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## Image Analysis for Cultural Heritage Digitization

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# IMAGE ANALYSIS

FOR CULTURAL HERITAGE

DIGITIZATION



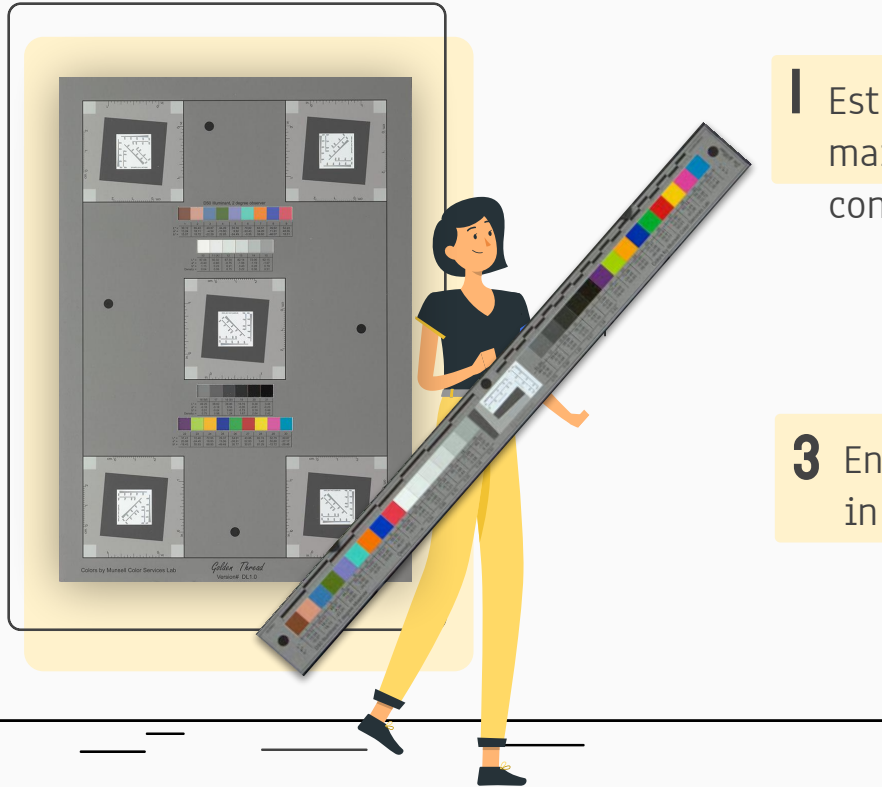
# INTRODUCTION

Naomi Langer - Digitization Technician  
Stephanie Becker - Digital Collections Manager

Case Western Reserve University - Kelvin Smith Library



# BENEFITS TO USING TARGETS



**1** Establish and maintain quality control

**2** Determine capture capability of a scanner or camera

**3** Ensure consistency in image production

**4** Document of imaging process




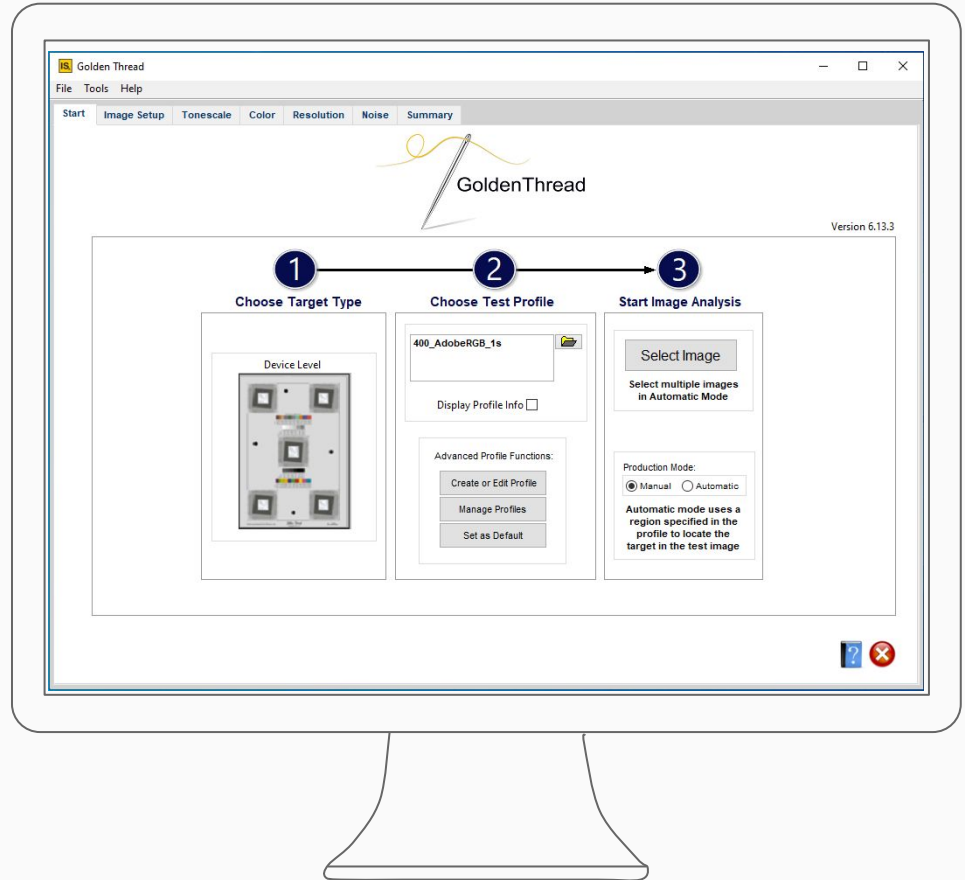
Device Level Target

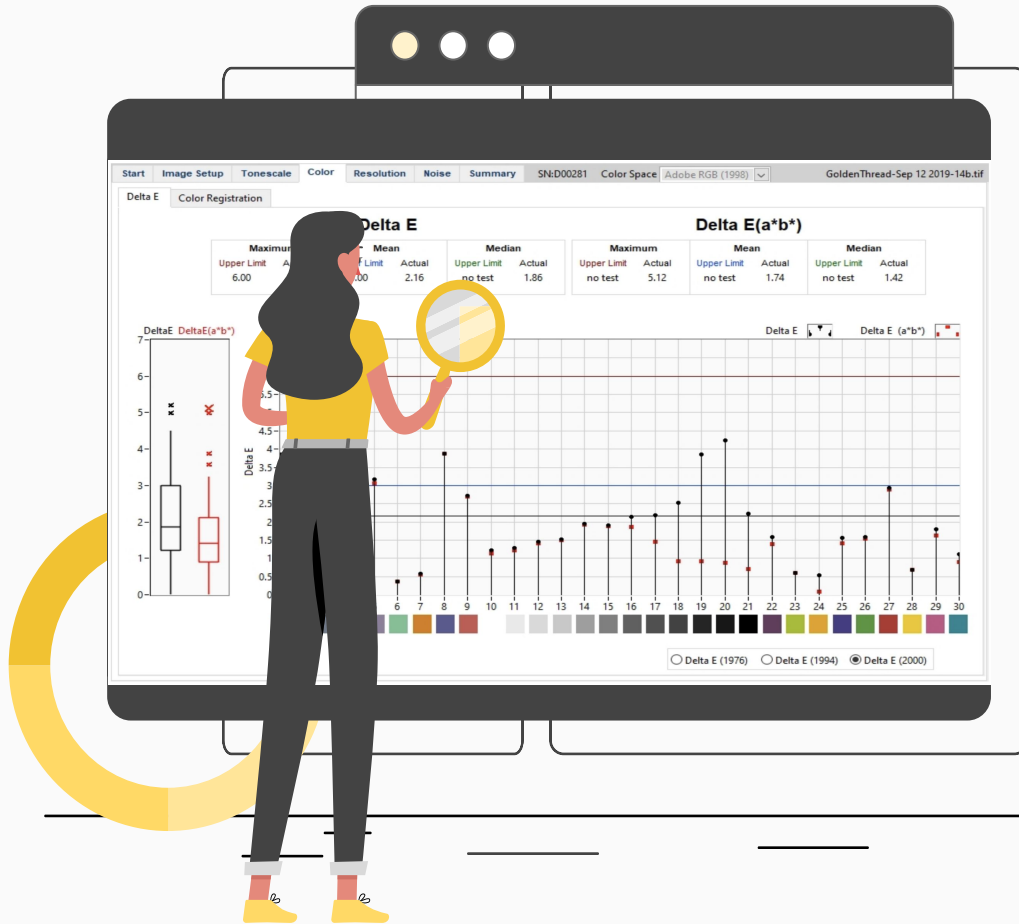


Object Level Target

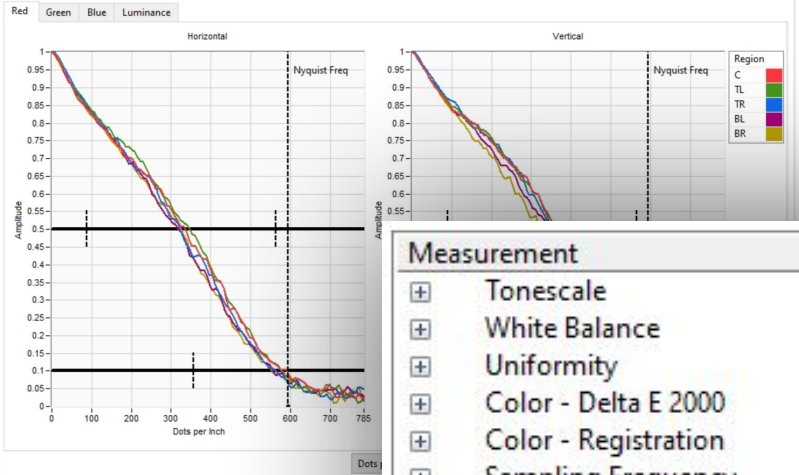
# GOLDEN THREAD

- Target and software package for image analysis
- Not the only option, but what we use at KSL 
- Compares our captures against FADGI standards

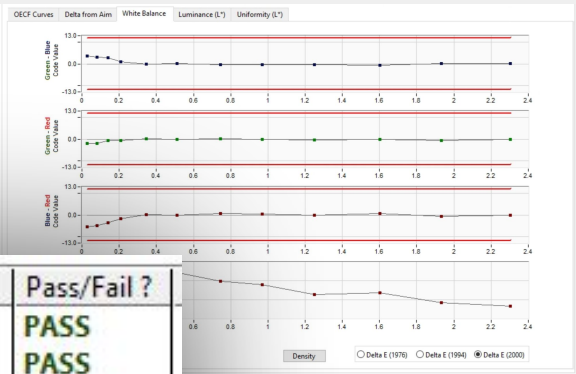




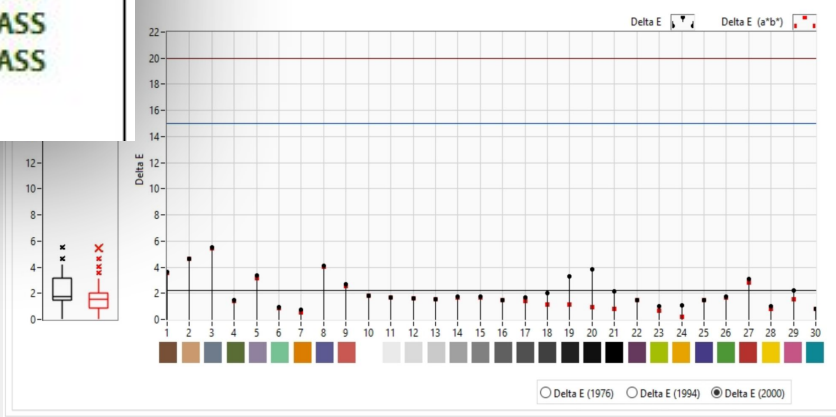
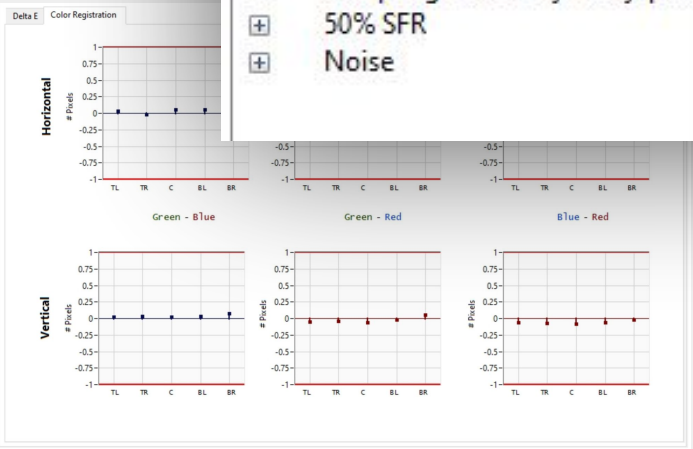
# READING THE DATA



Measurement	Pass/Fail ?
+ Tonescale	PASS
+ White Balance	PASS
+ Uniformity	PASS
+ Color - Delta E 2000	PASS
+ Color - Registration	PASS
+ Sampling Frequency	PASS
+ Sampling Efficiency & Nyquist	PASS
+ 50% SFR	PASS
+ Noise	PASS



Delta E				Delta E(a*b*)							
Maximum	Mean	Median	Maximum	Mean	Median	Maximum	Mean				
Limit	Upper Limit	Upper Limit	Upper Limit	Upper Limit	Upper Limit	Upper Limit	Upper Limit				
Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual				
0	5.49	15.00	2.19	no test	1.74	no test	5.48	no test	1.82	no test	1.52







Uniformity

PASS



Uniformity

FAIL

Overall Data

All Data

Overall Mean	65.47
Peak Difference %	0.61
Peak Difference % Aim	1.00

Peak Difference = (Max - Min) / Mean

Average Value

Top Left	65.31	▲
Top Right	65.59	
Center	65.31	
Bottom Left	65.41	
Bottom Right	65.71	

Overall Data

All Data

Overall Mean	60.75
Peak Difference %	5.95
Peak Difference % Aim	1.00

Peak Difference = (Max - Min) / Mean

Average Value

Top Left	61.12	▲
Top Right	58.91	
Center	60.76	
Bottom Left	62.53	
Bottom Right	60.42	

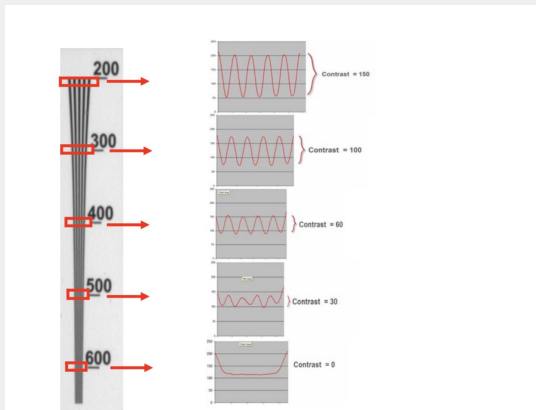
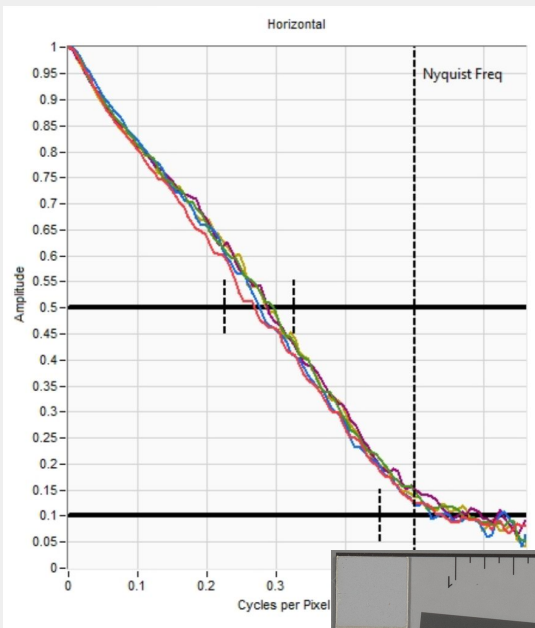
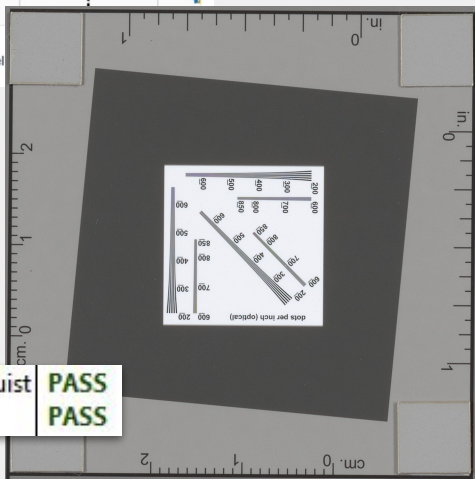
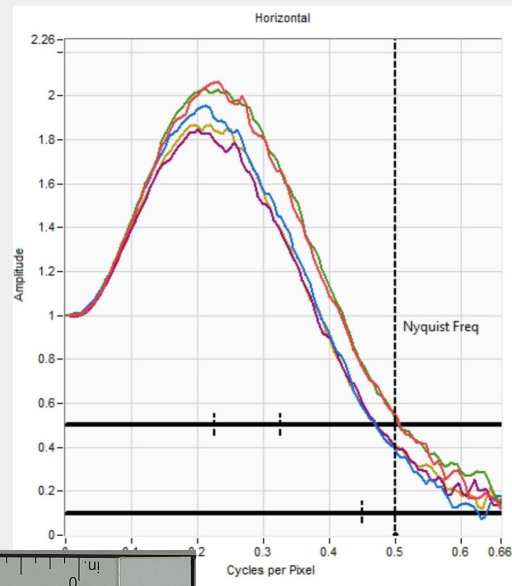
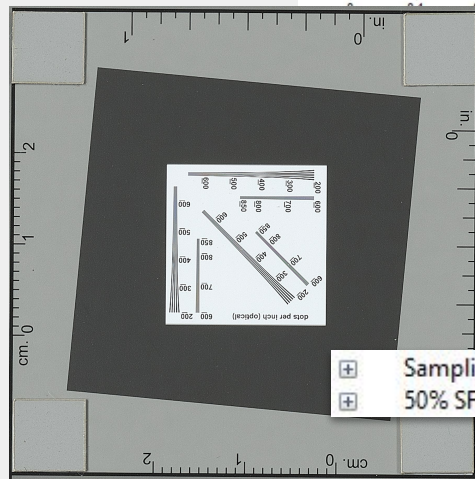


Fig. 4.3. Light intensity cross sections of resolution wedge at different line spacings

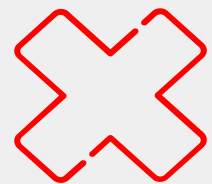


**PASS**  
**PASS**



**+** Sampling Efficiency & Nyquist  
**+** 50% SFR

**WARNING**  
**FAIL**



## HOW DOES THIS SUPPORT DIGITAL PRESERVATION?

- Ensures FADGI standards are being met
- Accuracy happens in capture so no editing required
- Creation of a true digital surrogate
- Guarantee the integrity of our files over time
- Target serves as additional documentation of the imaging process



# QUESTIONS?

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