Quality Control

EVALUATING THE DIGITAL SURROGATE

Presented by

Chris Lacinak

4/30/2007
NARA 21st Annual Preservation Conference
Managing the Intangible:
Creating, Storing and Retrieving Digital Surrogates of Historical Materials

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Background

- President of AudioVisual Preservation Solutions
- Adjunct Professor at NYU MIAP
  - Video lab - Intro lab - Directed Internships
- Former CTO and VP of VidiPax
- Have worked with organizations of all types and collections of all shapes and sizes for many years on tackling preservation and access issues.
- Active Member of standards forming bodies including AES, SMPTE and ISO
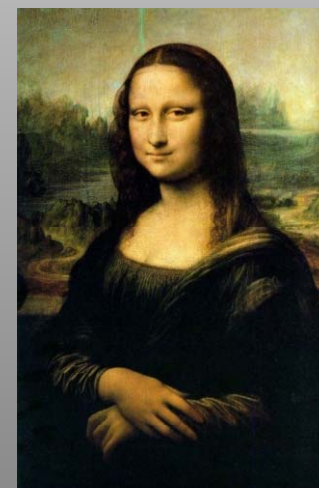- Chair of TC ARDL, and AMIA DAS

QC Pop Quiz

Static vs. Dynamic
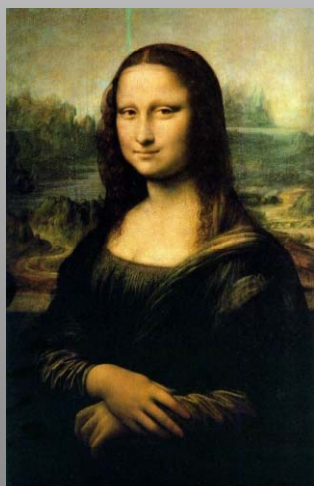
VS.

=

Creation

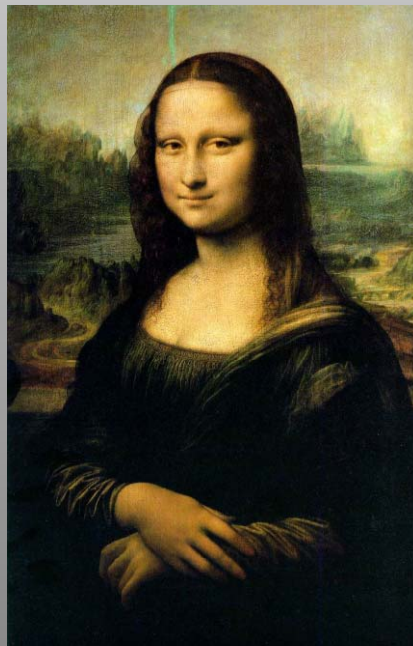🟡 Quality and condition of equipment

🟡 Expertise of Operator

🟡 Quality and condition of media
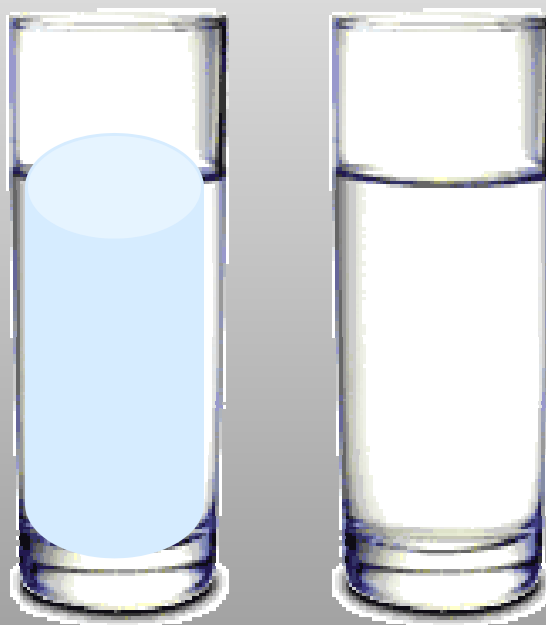
} Defines object of preservation
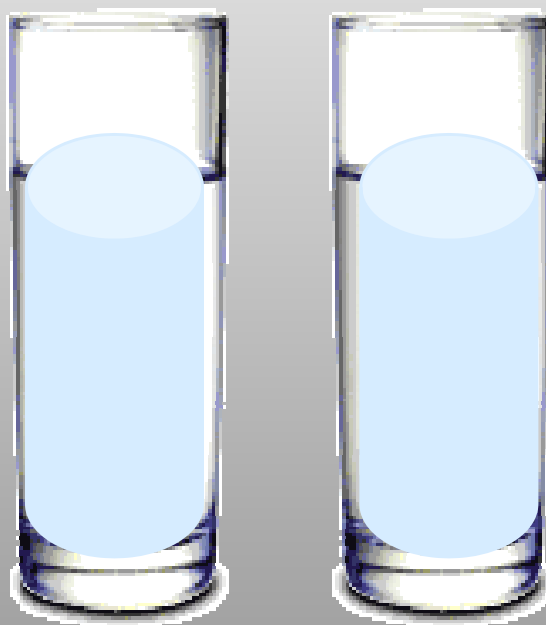
Regardless

Object of Preservation
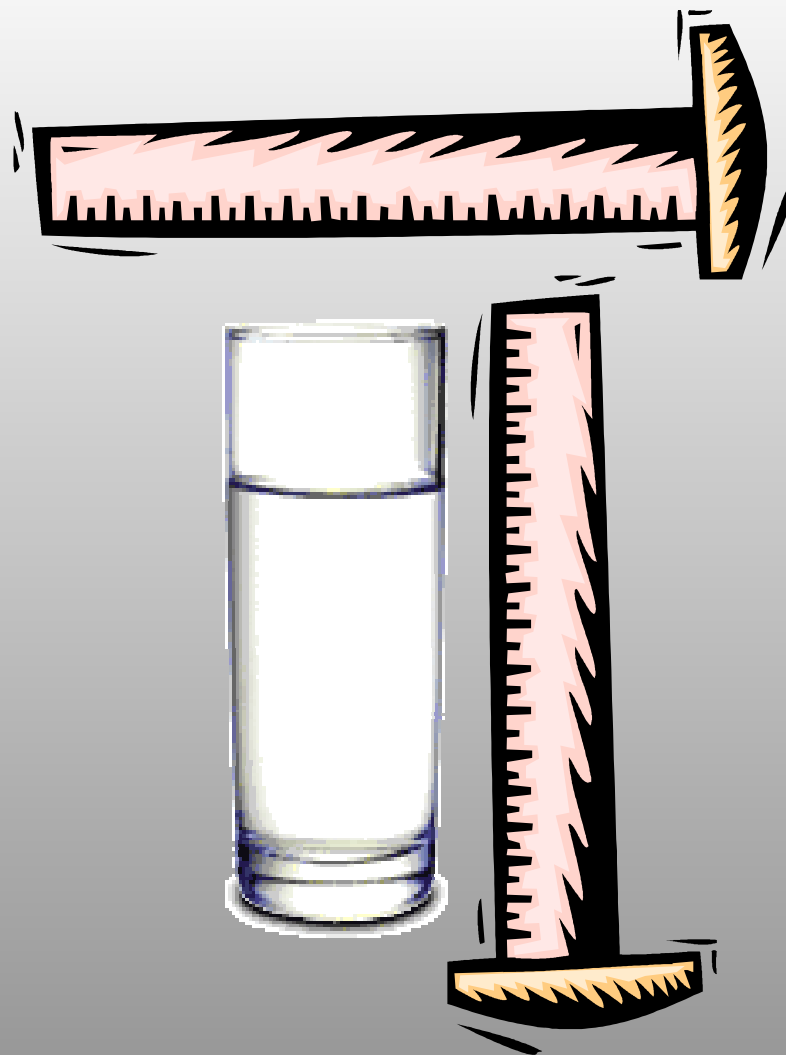
The container
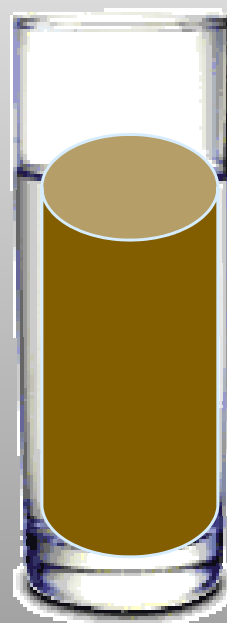
The object of preservation

Scenario 1
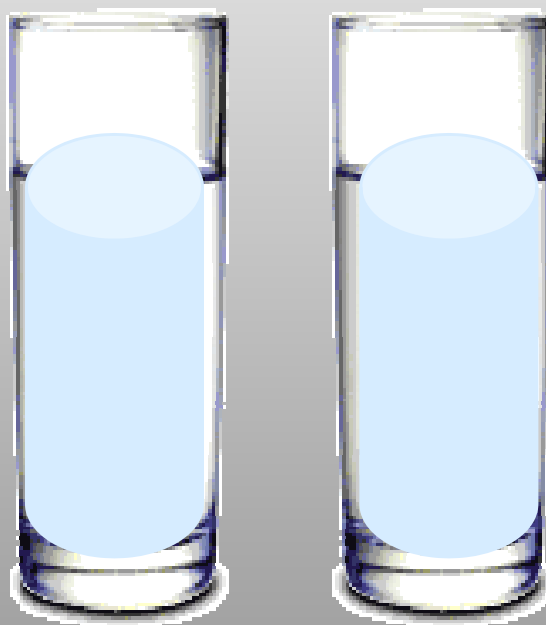
Scenario 1

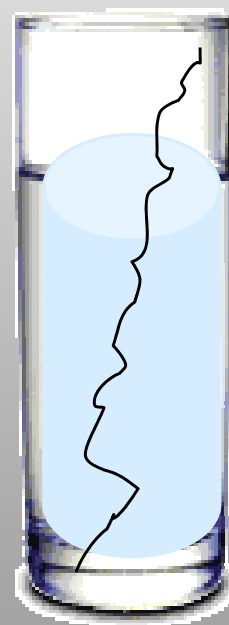# Scenario 1
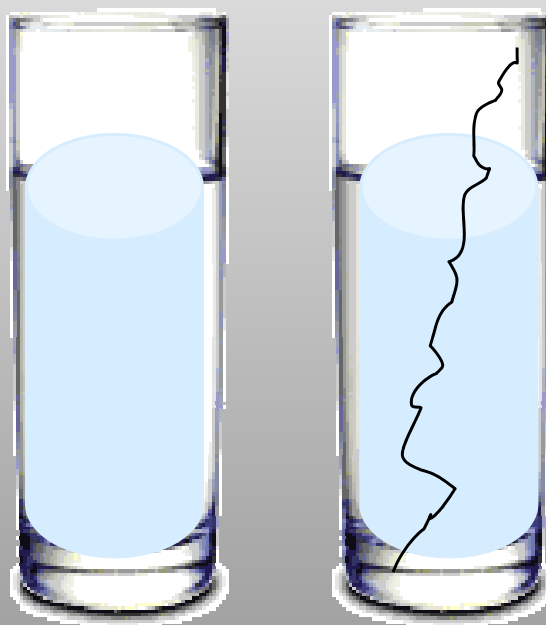
Scenario 1

Scenario 1

Scenario 2

Scenario 2

Scenario 2

Scenario 2
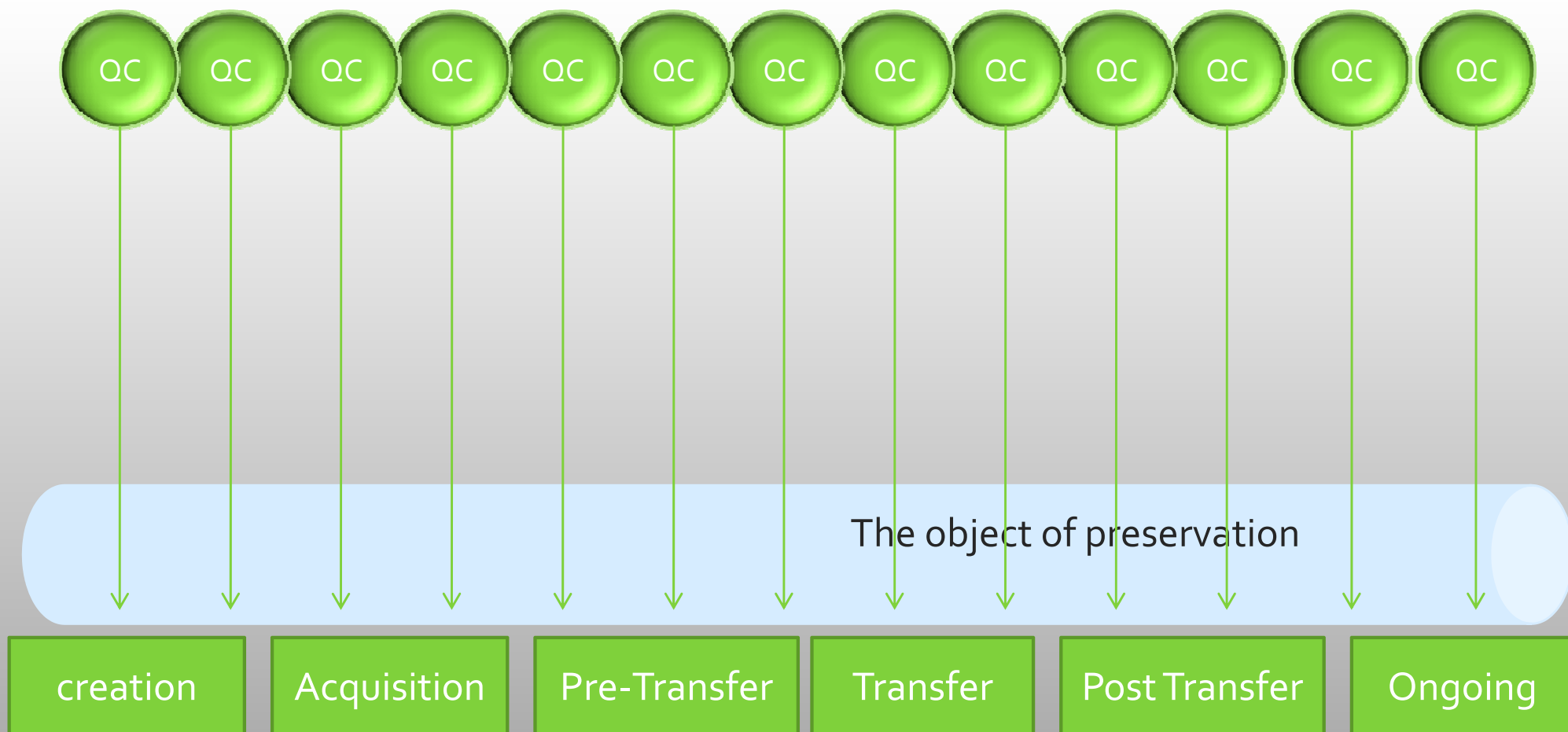
Scenario 2

acquire media, operator, equipment

record

catalog

store

transfer

create derivatives

QC   The object of preservation

QC QC QC QC QC QC QC QC QC QC QC QC QC

The object of preservation

creation | Acquisition | Pre-Transfer | Transfer | Post Transfer | Ongoing

The Process

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QC QC QC QC QC QC QC QC QC QC QC QC QC

creation   Acquisition   Pre-Transfer   Transfer   Post Transfer   Ongoing

The Process

creation Acquisition Pre-Transfer Transfer Post Transfer Ongoing

The Process

QC QC QC QC QC QC QC QC QC QC QC QC QC

creation   Acquisition   Pre-Transfer   Transfer   Post Transfer   Ongoing

The Process

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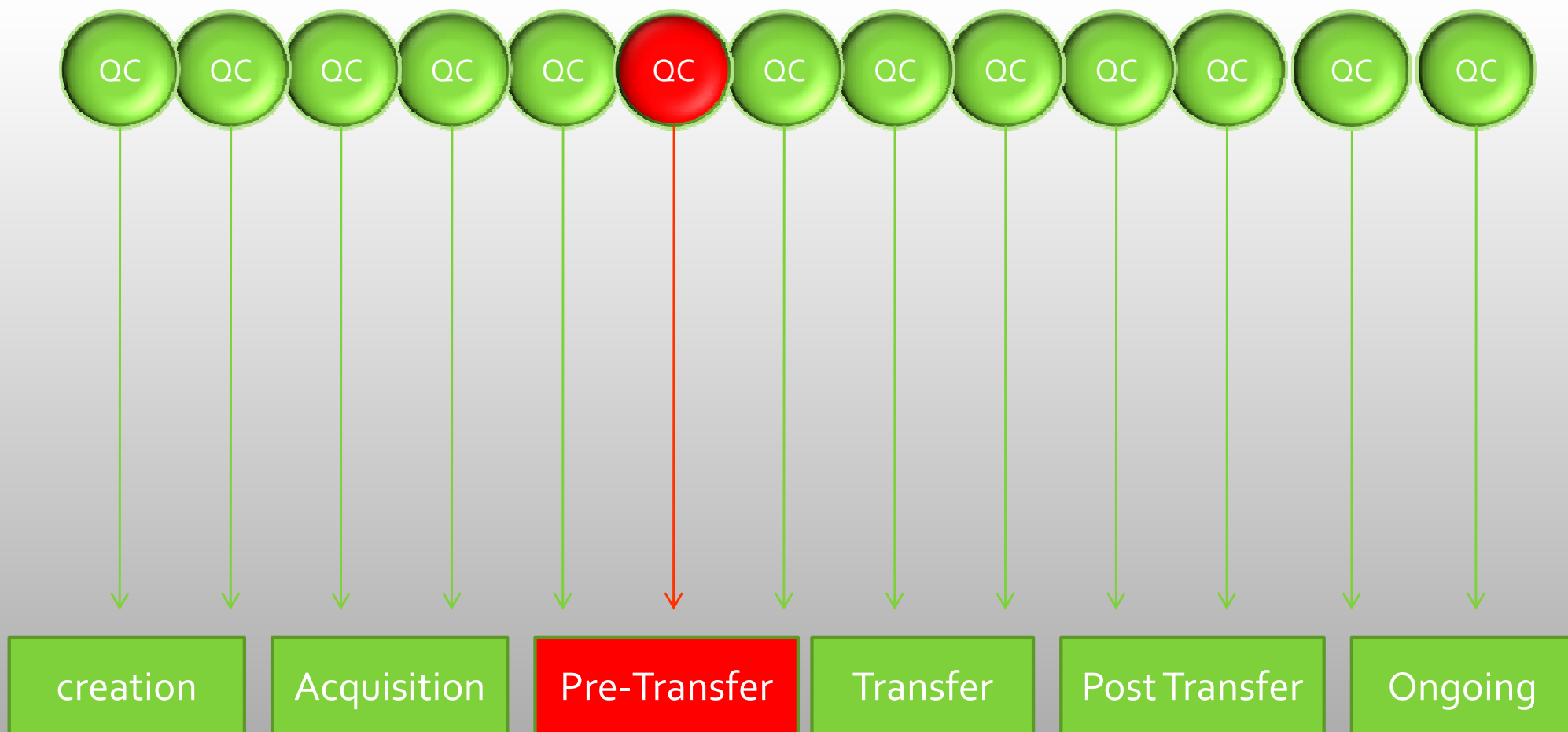
Examples from (and thanks to)

BBC Information & Archives
PrestoSpace Project:
Technology-enhanced Learning & Access to Cultural Heritage

www.bbc.co.uk

Michael D
Website

www.michaeldvd.com.au

Tektronix
Cerify Literature

www.tek.com

BAVC
PLAYBACK: Preserving Analog Video

www.bavc.org

1" Dropout
c/o BBC Information & Archives

Mistracking

Tape Tension Error
c/o BBC Information & Archives

Tension Error Shows First at Top of Frame
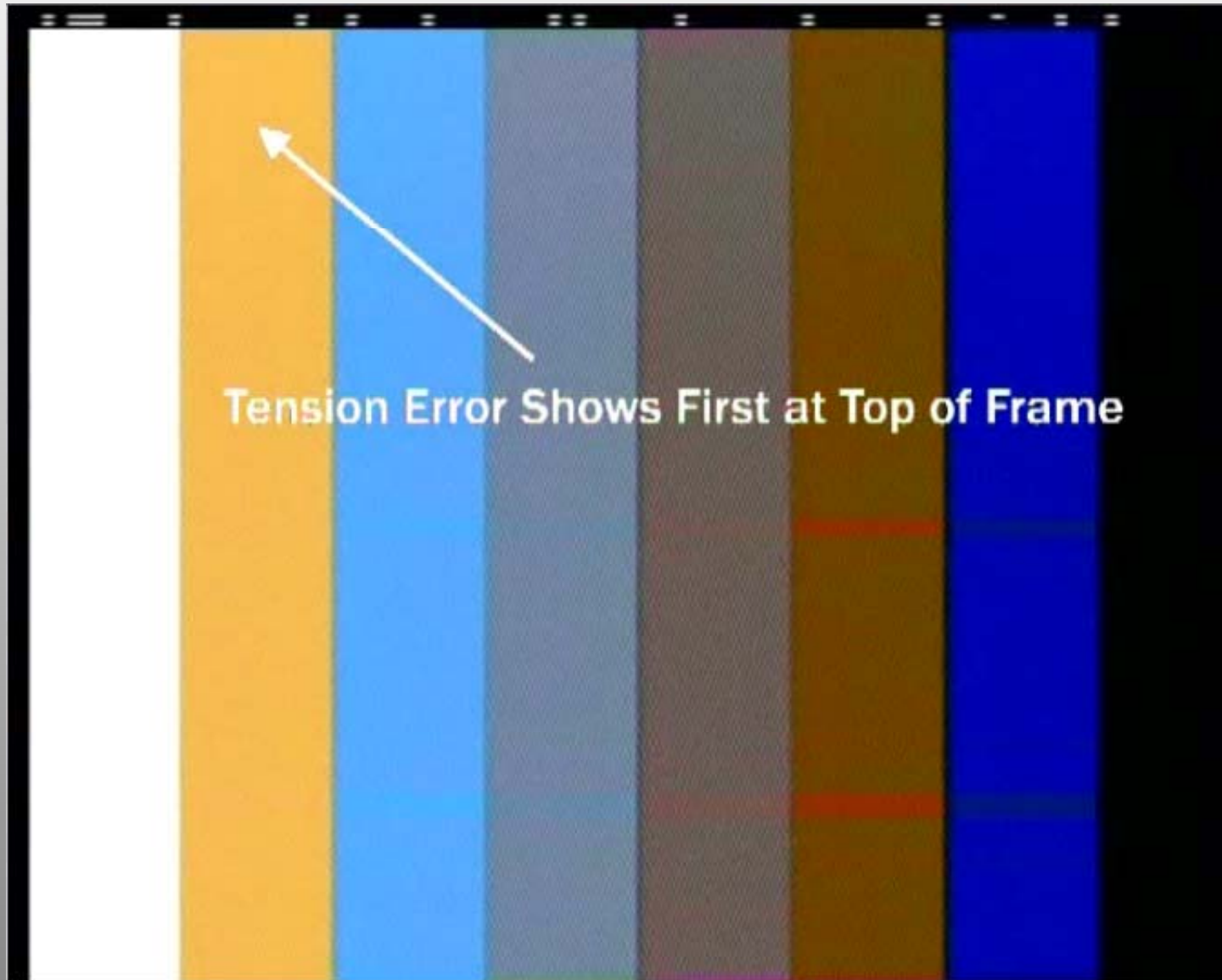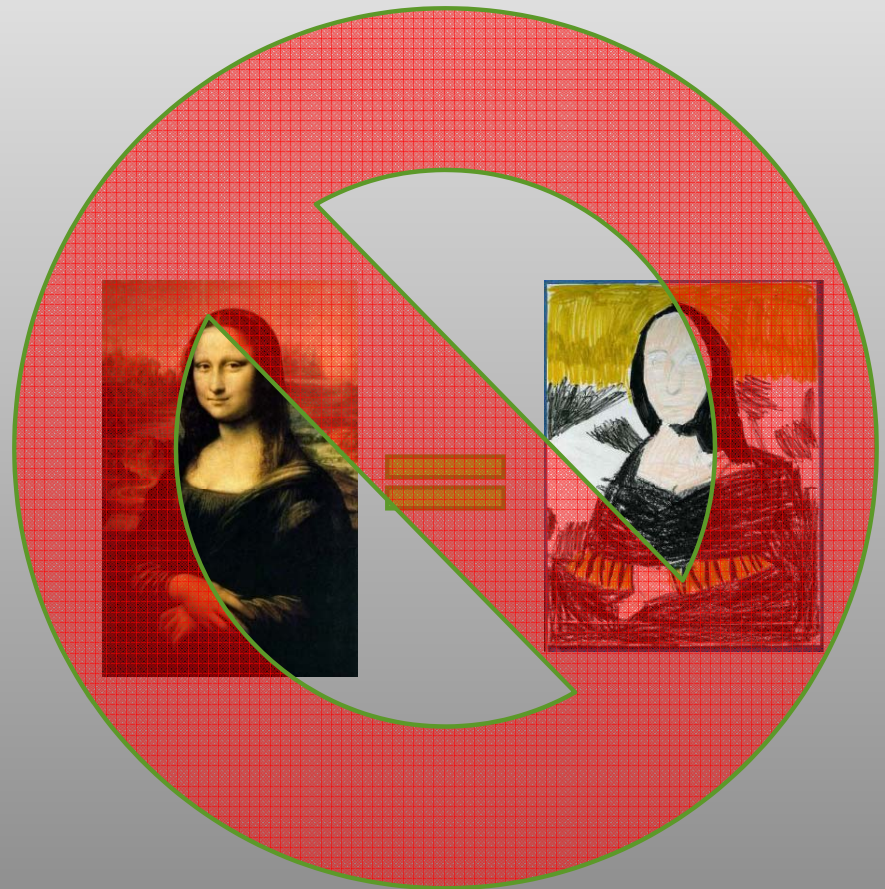
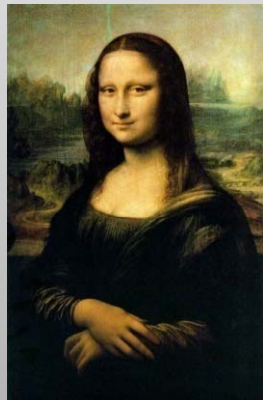# Digital Tape Error

c/o Michael D

½" Open Reel Dropout
c/o BAVC

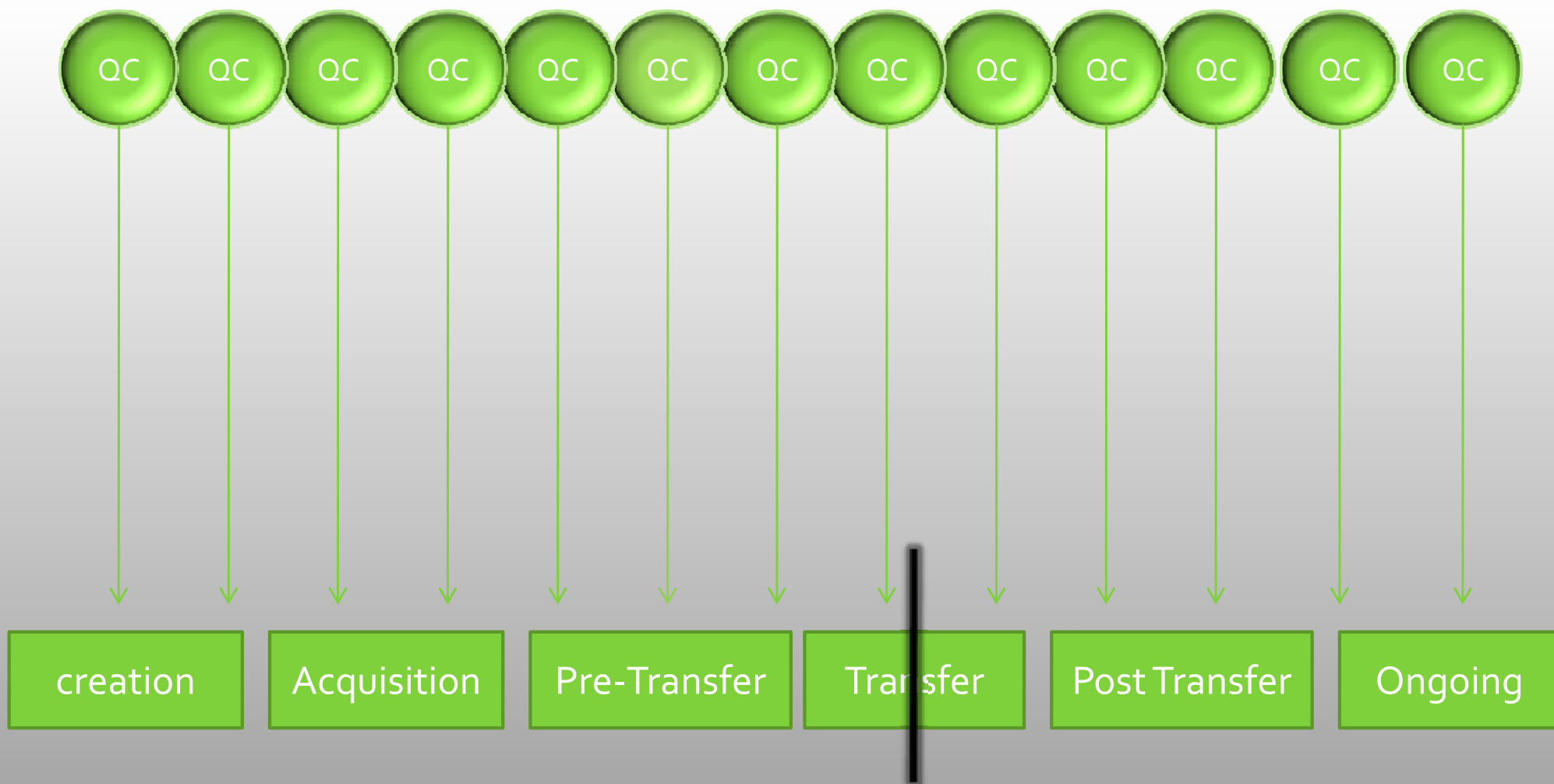# Aesthetic History vs. Quality:
The need for expertise
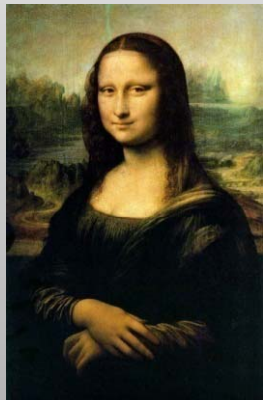
Digital File Error
c/o Tektronix

QC QC QC QC QC QC QC QC QC QC QC QC QC

| creation | Acquisition | Pre-Transfer | Transfer | Post Transfer | Ongoing |

The Process

Analog Container/
Physical Format

Digital Container/
File Format

QC QC QC QC QC QC QC QC QC QC QC QC QC

creation   Acquisition   Pre-Transfer   Transfer   Post Transfer   Ongoing

The Process

Analog Container/
Physical Format

Digital Container/
File Format

QC QC QC QC QC QC QC QC QC QC QC QC QC

creation | Acquisition | Pre-Transfer | Transfer | Post Transfer | Ongoing
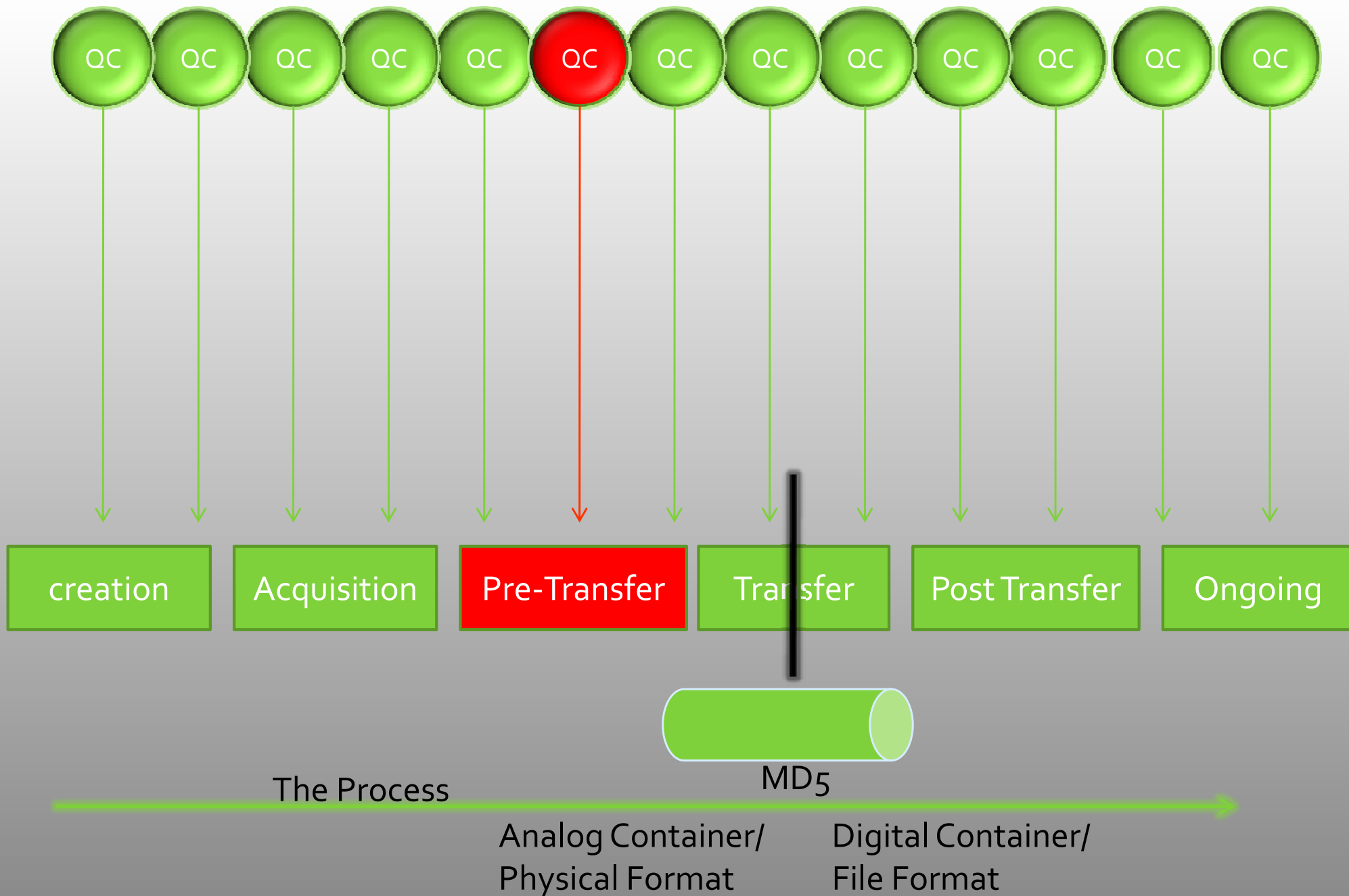
The Process

Analog Container/
Physical Format

Digital Container/
File Format

QC QC QC QC QC QC QC QC QC QC QC QC QC

| creation | Acquisition | Pre-Transfer | Transfer | Post Transfer | Ongoing |

MD5

The Process

Analog Container/
Physical Format

Digital Container/
File Format

creation | Acquisition | Pre-Transfer | Transfer | Post Transfer | Ongoing
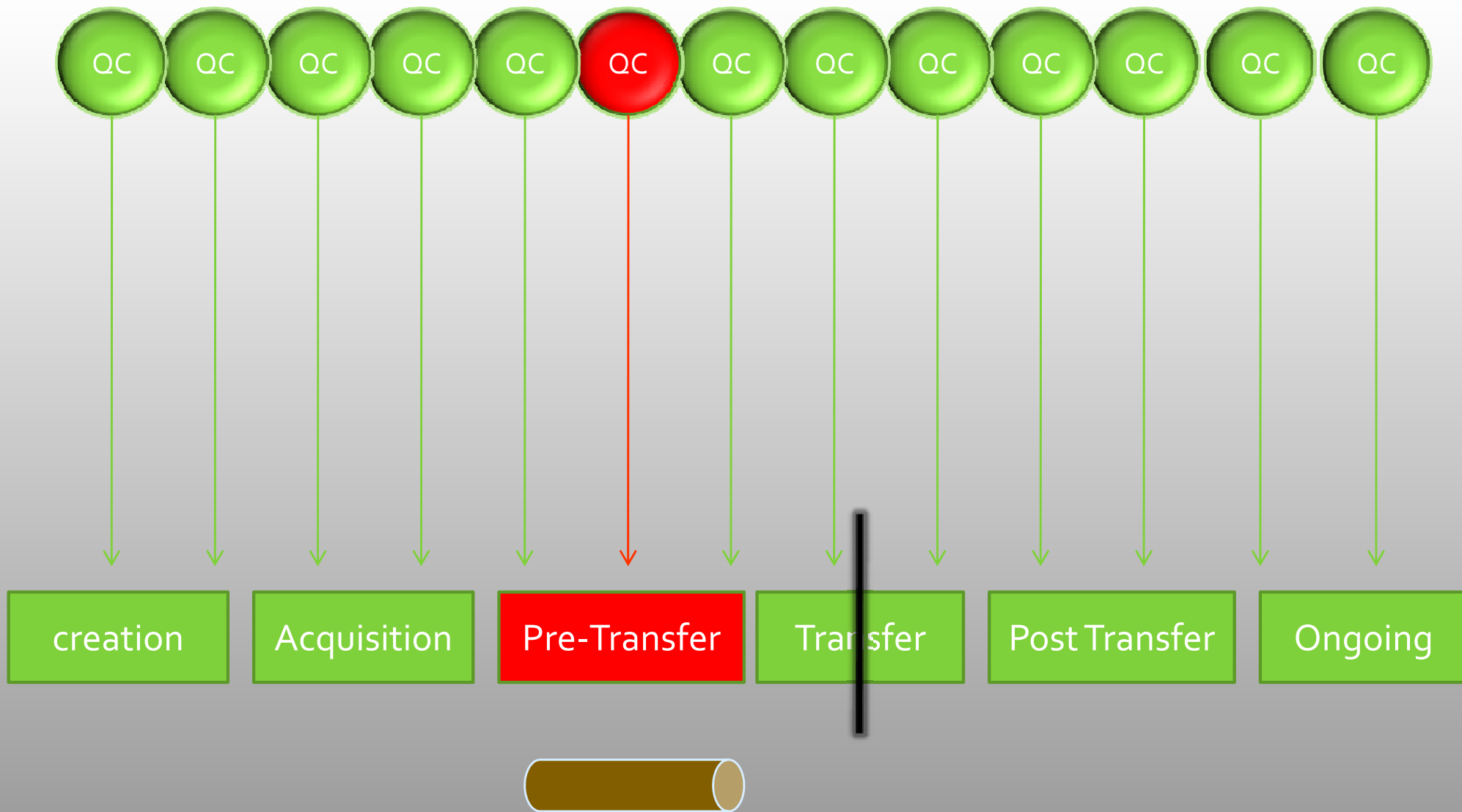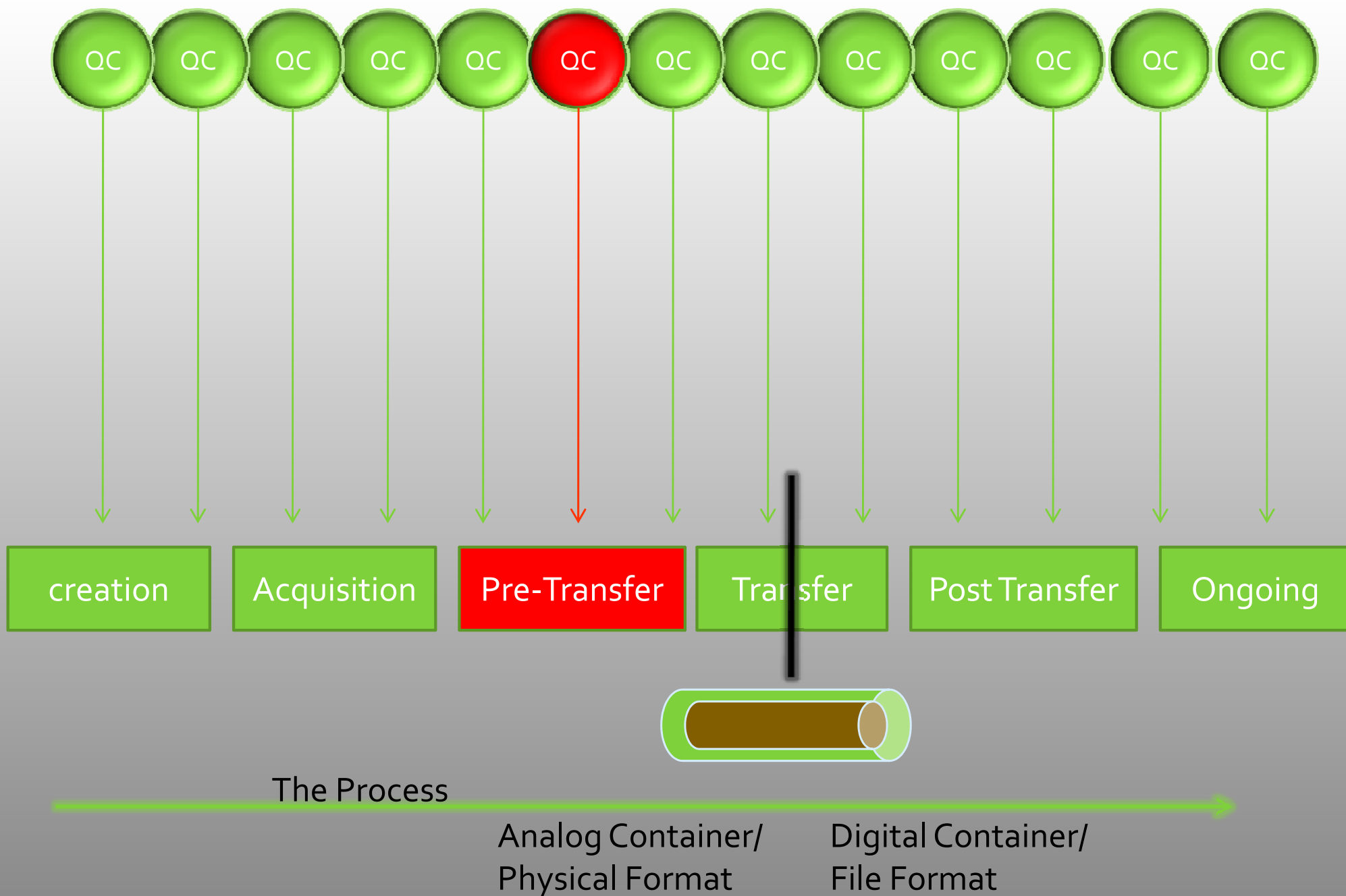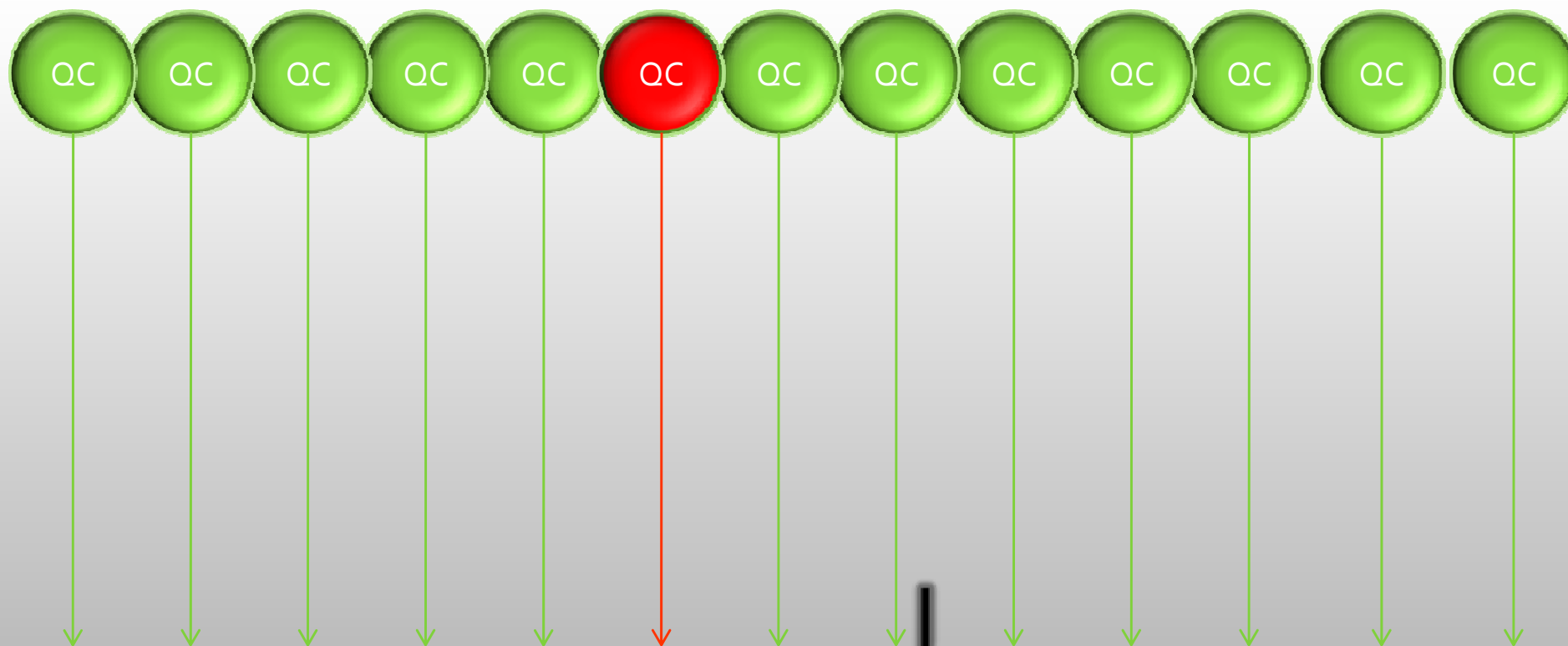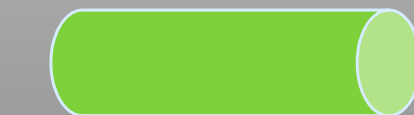
The Process

MD5 = MD5

Analog Container/
Physical Format

Digital Container/
File Format

QC QC QC QC QC QC QC QC QC QC QC QC QC

creation   Acquisition   Pre-Transfer   Transfer   Post Transfer   Ongoing

The Process

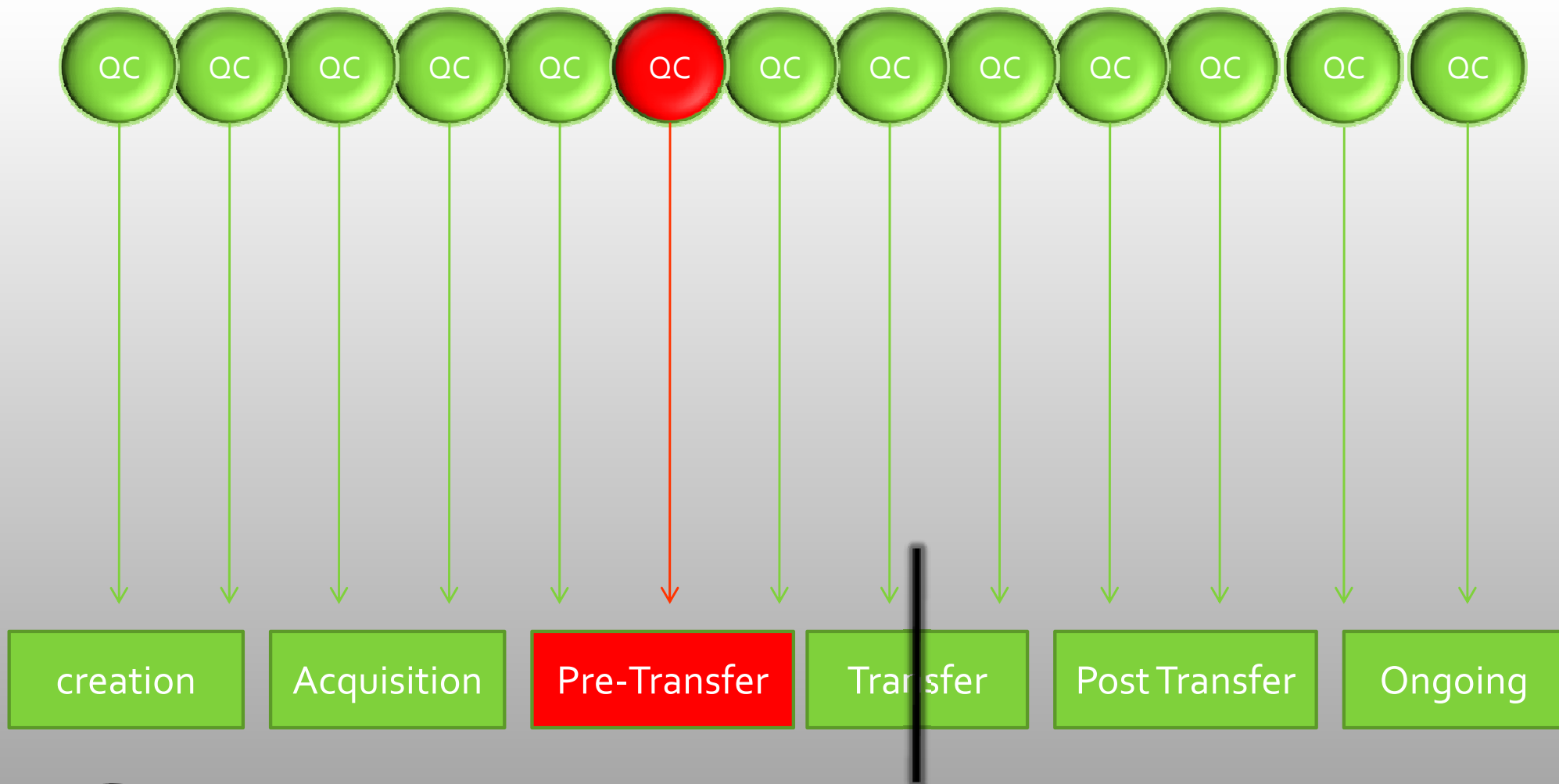Analog Container/
Physical Format

Digital Container/
File Format

MD5 = MD5

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Operator

Metadata

Equipment

Media

Expertise

Care & Handling

Physical and intellectual control/
Collection management

Storage

All above

Diagnostic

Infrastructure

Supplies

QC

Align & Setup

monitoring

Signal

Documentation tools

Transport

Analysis tools

Checksum

Validation

Accuracy

HDD monitoring

checksum

Metadata updating

Creation

Operator Metadata

Equipment Media

Post Acquisition

Expertise

Care & Handling

Storage Physical and intellectual control/
Collection management

Pre-Transfer

All above Diagnostic

Infrastructure Supplies

Align & Setup

Transfer

monitoring

Signal Documentation tools

Transport

Analysis tools

Post-Transfer

Checksum

Validation

Accuracy

Ongoing

HDD monitoring

checksum

Metadata updating

Acquisition

import

✓ Check existing metadata against item labels

✓ Identify any glaring issues (mold, fire damage)

✓ Avoiding redundant data entry

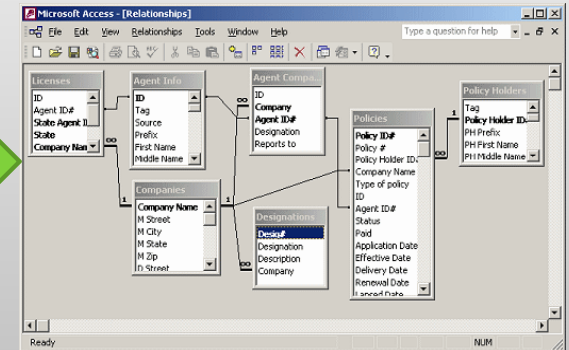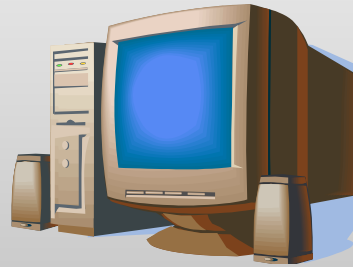✓ Assign ID and media tracking info

Inspection and Diagnostics

1/4" Tape

- full track
- 2 channel / 2 track
- 2 channel / 4 track
- 4 channel / 4 track
- 2 channel / 8 track

✓ Expert evaluation of condition and tools required for reproduction

✓ Another look at the metadata accuracy
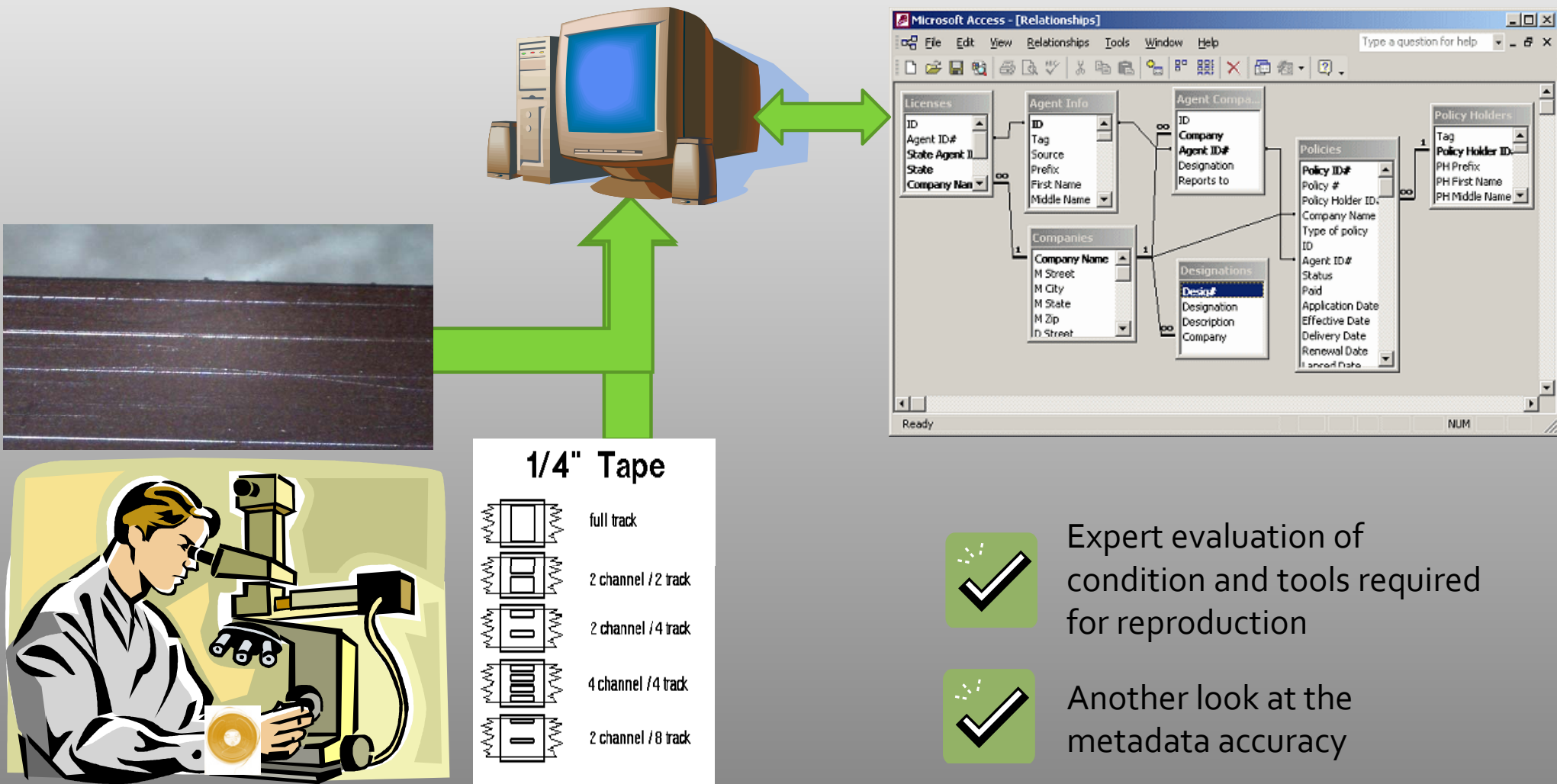
Treatment

refrigeration, reverse wind, relaxing

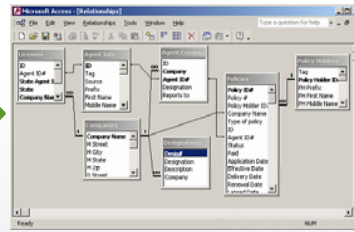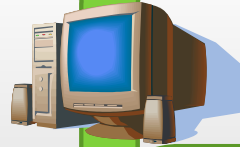✓ Expert Treatment of media to achieve optimal transport

✓ The right tools for the job
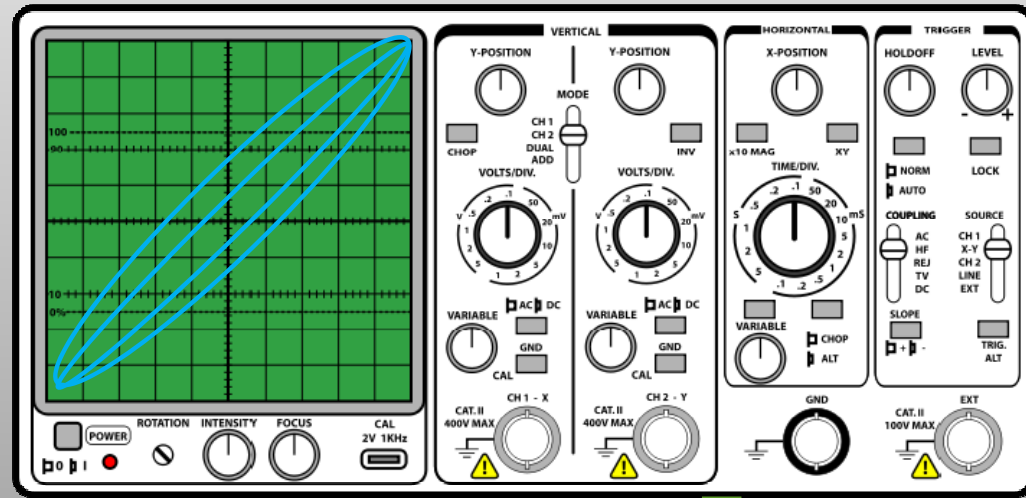
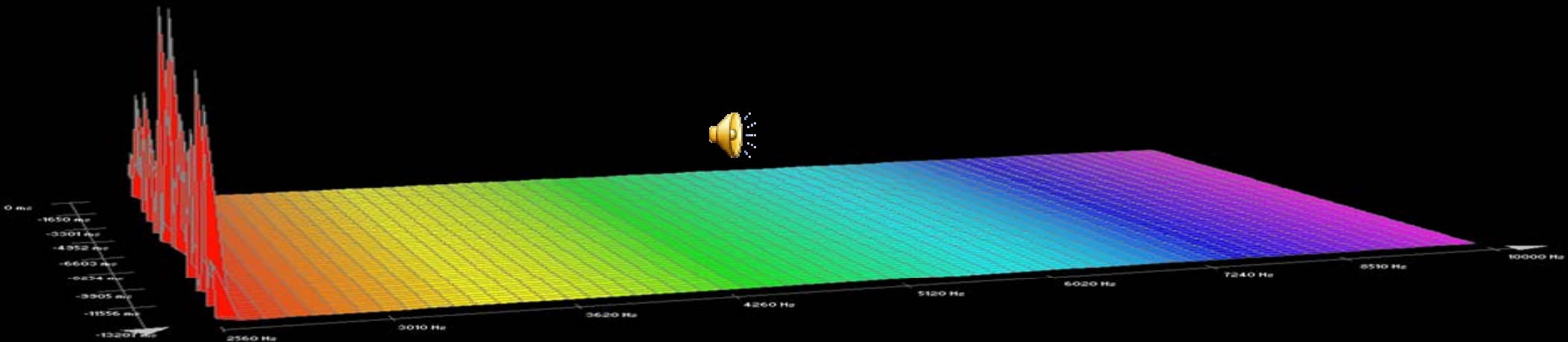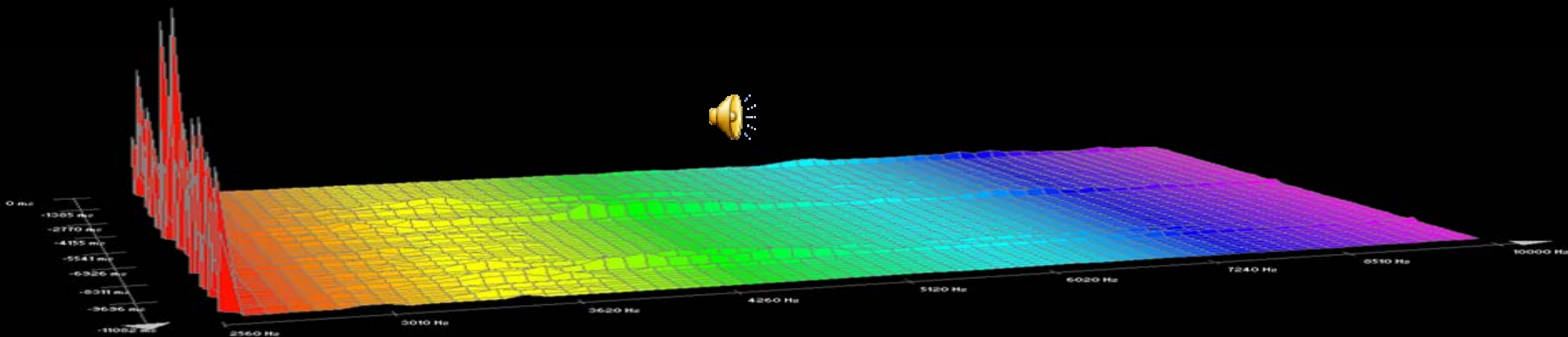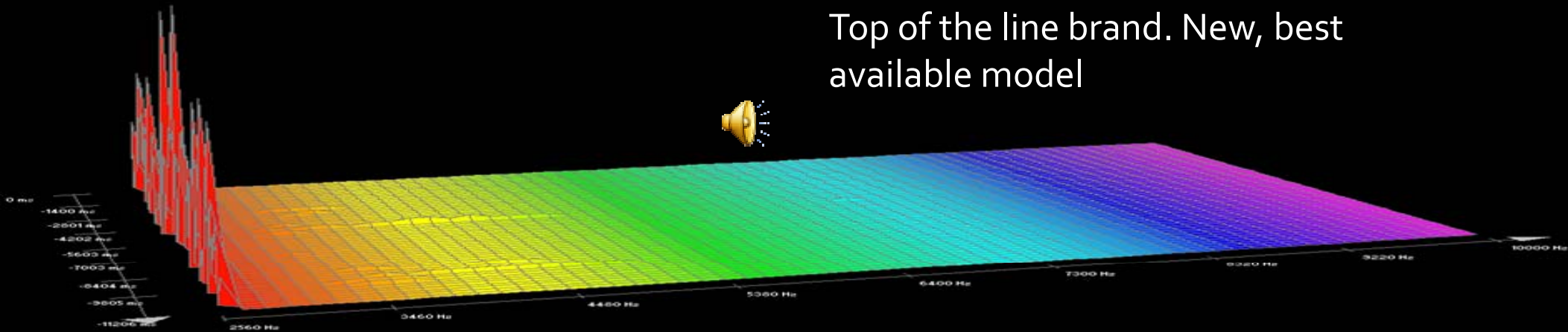✓ Clear documentation of the methods used

Setup

Good equipment and tools

Expert operator

Good analysis & monitoring

Process Documentation

Top of the line brand. New, best available model

Top of the line brand, top of the line model, aligned properly, no longer available new

Top of the line brand, top of the line model, not aligned, no longer available new
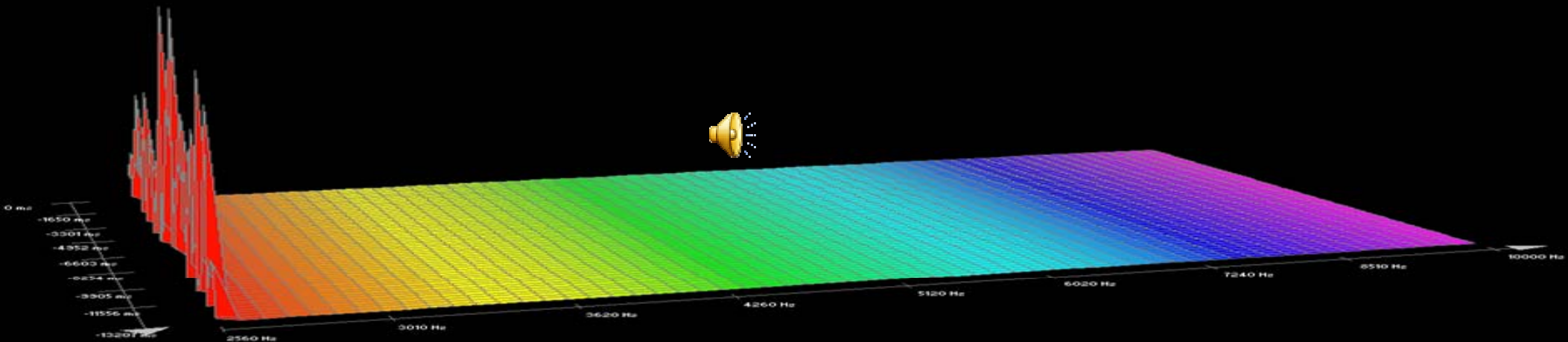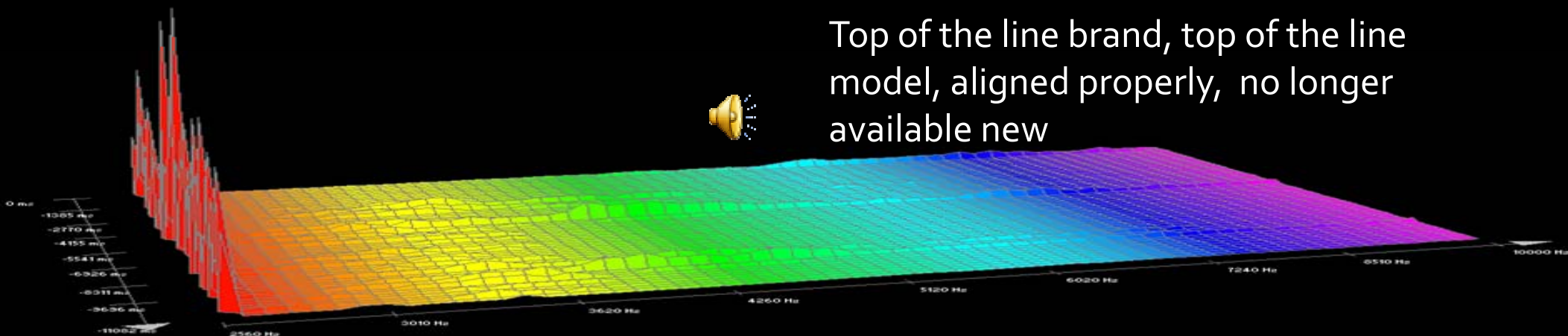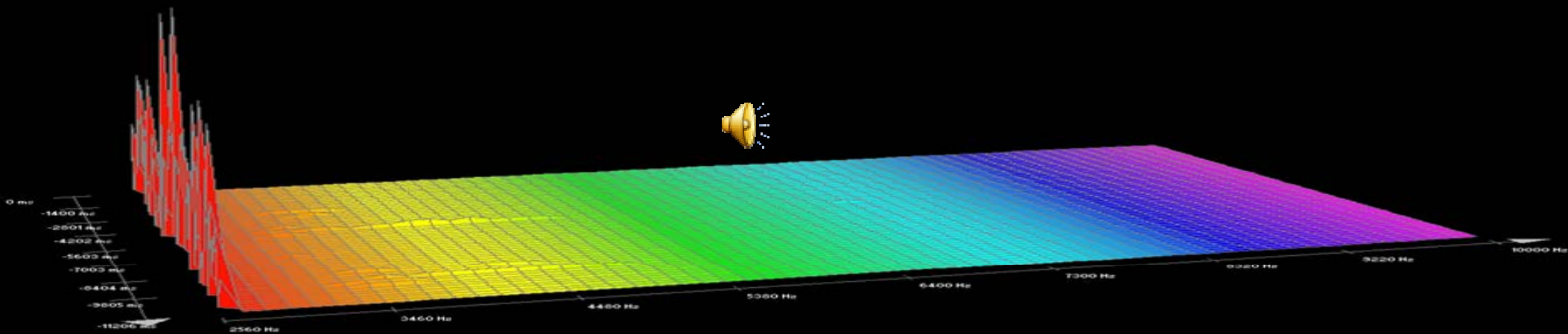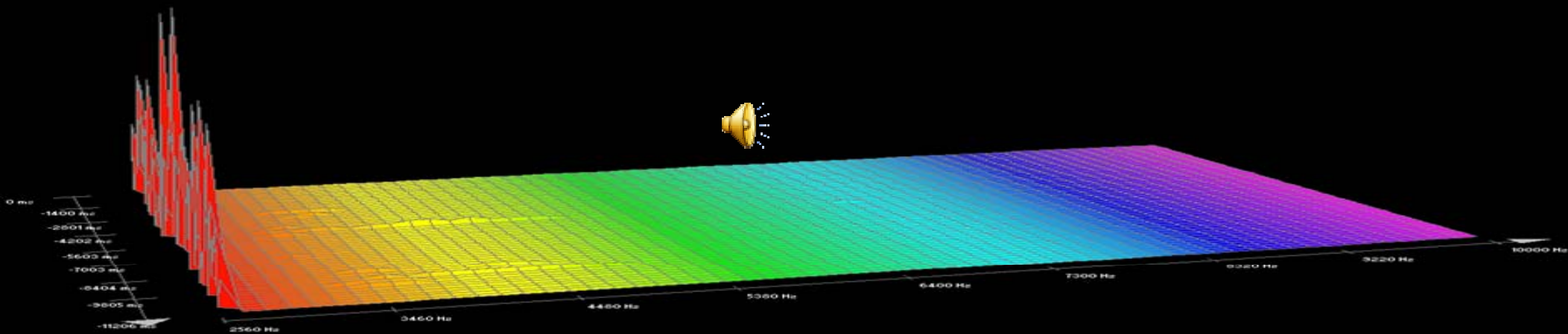
Aesthetic History vs. Quality
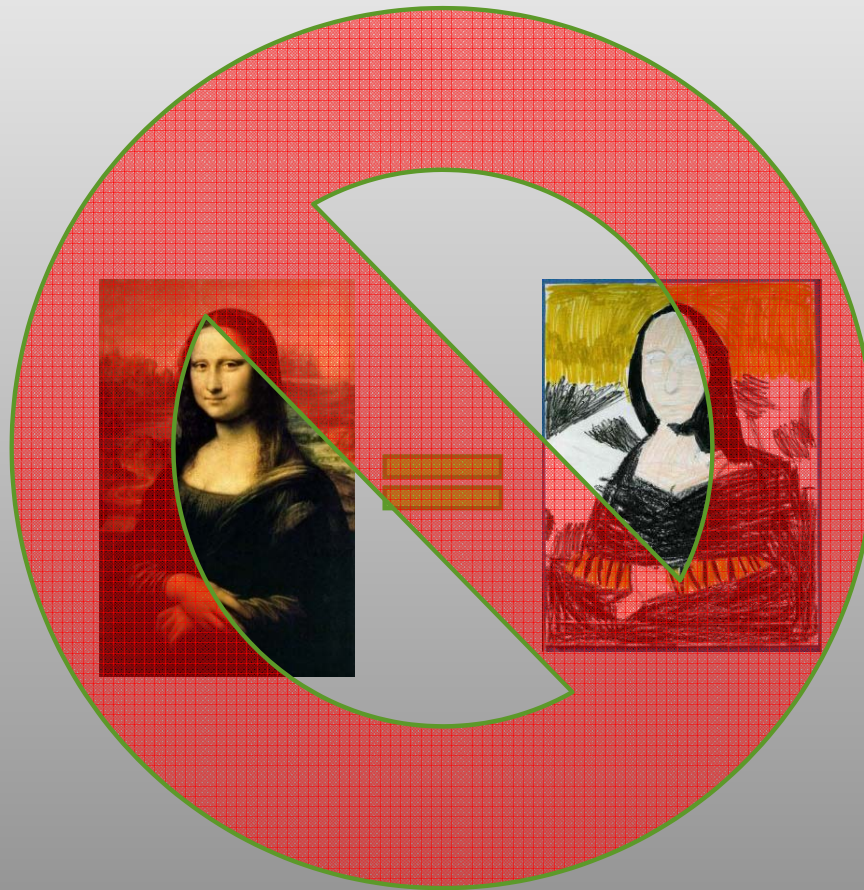
Transfer

Digital and analog automated error checking and manual data entry. Documenting of descriptive and technical metadata.
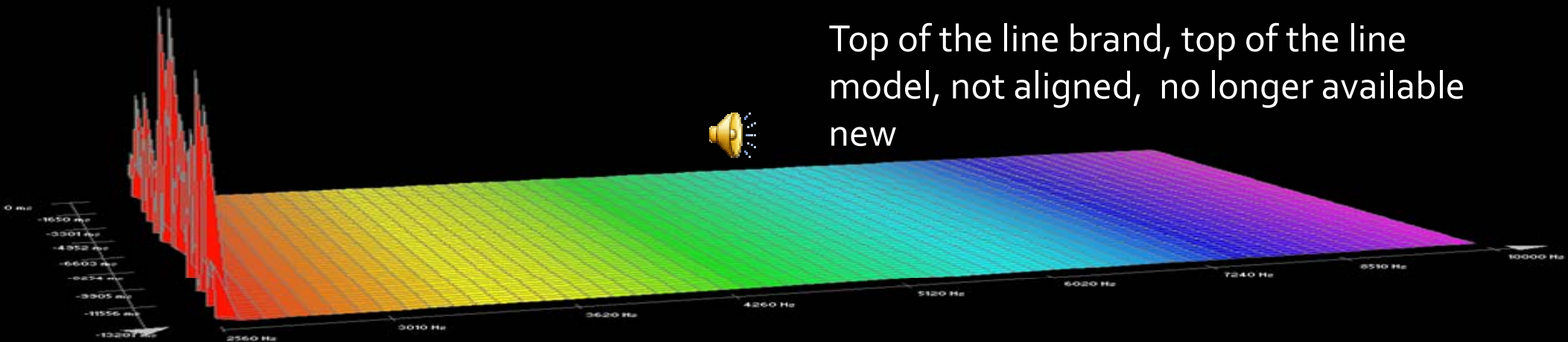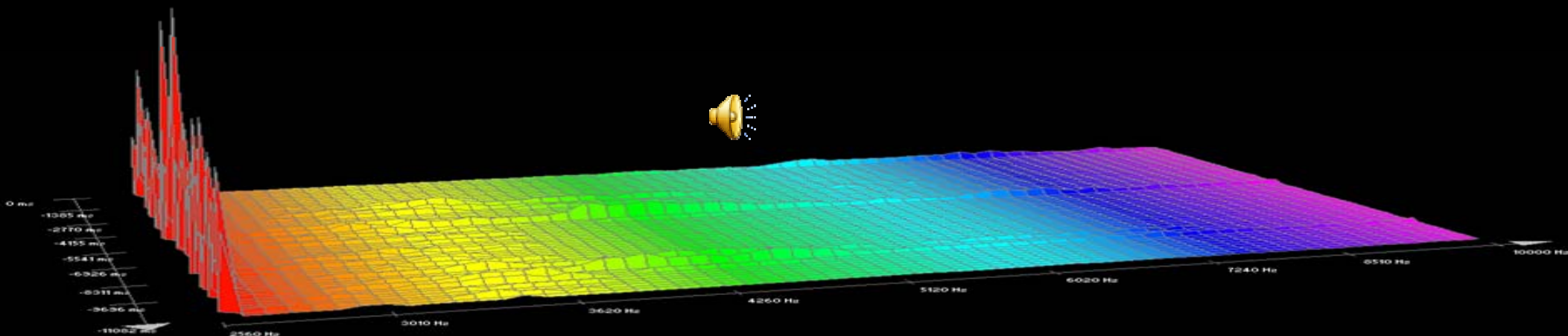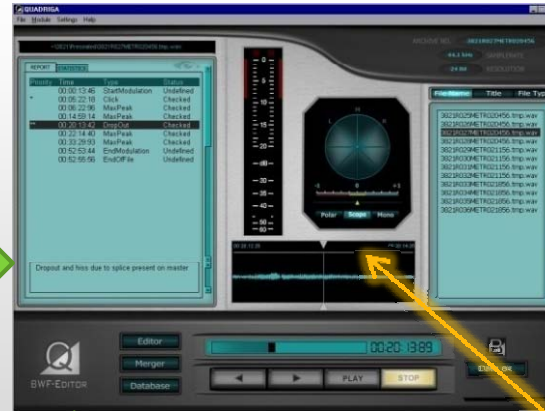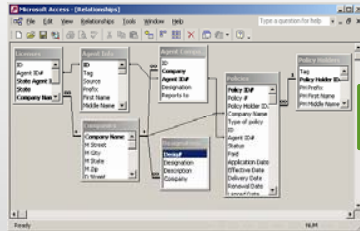
A/D Converter

D/A Converter
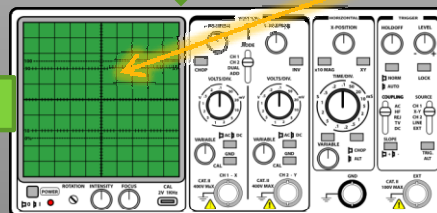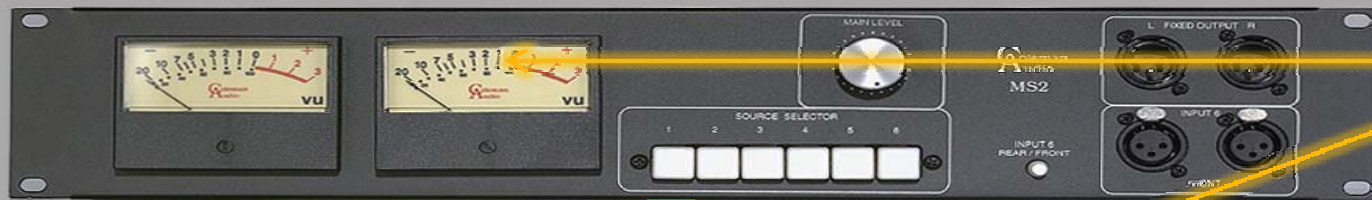
✔ Expert operator and High quality equipment

✔ Good monitoring & analysis and good signal path

✔ Full Documentation & no repetitive entry

Post Transfer 1/5

.wav
.xml

.wav

.xml
MD5

.wav
MD5

✓ Validate and supplement automatically generated metadata

✓ Metadata exported as XML for import into database and/or SIP

✓ Generate checksums for metadata and audio object

Post Transfer 2/5

.wav	Jhove →	[software screenshot] →	md .wav / .wav XML / .wav MD5
.wav .xml	MD valida tor →		md .mp3 / .mp3 XML / .mp3 MD5
			md ... / ... XML / ... MD5
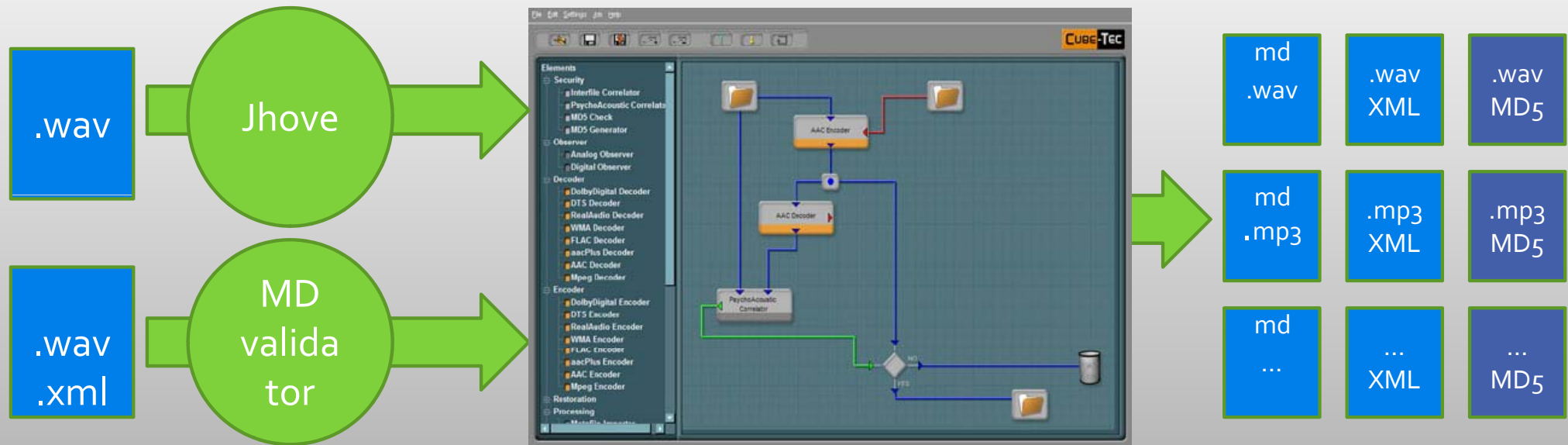
✓ Validate file and metadata as well formed and valid instances

✓ Generate Checksums for derivatives

✓ Automatically generated derivatives

✓ Generate & export descriptive and technical metadata for derivatives

✓ Imported XML for dissemination to derivatives

Post Transfer 3/5

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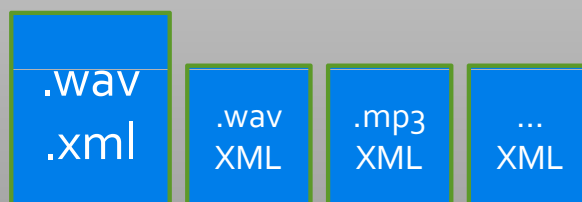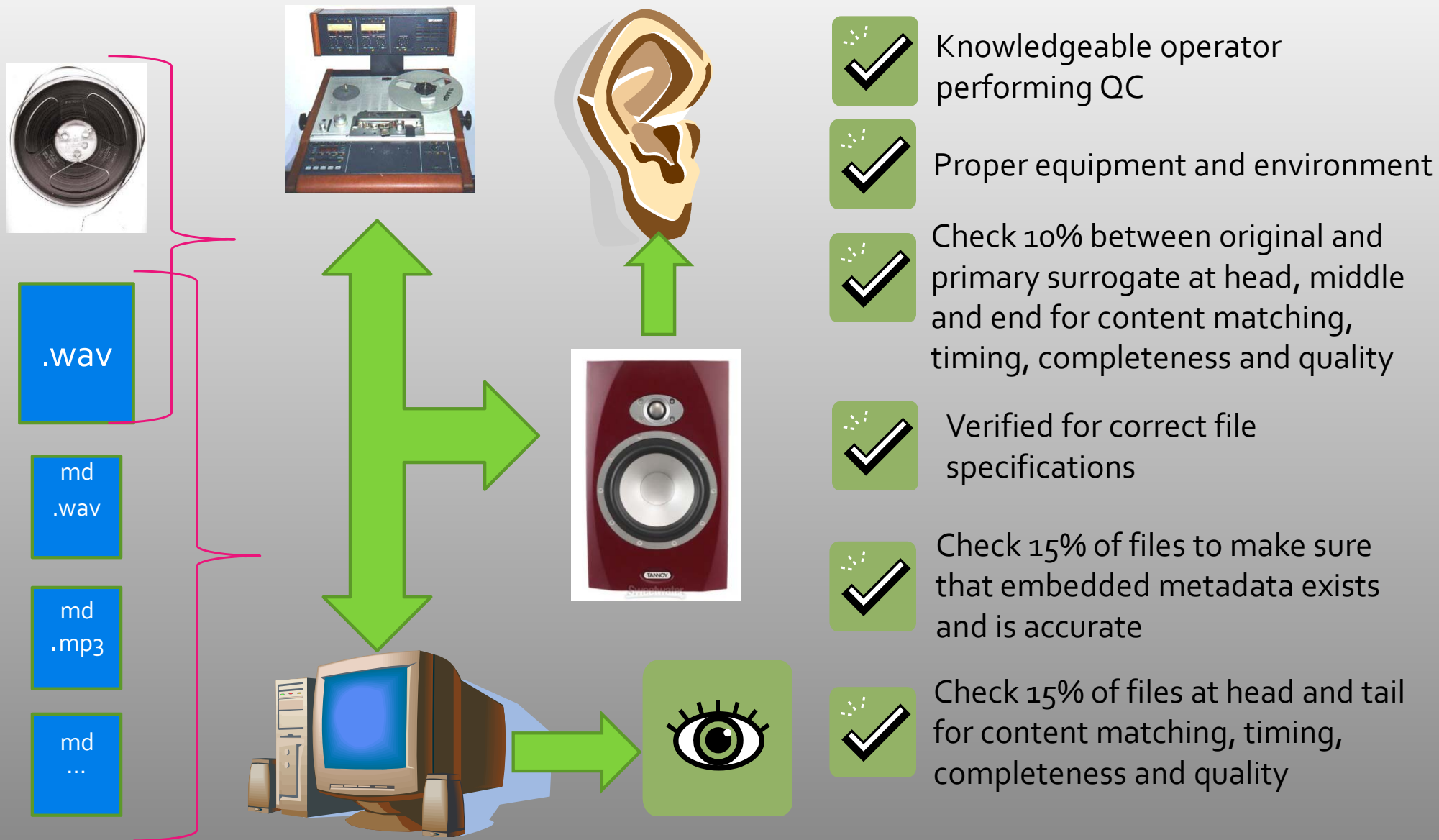
Post Transfer 4/5

.wav

md
.wav

md
.mp3

md
...

✓ Knowledgeable operator performing QC

✓ Proper equipment and environment

✓ Check 10% between original and primary surrogate at head, middle and end for content matching, timing, completeness and quality

✓ Verified for correct file specifications

✓ Check 15% of files to make sure that embedded metadata exists and is accurate

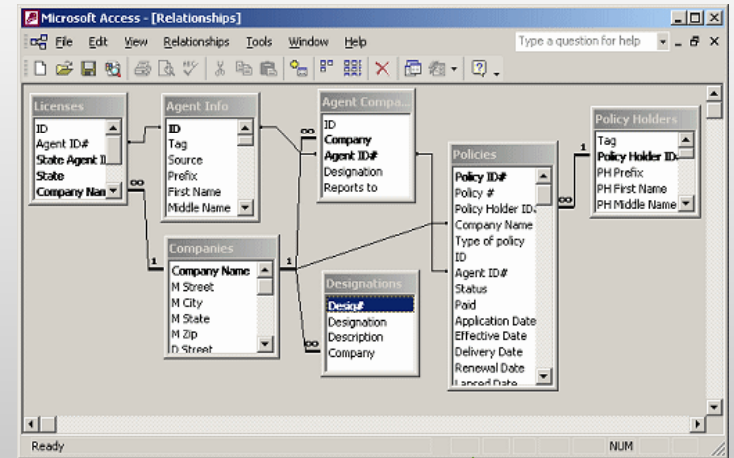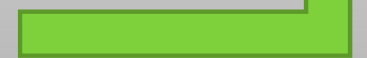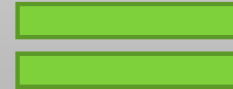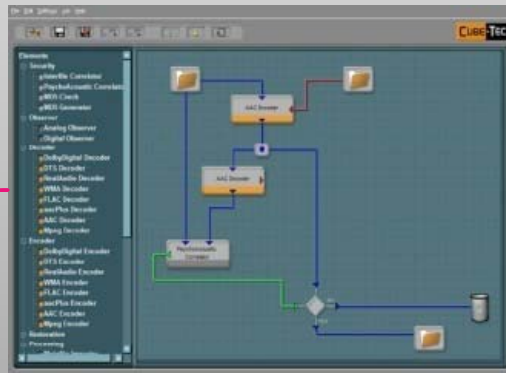✓ Check 15% of files at head and tail for content matching, timing, completeness and quality

Post Transfer 5/5

.wav
.xml

.wav
XML

.mp3
XML

…
XML

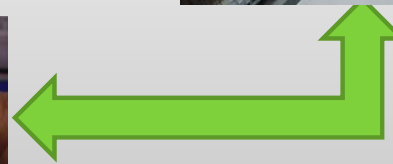Descriptive and technical specification metadata is checked and compared for differences

Quality reports are compared for quality differences

All selected metadata captured throughout process exists in database

Ongoing

.wav

| md .wav | md .mp3 | md ... |

.wav MD5

| .wav MD5 | .mp3 MD5 | ... MD5 |

.wav .xml

| .wav XML | .mp3 XML | ... XML |

.xml MD5

RAID

Mirror

✔ Proper physical storage

✔ RAID and Redundant Storage

✔ Different Media Types

✔ Geographical separation

✔ Automated data integrity monitoring

Handout

QA_QC_Considerations.pdf

Quality Control

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