

# Practical Video Compression in a Post Youtube World

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**Master Trainer**  
**Adobe, Apple, Avid**

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# Session Overview

- **What it means to be in a post YouTube world**
- **What are they doing?**
- **How do I get my video to look its best?**
- **Your compression tool**
- **Online host best practice suggestions**



# Housekeeping

- **Ask anything you want!**
- **URL of Notes @ JGreenbergConsulting.com**
- **my email @ Jeff @ J Greenberg Consulting .com**

# **Survey Compression tool?**



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**Adobe Media Encoder**

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**Apple Compressor**

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**Telestream Episode**

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**MPEG Streamclip**

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**Apple Compressor**

**Sorenson Squeeze**

**Telestream Episode**

**MPEG Streamclip**

**What else?**



# Why this session?

I want my stuff to look as **good** as possible online

I want my stuff to look as **bad** as possible online

I have **no idea** why my stuff looks good or bad

Compression is a **dark painful place** in my life

**Cool Tip**

**DamnVid**

**<https://code.google.com/p/damnvid/>**



11 Month Old Twins Dancing to Daddy's Guitar - YouTube

www.youtube.com/watch?v=to7ulG8KYhg

YouTube twin babies dancing with daddy

Browse Movies Upload Jeff Greenberg +

# 11 Month Old Twins Dancing to Daddy's Guitar

Brovadere + Subscribe 1 video



0:20 / 0:45

Like Add to Share Download 10,526,655

Published on Aug 8, 2012 by Brovadere

My identical twin girls get so excited whenever I play the guitar! \* OFFICIAL VIDEO \*

Thank you all for the wonderful comments about the girls! We are thrilled to

Show more

Top Comments

00:14 This is my favorite part, when they look at each other immediately upon hearing the music. It says so much about their love of music, but even more, it says a lot about the connections twins have -- this is obviously totally a shared experience! Also, it looks to me like it won't be long before they rock in unison... and they could well pick up on actual rhythm sooner than

The Sims 3 Supernatural by TheSims 104,155 views Ad

BFFs Trailer (OFFICIAL) by YOMYOMF 634,123 views FEATURED

11 month old Twins Wrestling by tamhod1974 580,304 views

Twins Merle and St... by ... 57

Nelson Twins - Australia's Got Talent by nana443 367,145 views

Hey Ya by choynina 5,603,742 views

Top 10 Funny Baby Videos! by BestTVvideo 72,880,126 views

Who's Your Favourite? by PowSound 5,543,657 views



# Hosting your video yourself?

- **No way!**
- **10 people sharing simultaneously kills most in house Internet connections.**

# Who are you hosting with?

- **Youtube**
- **Vimeo**
- **BrightCove**
- **?????**

# **What are they doing?**



# Everyone Recompresses

**Recompression is  
generally a sin in the  
workflow chain**

# FFMPEG

- **Handbrake? VLCPlayer?**
- **Command line utility**
- **FFMPEG.org**
- **Run on Linux Boxes**
- **Free/opensource\***



**How do I get my video  
to look its best?**

# **What's the best format?**

**Least compressed  
version possible....  
or h.264**



# Quick and dirty answer

**Large data rate  
2 pass VBR  
@ original size & FPS  
= decent quality**

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**2 pass VBR**  
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# Understanding Data Rates

- **Measurement of how much data per second the video receives**
- **Larger is generally better**
- **Uh...oh....numbers**

**Math doesn't have  
to be scary**

# 4 numbers to understand

1

25

125

880



# 4 numbers to understand

1

25

480i SD

Uncompressed

**125** Megabits/sec

1 min ~ 1 gig

1 hr ~ 60 gigs

880

# 4 numbers to understand

1

Mini DV  
DV25

**25** Megabits/Sec

5 min ~ 1 gig

1 hr ~ 12 gig

480i SD

Uncompressed

125 Megabits/sec

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880

# 4 numbers to understand

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Mini DV  
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5 min ~ 1 gig

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480i SD

Uncompressed

125 Megabits/sec

1 min ~ 1 gig

1 hr ~ 60 gigs

**1080 HD**

**Uncompressed**

**880 Megabits/Sec**

**1 min ~6 gigs**

**1 hr ~ 600 gigs**



# 4 numbers to understand

**Youtube SD**

**640x360**

**1 megabits/sec**

**2 hrs ~ 1 gig**

**1hr ~ 500 megs**

**Mini DV**

**DV25**

**25 Megabits/Sec**

**5 min ~ 1 gig**

**1 hr ~ 12 gig**

**480i SD**

**Uncompressed**

**125 Megabits/sec**

**1 min ~ 1 gig**

**1 hr ~ 60 gigs**

**1080 HD**

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480i SD

Uncompressed

125 Megabits/sec

4 min ~ 1 gig

1 hr ~ 60 gigs

1080 HD

Uncompressed

880 Megabits/Sec

4 min ~ 5 gigs

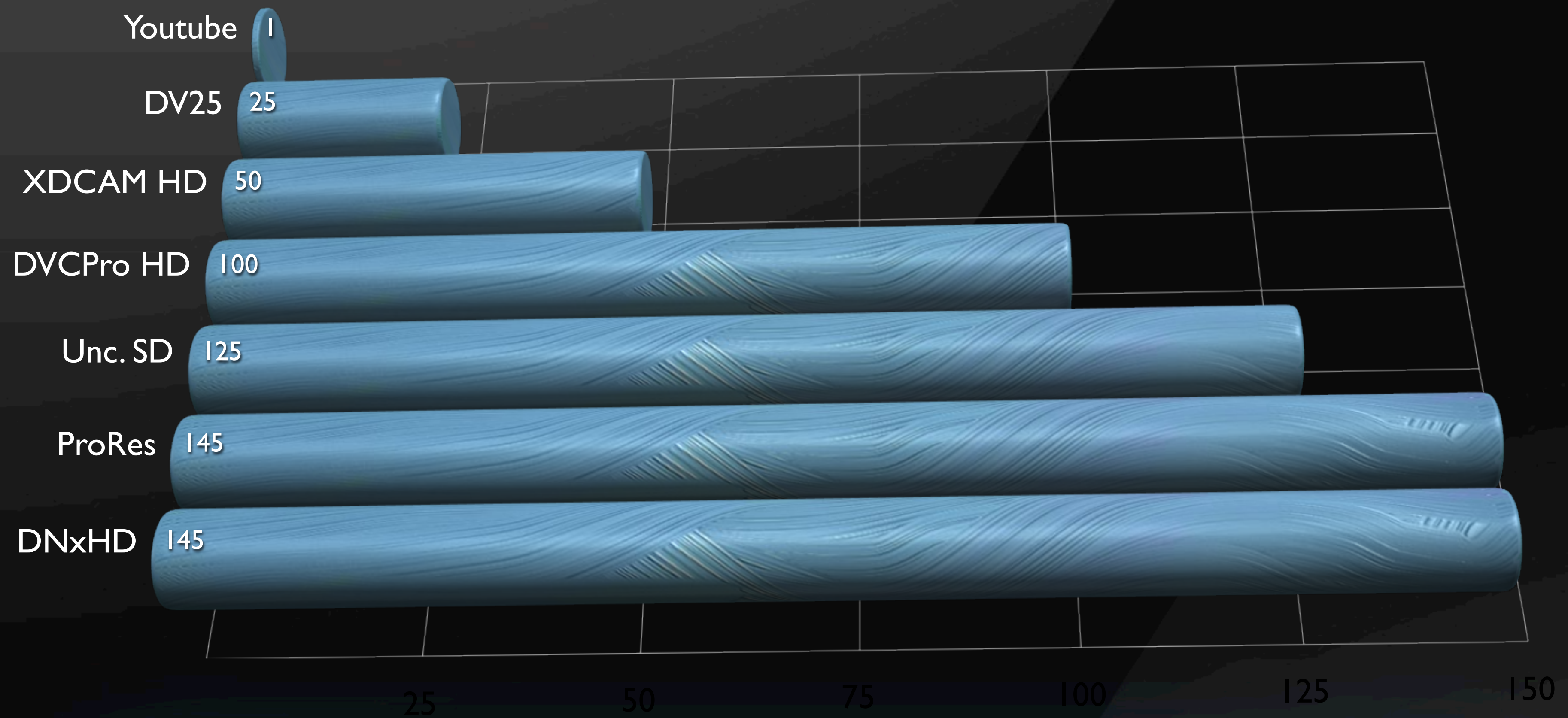
1 hr ~ 600 gigs

**Don't be scared by  
numbers**



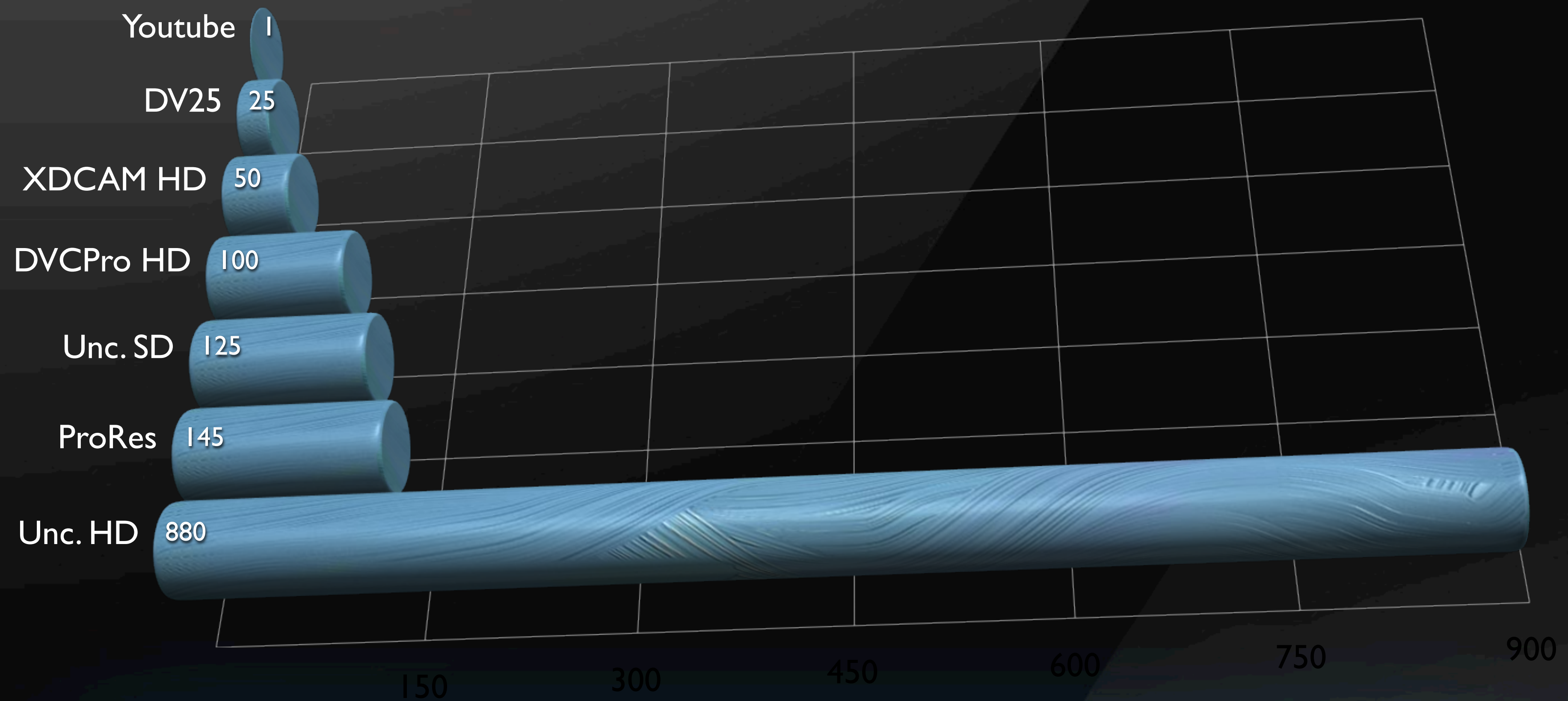
dialup	0.058 Mb/s	
youtube	0.6	30:1
cable	4 Mb/s	
p-jpeg offline		30:1
15:1s		30:1
miniDV	25 Mb/s	5:1
HDV	25 Mb/s	30:1
Most DSLRs	17/45 Mb/s	
XDCam HD	25/35/50	
DVCPro 50	50 Mb/s	2.5:1
802.11g	54 Mb/s	
Ethernet	100 Mb/s	
AVC Intraframe	100 Mb/s	
DVCPro HD	100 Mb/s	6:1
UNC SD	125 Mb/s	1:1
ProRes	35/100/145/220/330 Mb/s	4:1 or less
FireWire	400/800 Mb/s	
DNxHD	145/220 Mb/s	4:1 or less
Red One	224/288/336	12:1 or less
UNC HD	880 Mb/s	1:1
Ethernet	1000 Mb/s	

# Graphs mean more





# Unc. HD is huge





# 4 numbers to understand

1

25

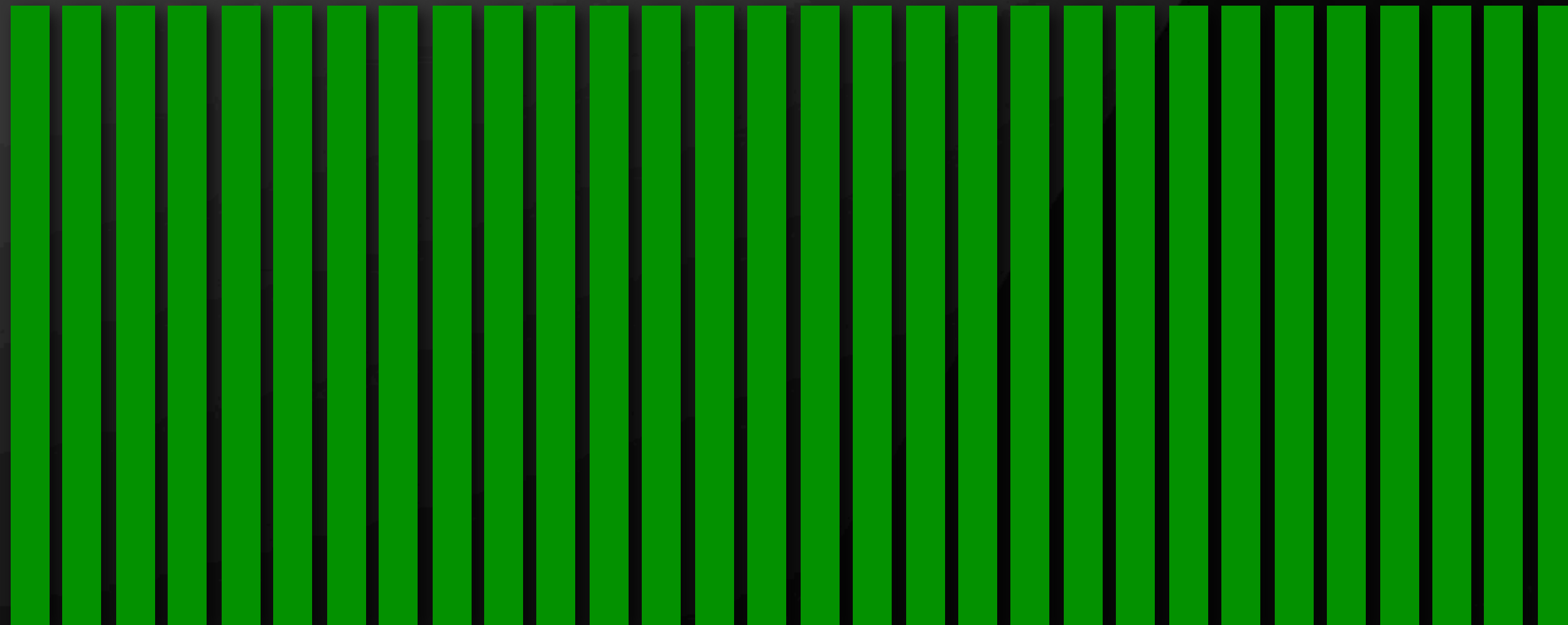
125

880

**Large data rate**  
**2 pass VBR**  
**@ original size & FPS**  
**= decent quality**

# Constant Bit Rate

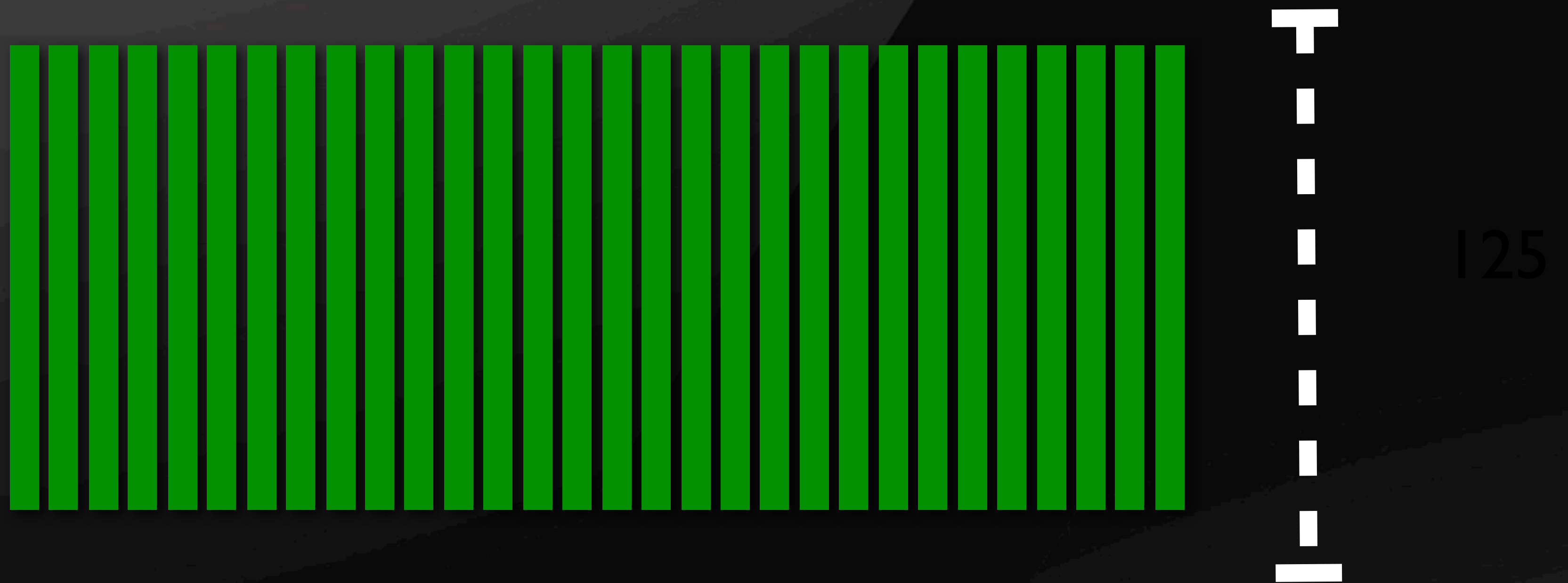
(every frame gets the same amount of data)





# Constant Bit Rate

(every frame gets the same amount of data)



Uncompressed = easy for camera  
(no compression/decompression)



# **Variable Bit Rates or Robbing Peter to pay Paul**



# How low can we go?

- **At some data rate, the quality becomes unacceptable.**
- **Unique for any type of footage**
- **but some footage has lesser demands**

# Data

Complex material

Cherry Blossoms  
falling in DC



Simple material

Talking heads

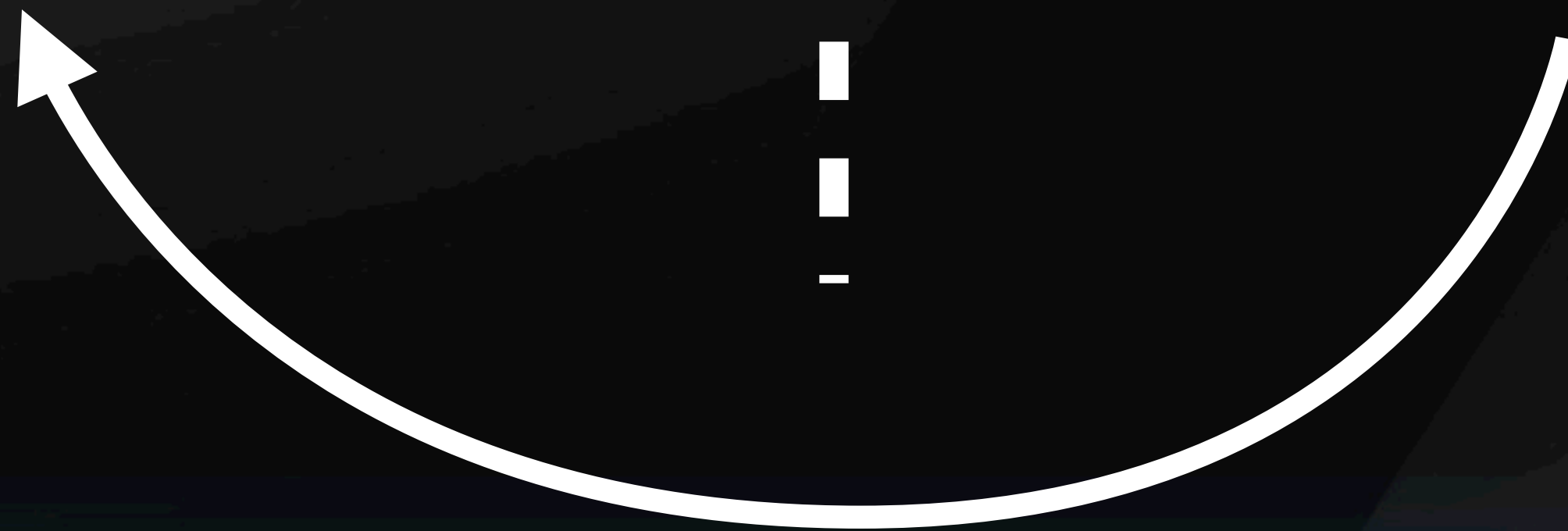
# What if we could steal data for where it's needed?

Complex material

Cherry Blossoms  
falling in DC

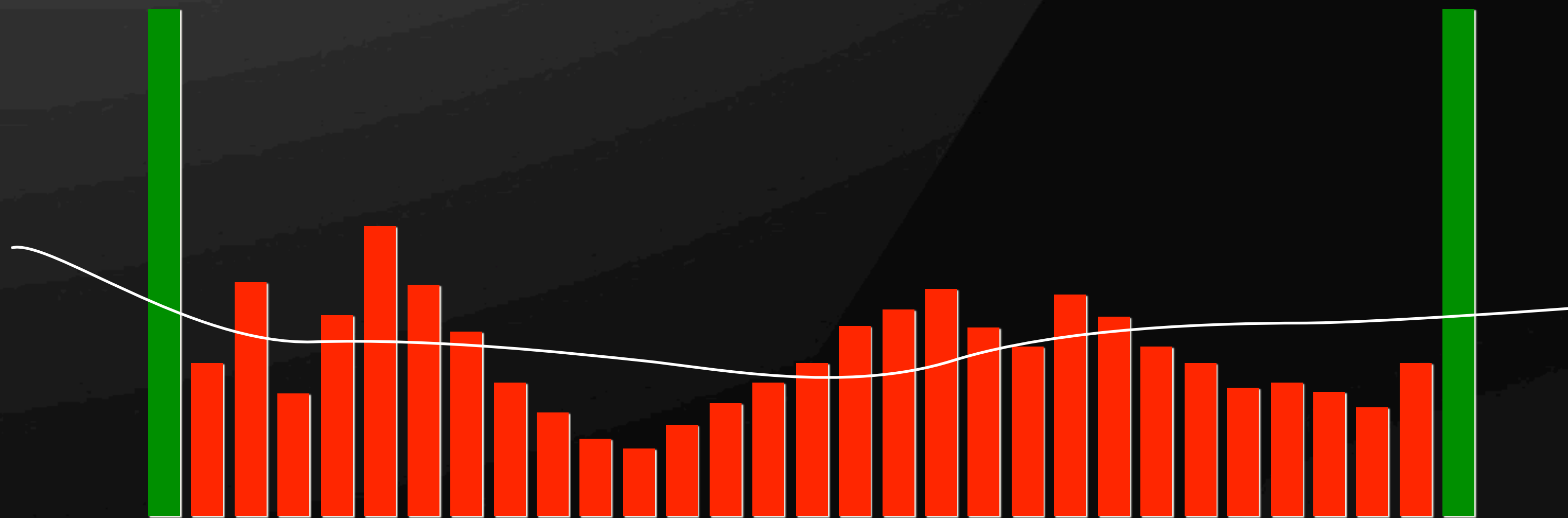
Simple material

Talking heads





# Variable data rates



**Multiple Passes = more  
Analysis**

**Large data rate**  
**2 pass VBR**  
**@ original size & FPS**  
**= decent quality**



**The larger the  
dimensions the **more**  
data needed**

# You're shooting HD

- **1920 x 1080**
- **1280 x 720**

**Smaller dimensions  
mean **less** data**



# Halve the size **quarter** the data

- **1920 x 1080**

960 x 540\*

- **1280 x 720**

640 x 360\*\*

\* bigger than SD

\* SD widescreen

**Large data rate**  
**2 pass VBR**  
**@ original size & FPS**  
**= decent quality**

# How many fps do you need?

- **1080 @ 30i (for a total of 60 'moments')**
- **720 @ 60**
- **1080/720 @ 24**



**More frames  $\neq$  larger files**

**higher data rate =  
larger files**

**More frames at the  
same data rate means  
less data per frame**

# Pick fps carefully

- **Filmic motion vs. smooth motion**
- **Talking heads vs. sports**



# Bonus tip

**Lower fps (same data rate) = better picture**

**Lower fps (1/2 data rate) = smaller picture**

**\*can't use online hosting**

**\*\*subjective**

**Large data rate**  
**2 pass VBR**  
**@ original size & FPS**  
**= decent quality**

# Quality is subjective

- **“Does it look good enough?”**
- **Encode tough 30 seconds (TETO)**
- **Better looking starting point = better finishing point (GIGO)**



# Which architecture?

# FLV, MOV, MP4?

# MP4

- **Can always go in the other containers**
- **Can never get out of the other containers to MP4**
- **WRONG JEFF - You know how to get it out of QuickTime**



# Improving h.264

**Throw enough data @  
the problem and  
there's no problem**

**perfect** for online  
sharing

# “Adequate” data rates

1920x1080	8 Mb/s
1280x720	6 Mb/s
960x540	2-4 Mb/s
640x360	1-2 Mb/s
320x180	.3-.5 Mb/s



**Throw enough data @  
the problem and there's  
no problem**

**DSLRs encode  
@ 48mb/s**

**Send larger (less  
compressed) files to  
online re-encoding  
services  
@ 20 mb/sec or more**

**Large data rate  
2 pass VBR  
@ original size & FPS  
= decent quality**



# **Understanding your compression tool**

**In some ways,  
they're all the same**

**A source gets a **setting**  
and is told to **output**  
in a specific place**

**Where are the data rate  
settings? VBR? FPS?**

# **What the hosts want for upload**



# Youtube

- **h.264 - any size**
- **ProRes, DNxHD**
- **20 mbs or larger @ 1080 h.264**

# Vimeo

- **h.264**
- **Don't follow their suggestions (5mb@ 720)**
- **Throw more data @ the problem**

# Brightcove

- **Unique in that you can upload video @ h.264 and if you do it right....they won't recompress**

# **Tools to add to your toolbox**



# Review

- **What it means to be in a post YouTube world**
- **What are they doing?**
- **How do I get my video to look its best**
- **Your compression tool**
- **Online host suggestions**

# **Closing** **(aka “Stuff you should** **know about”)**

# Other sessions

## **Tuesday**

Mastering the Magnetic Timeline in FCPX  
Practical Video Compression in a Post YouTube World

## **Wednesday**

Precision Output From FCPX/Compressor  
BootCamp - Getting Started with Adobe Premiere Pro

## **Thursday**

Understanding Video Compression

**Jeff @ J Greenberg Consulting . Com**



# Jeff @ J Greenberg Consulting . Com

Master Trainer



CERTIFIED INSTRUCTOR



Certified Trainer

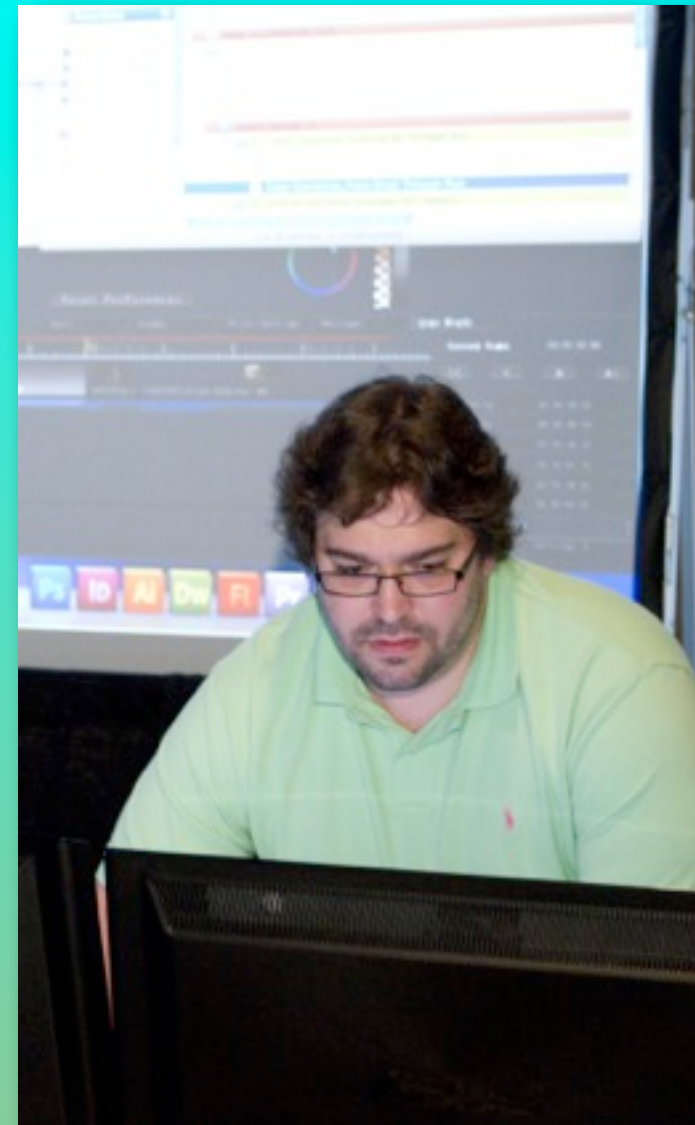
**Avid**®

Certified  
Instructor



You **should** follow me on [twitter.com/filmgeek](https://twitter.com/filmgeek)





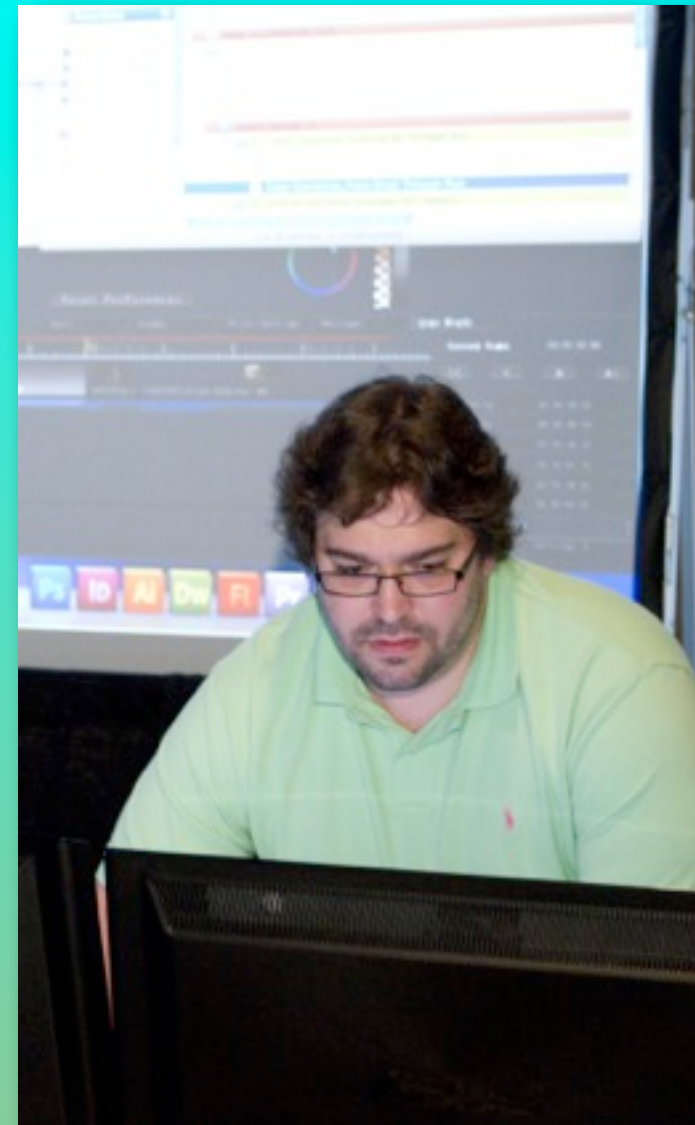
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## **FOCUS Workshops at FMC**

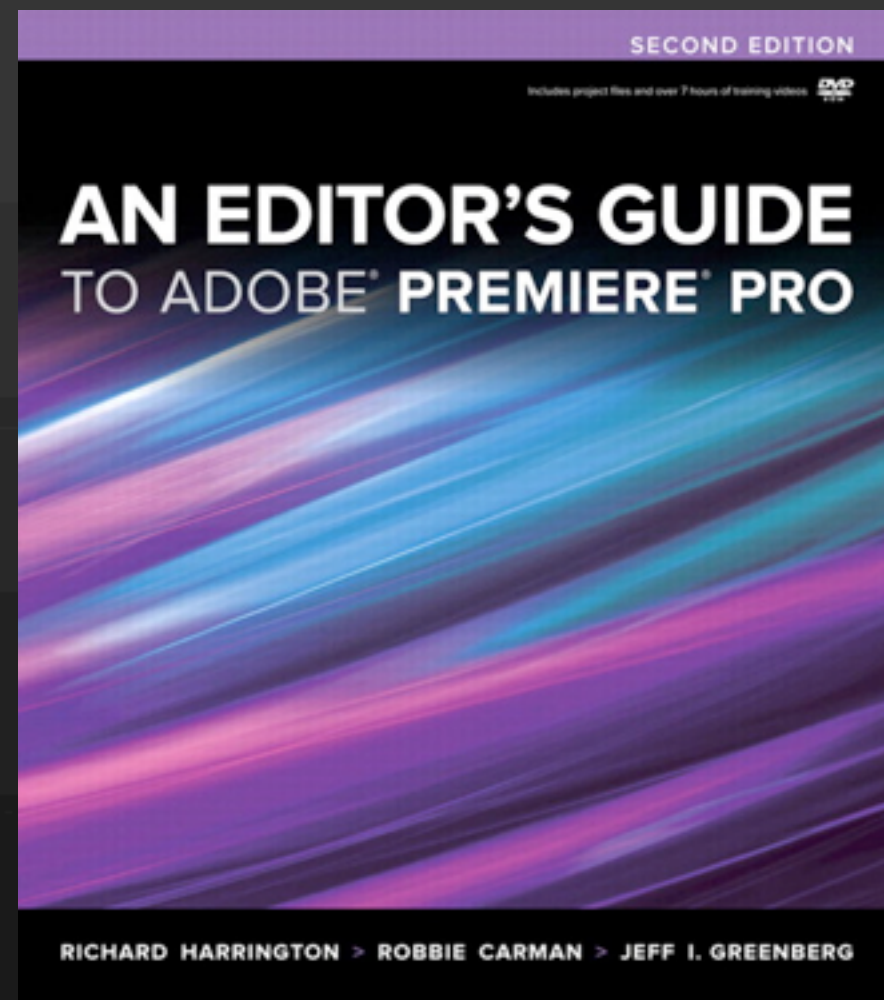
Full-day, in-depth explorations of your favorite production topics

# **One day HANDS ON**

# **Color Correction in ANY NLE workshop**

# **Video Compression workshop**

# Jeff @ J Greenberg Consulting . Com



Peachpit

Amazon.com

iBooks

Kindle

**macProVideo.com**

Comprehensive Media

Composer 6 Training

Premiere Pro and FCPX DSLR

workflow training

**Lynda.Com**

Compressor

Training

You should follow me on [twitter.com/filmgeek](https://twitter.com/filmgeek)



# THANK YOU!

Session Notes @ J Greenberg Consulting  
(along with my blog)

Contact me if you'd like to talk  
about me education/speaking to  
your group directly

Jeff @ J Greenberg Consulting . Com