



NextGen Technology

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The Rush to NextGen

- NextGen image/audio formats cost more to produce, distribute, consume
- Must be beneficial to consumers and entire entertainment ecosystem
- MovieLabs Specifications for the Next Generation of Video and Enhanced Content Protection
 - Improve all image/audio quality parameters for a clearly-differentiated, premium, consumer experience
 - (Resolution alone is already proving to be a lost production cost)
 - Increase content protection for better return on investment

What portion of consumers care about quality?

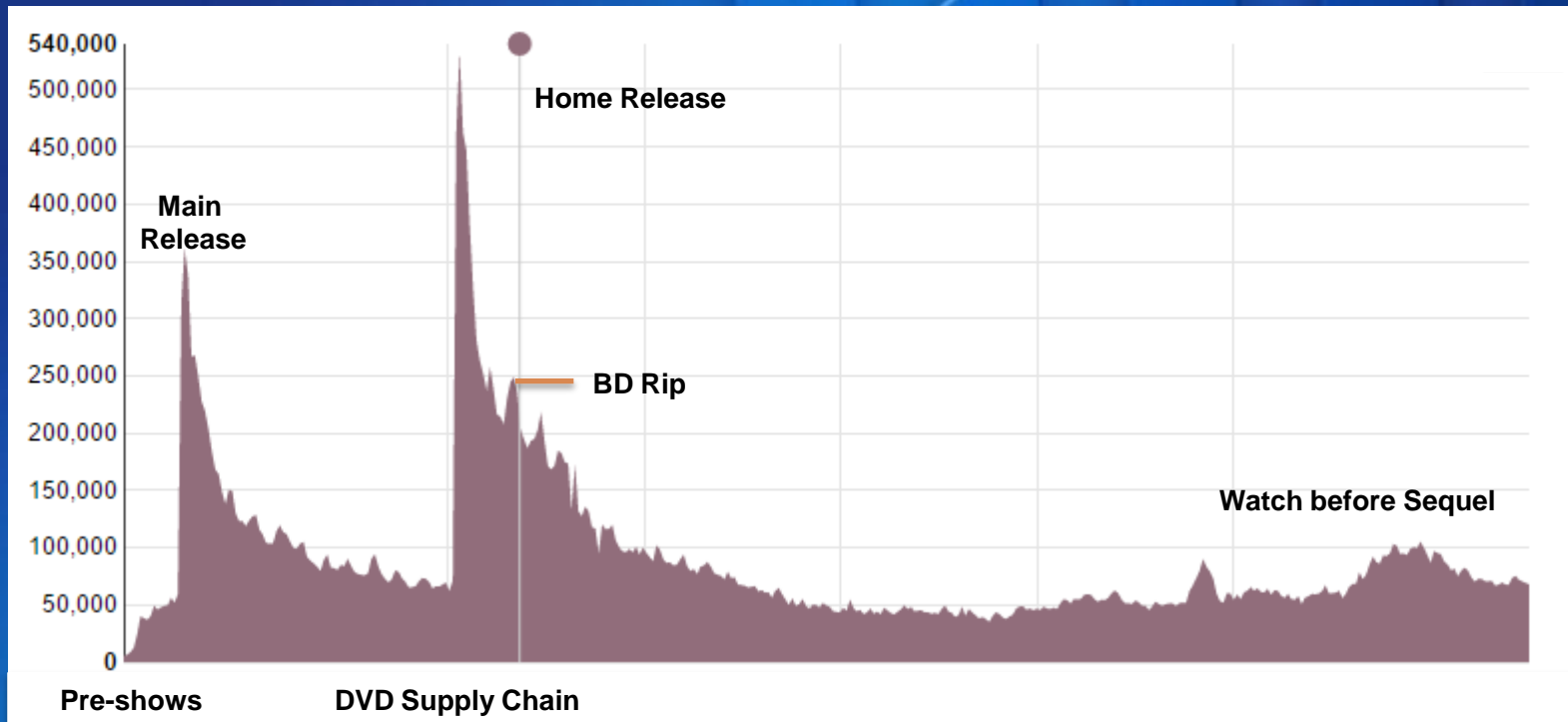
Feature Comparisons

	Raw Data Increase	Human Visual System Acuity
Resolution HD → UHD	400%	Low
Frame Rate 24→48	200%	Medium High
Color Volume Rec 709 → Rec 2020	125% (8→10bits)	Medium Low
Dynamic Range 100 → 10000 nits	125% (8→10bits)	High

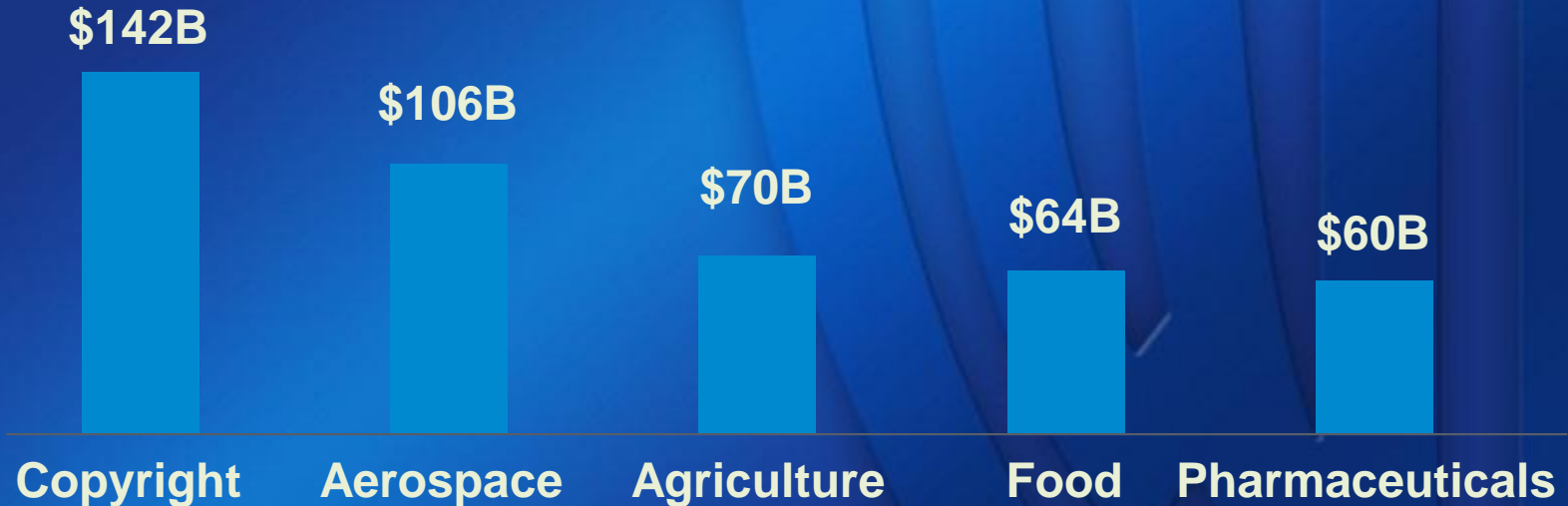
Image Spec Summary and Comparison

	Rec.709	Rec.2020	MovieLabs NextGen
Resolution	1920x1080, 1280x720	3840x2160, 7680x4320	3840x2160, 4096x2160
Raster Format	Interlace, Progressive	Progressive	Progressive
Frame Rates	23.976, 25, 29.97, 50, 59.94	23.976, 24, 25, 29.97, 30, 50, 59.94, 60, 120	24, 25, 30, 48, 50, 60
Max Brightness	100	100	10,000
Color Space	RGB (cathode)	Wide RGB (laser)	CIE XYZ
Sample bit depth	8, 10	10, 12	12
Chroma format	4:2:0	4:2:0	4:2:0, 4:2:2, 4:4:4
Metadata	None	None	Mastering display metadata (RGBW) delivered to consumer display

Typical Film Ripping Profile



Copyright Industries Fuel America's Economy Through Foreign Sales and Exports



The statistics detailed above are from: Copyright Industries in the U.S. Economy: The 2013 Report prepared by Steven Siwek of Economists Incorporated for IIPA from data from the U.S. Bureau of Economic Analysis and other government agencies. Copyright industries include software, games, books, newspapers, periodicals, motion pictures, music, television.