

Seeing the future of video

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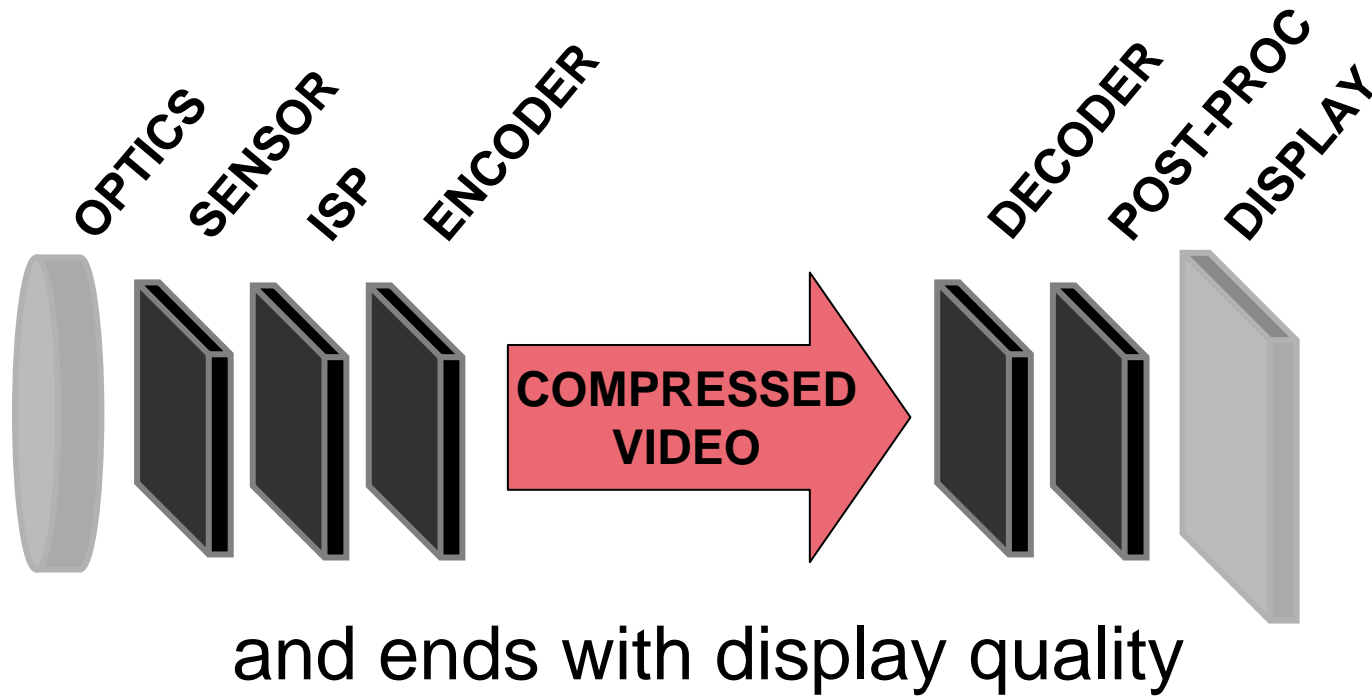
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Outline

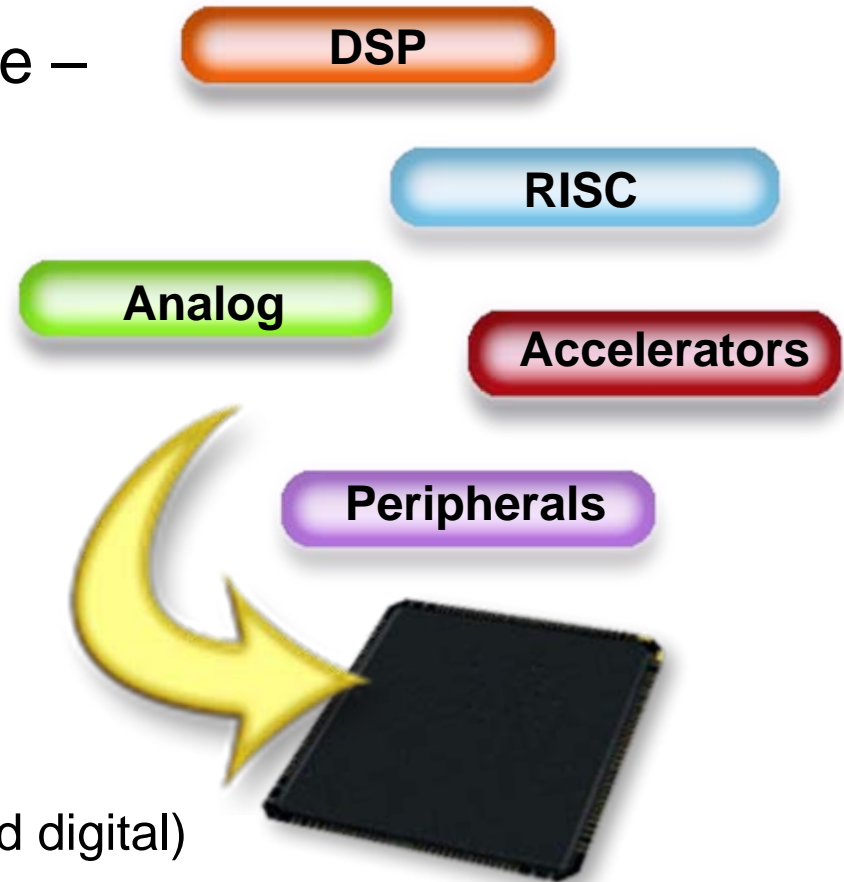
- **Video technology today**
- **Challenges to address**
- **Future of video & entertainment**

This is the view today: Video quality starts with image quality



Technology trends supporting video innovation

- Video processing is parallelizable – Amdahl's Law likes us
- We will continue to get more transistors to do the processing
- Highly parallel multi-processing systems will be possible
 - Homogeneous
 - Pixel processors
 - SIMD
 - Heterogeneous
 - Signal Processors (both analog and digital)
 - RISC processors
 - Accelerators (programmable, configurable and fixed function)
 - Peripherals



Opportunities for video innovation

- **Quality: More life like**

- More Pixels – Most entertainment systems don't need more than 1080p but what about: Security, Medical, Video conferencing, Automotive, Robotics
- More Dimensions – will three dimensions be enough
- More bits per pixel – eyes are good for about 20 to 24 bits per pixel

- **Latency**

- In Live Audio settings the maximum acceptable latency is between 5 and 7 mS
- In Live Video settings (Video Conferencing) acceptable latency is in the range of 50 to 200 mS
- In Playback settings (TV, TIVO, etc) audio and video synchronization is all that is necessary (Lip sync'ing)

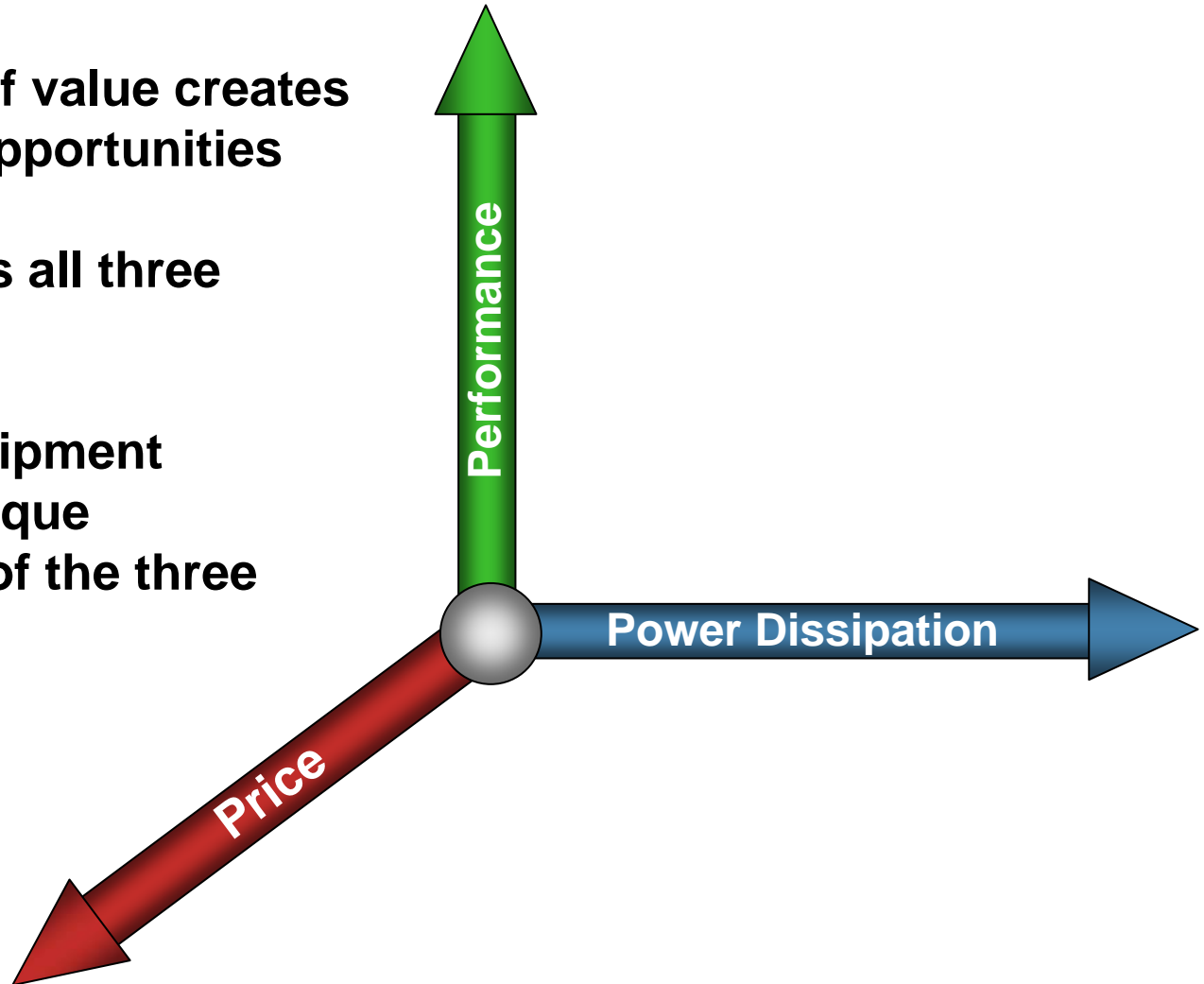
- **I/O**

- What could we do with video I/O in entertainment?
- In other video/imaging opportunities?



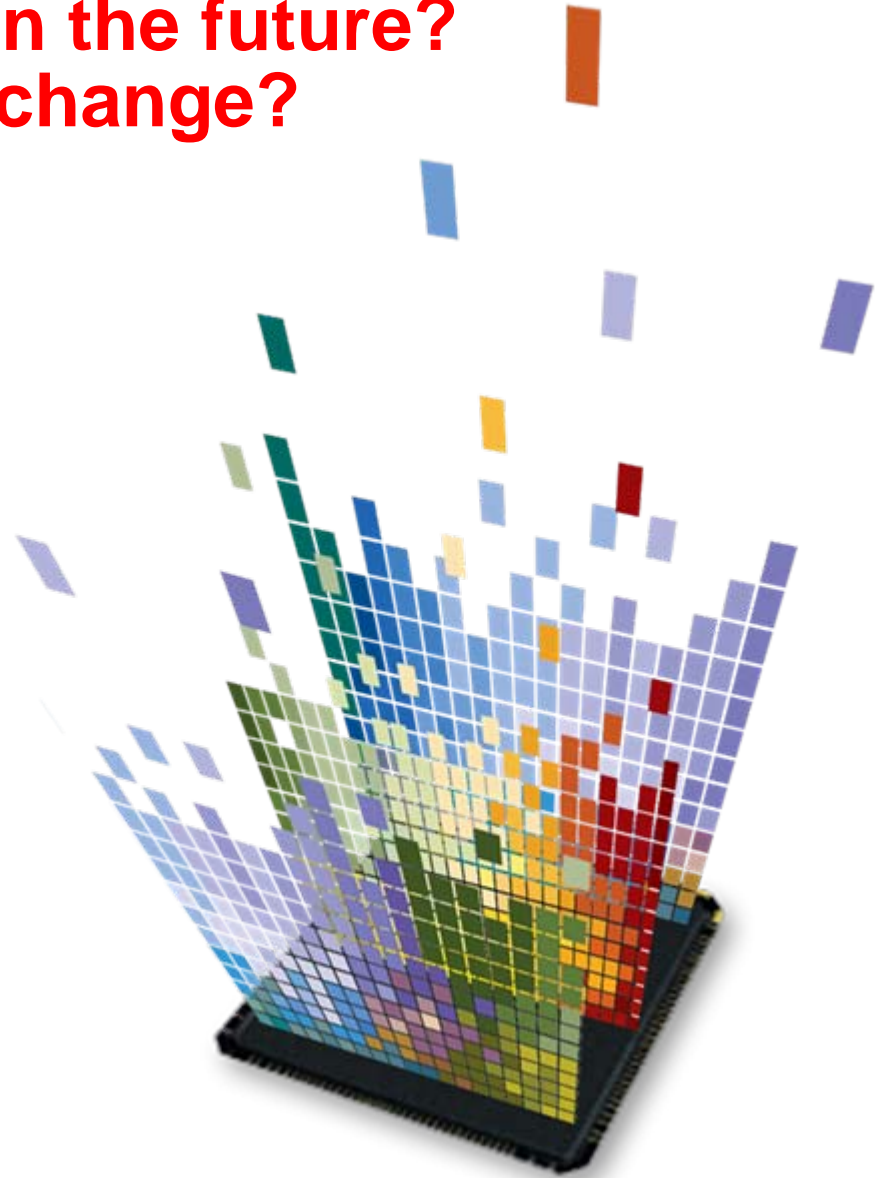
Video challenges that still need to be resolved

- Each vector of value creates new market opportunities
- Design effects all three vectors
- Each end equipment requires a unique combination of the three



What will differentiate in the future? Should the framework change?

- More pixels?
- More dimensions?
- More color depth?
- Something else?



Total Emersion

- **Today entertainment is passive except for**
 - Turning it on and off
 - Skipping commercials
 - Video games



Future will be full emersion entertainment



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