MACTECH 2011

What IT Needs to Know about Media

Larry Jordan
www.larryjordan.biz

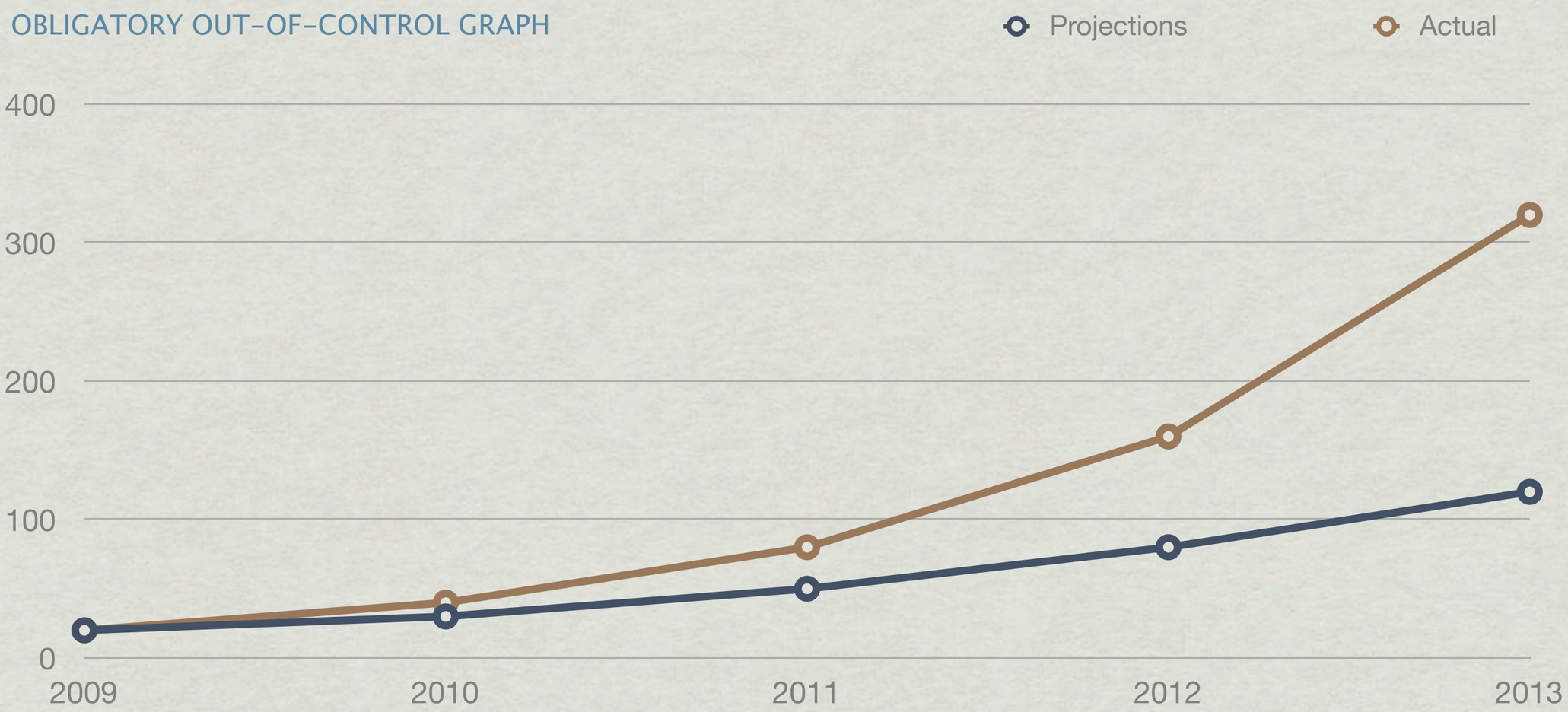
Goals

* Media files present massive problems for IT
* Discuss media formats for the Web
* Discuss media formats for Intranet and production
* Discuss media codecs and compression requirements
* Discuss storage, retrieval, and backup needs

Media Challenges for IT

* Media files are huge.
* Media files are proliferating.
* Media files can be created by anyone, not just the pros.
* Media files are even an essential part of PowerPoint

Whatever You Plan – Reality Interferes



Media Formats for Web

- Three main flavors of media
  - **WMV** – Popular on Windows and preferred for PowerPoint
  - **Flash** – Traditional video format for the web, currently under challenge
  - **QuickTime** – Everywhere Apple iDevices are viewing media
- For the first time in our history, all three formats use the same codec: **H.264**

Definition: Codec

- **CO**mpressor/**DEC**ompressor. The mathematics behind how video is converted from analog light to digital bits.
  - If the format – QuickTime – is the car, the codec is the engine.
- There are a wide variety of codecs
  - H.264
  - PhotoJPEG
  - MPEG-2
  - ProRes 422

Storage Size for Web

- While web compression varies, a good rule of thumb is to assume 7.5 MB per minute of video media.
  - So, a 10-minute video would be about 75 MB in size
- Audio is about 850 KB per minute of stereo media
  - A 10-minute audio file would be about 8.5 MB in size

Compression Secrets

- File size is dependent upon two criteria
  - Image size
  - Bit-rate
- Image size is the size, in pixels, of the video frame
  - Larger images require bigger files, but provide better quality
- Bit-rate is the speed of data transfer during file playback.
  - Measured in kbps, or mbps
  - Faster bit rates require bigger files, but provide better quality

Manage Intranet Video Files

- While every compressed file is different, if you are hosting files on an intranet, standardizing compressed file formats can help you plan storage needs and control expansion.
- Suggested compression format:
  - MPEG-4
  - H.264 codec
  - 720p image size (1280 x 720 for HD)
  - Bit-rate of 1500 kbps (this will be the one variable that needs to

Media Formats for Editing

* QuickTime
* MPEG-2
* MXF
* AVCHD
* MPEG-4
* ... and others
* All of these are characterized by very large file sizes.

General Storage Requirements

Video Format	Space Needed to Store One Hour of Footage	Data Transfer Requirements
DV	13 GB	3.75 MB/sec
HDV	13 GB	3.75 MB/sec
AVCHD	Up to 10.8 GB	3.0 MB/sec
ProRes Proxy (1080i/60)	20 GB	5.6 MB/sec
ProRes 422 (1080i/60)	66 GB	18.1 MB/sec
Uncompressed 10-bit SD	96 GB	26.7 MB/sec

Key New-World Point

* Unlike at any time in the past, with the introduction of tapeless video, the worlds of IT and filmmaking have collided.
* Filmmakers are clueless about backups, media management, and archiving.
* IT is every uncomfortable in the squishy world of editing, filmmaking, and storytelling.
* This creates a built-in recipe for conflict that can ONLY be met by constant communication. Standard IT “data

So What Do You Archive?

- It depends upon what you want to do with media later.
  - Backup a website
  - Store for indefinite playback on intranet
  - Reedit finished projects
  - Save all source materials
- Understanding what you want to do with media later will help you pick the right codec now.

Backup Options

* Backup a website
  * Whatever formats are used on the website
* Store for indeterminate playback on intranet
  * The current format as compressed
* Store for future reediting – create master file of project
  * ProRes, DNXHD (high-bit rate), PhotoJPEG in .MOV wrapper
* Store source files for future reediting
  * Store camera-native formats – store entire contents of camera

Archiving Problems with MPEG-2

- MPEG-2, best known as the codec for DVDs, has problems when used for archiving footage.
  - It is very lossy, resulting in reduced image quality
  - It removes about 75% of the color in a signal
  - It is difficult to edit in its native format
  - It no longer creates particularly small files

Archiving Production Files

- Source files should always be archived
  - As the video industry goes tapeless, archiving is ever more critical.
  - Masters worth hundreds of thousands of dollars now only exist as files on a hard disk. This is **NOT** news to IT, it is very scary new territory for filmmakers.
- Never archive render files.

When Do You Archive?

* In video editing, media is captured at the beginning, then never changes.
  * Unlike a database, which changes constantly.
* In video editing, project files (edit decisions) change constantly.

How Do You Archive?

- In general, try to keep all files related to a single project in one place.
- Files need to be restored by project, rather than ad hoc.
- Current recommendations are to use LTO-5.
  - The LTFS system, while useful, is slow. An asset management system, such as CatDV (www.squarebox.co.uk) is a much better option.

Summary

* These are exciting times for IT – assuming you like living on the edge of your seat with shrinking budgets, demanding clients, and exploding storage requirements.
* The challenges media presents are not going away, but only going to get worse.
* Thinking through how you want to manage this explosion, by allowing creativity but managing file size, will give you plenty to reflect on in coming months.
* Remember that filmmakers need your assistance,

MACTECH 2011

Thanks!

Larry Jordan — www.larryjordan.biz