours and deliver the best imagery



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## Current state of affairs at Cinnafilm

- World class R&D experts on GPU-based image processing
- Other market opportunities we are evaluating:
  - Surveillance and Defense, Scientific Imaging
- Strong industry endorsement via partnerships
  - ARRI, Quantel, Harmonic, NVIDIA, several more presently under development
- Self-funded since inception; seeking institutional investment partners to expand into next opportunities
- Cinnafilm has kept the bar high, we believe quality is worth saving