

# Implementing Efficiency and Effectiveness in Print Manufacturing

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 ChromaChecker INC.

# Agenda

- ◇ Important Statistics for Print Service Providers
- ◇ Implement Lean Print Manufacturing
- ◇ Implement Continuous Improvement
- ◇ How to learn where your shop is today
- ◇ Business Intelligence
- ◇ Actionable data...

# Printer Profitability Facts

## ***PIA Industry Flash Report 2017***

- ◇ Top 25% Printers make >5% margin on sales
- ◇ Next 50% Printers make <2% margin on sales
- ◇ Last 25% Printers make 0% margin on sales

\$400 Waste= 1 Customer Rejected Job due to color

*Requires \$8,000 Sales to overcome for top 25% printers*

*\$20,000 Sales to overcome for next 50% printers*

**Can't manage what you don't measure**

# Lean Print Manufacturing = Eliminating Waste

## Lean Print Manufacturing

Oriented to Management

Controlling Manufacturing (Printing)

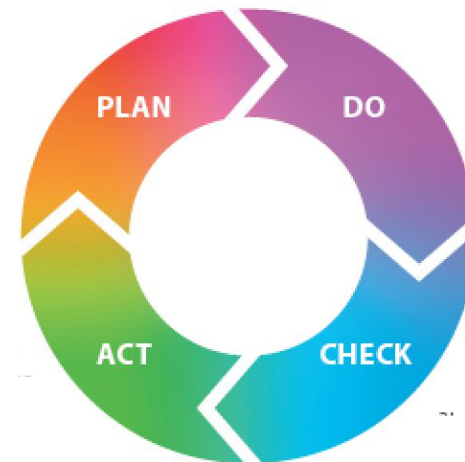
Reducing costs to increase efficiency, profitability, and value to customer

## **Effectiveness + Efficiency + Discipline = Lean Print Manufacturing**

Effectiveness- doing the right thing

Efficiency- doing things the right way

Discipline- **Plan, Do, Check, Adjust**



# What is Continuous Improvement?

## Incremental Improvements to Production Process (Kaizen)

- Oriented to Operators- front line employees given easy pass fail criteria
- Reporting- Small, measured daily contributions, KPIs related to Color Acceptance
- Aggregate of Improvements- significant to overall performance

## Keys to Continuous Improvement in Print Manufacturing

- Knowledge Repository- Standard Operating Procedures (SOPs)
- Compliancy/Policy Management- Delta E & E-Factor (CRF, 95th percentile delta E<sub>00</sub>)
- Knowledge Comprehension- E-Learning modules and instructive videos
- Evaluations- proactively assess devices and personnel (KPIs) system reporting
- Behavior Change- Employees enabled to embrace disruptions & contribute to solutions

# How to Determine What is Waste?

## Print that isn't Salable...

- ◇ How different is too different for customer to buy?
  - ◇ 1= Proof
  - ◇ 2= Acceptable?
  - ◇ 3= Not...

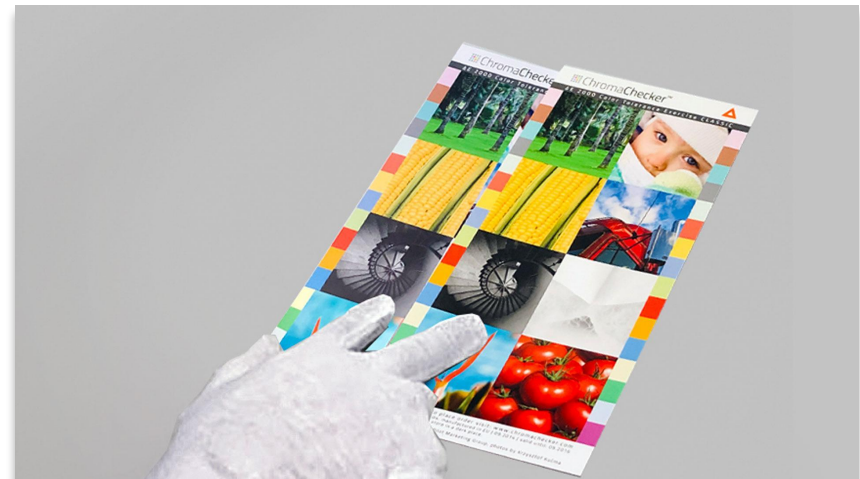
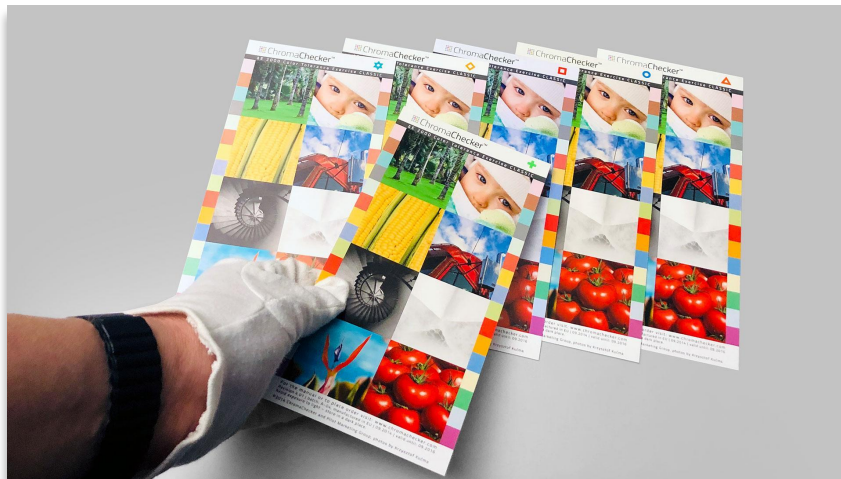


# Scientific Research to Quantify Salability

## Everyone has different Expectations (E-Factor)



- ◇ Visual Survey of 200 Print Buyers
- ◇ Comparison images built with type of  $\Delta E$ - 95th Percentile CRF
  - *Provided 80 random paired comparisons, D50 Lighting*
  - *Graded Match: Excellent, Good, Fair, Poor, Unacceptable*

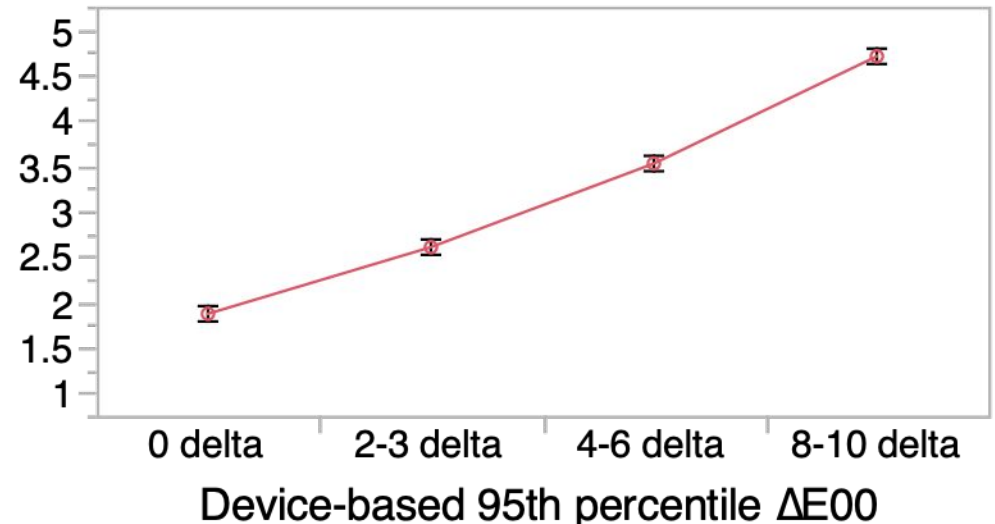


# Industry Results?

## ***Print Buyer Survey, Published TAGA 2017***

- ANOVA statistical analysis proves a linear relationship between E-Factor and human visual judgement!

Unacceptabl  
e  
Poor  
Fair  
Good  
Excellent





# Summary- Very Interesting...

## ***Industry Survey proves:***

- **“One”** number to define customer expectations
  - *E-Factor: 2-3 = Good or Excellent Match by vast majority*
  - *E-Factor: 3-8 = Disagreement on Acceptability*
    - Danger Zone: Unacceptable to 50%+***
  - *E-Factor: 8+ = **Unacceptable by vast majority (97%)***
- ***Most printing is 4-8 E-Factor different from Proof***
  - \*\* thousands of printers surveyed with ChromaChecker***

# How to Determine What is Waste?

## Print that isn't Salable...

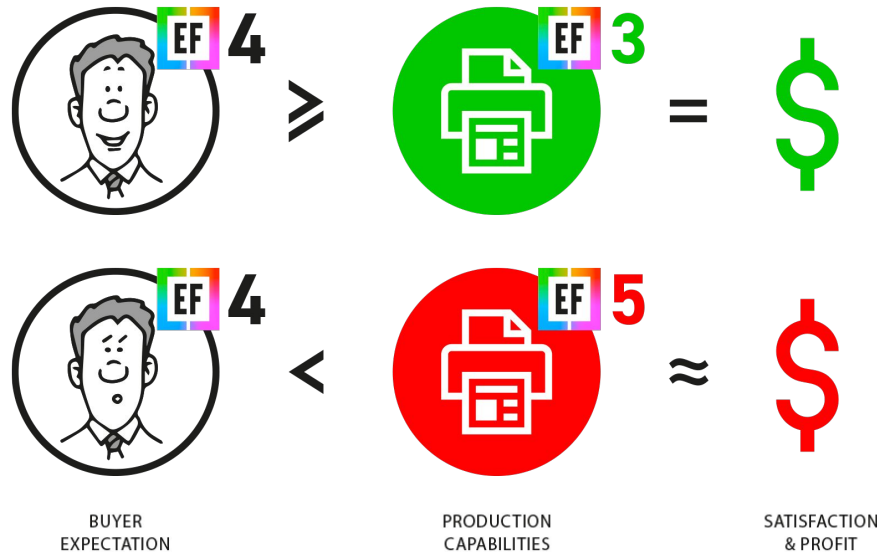
- ◇ How different is too different for customer to pay for?
  - ◇ 1. Proof
  - ◇ 2. EF= 3
  - ◇ 3. EF= 15
- ◇ Actual Clemson Survey with 10 big web Printers, all but one was more than 4.5 EF



# ChromaChecker: Salability Platform!

## ***Color Conformance Platform***

- ◇ Defines Production Capability of all Devices
- ◇ Defines if devices are within Customer Expectations
  - ◇ Operator- Real time judgement reduces waste
  - ◇ Sales/Customer Service/Management/Customer

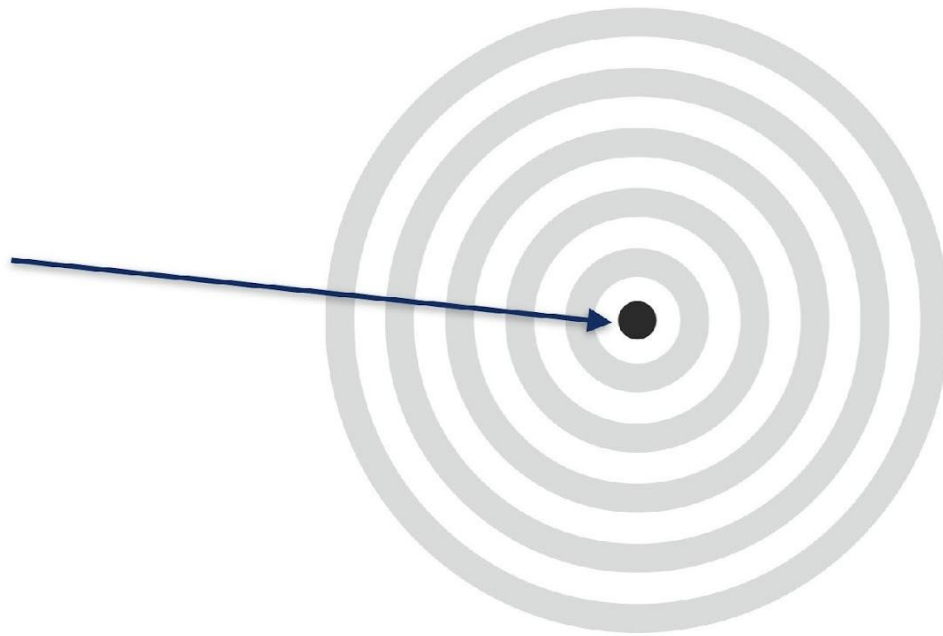


# Printing to Industry Reference Condition

## *Multiple printing devices match to reference*

- ◇ GRACoL2013 for coated papers

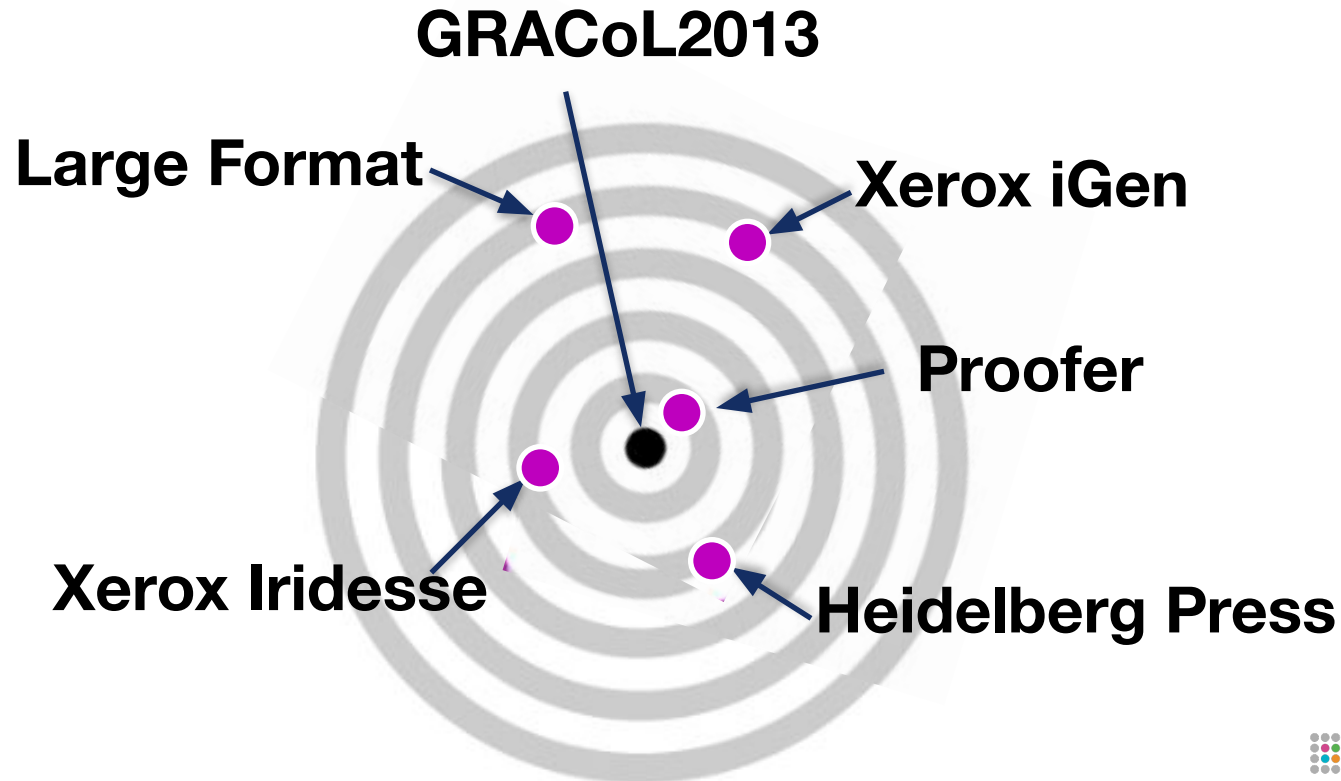
**Original Reference**  
(Golden Master)



# Color Match- Quantify How Close?

## *Match Printers to Reference (GRACoL)?*

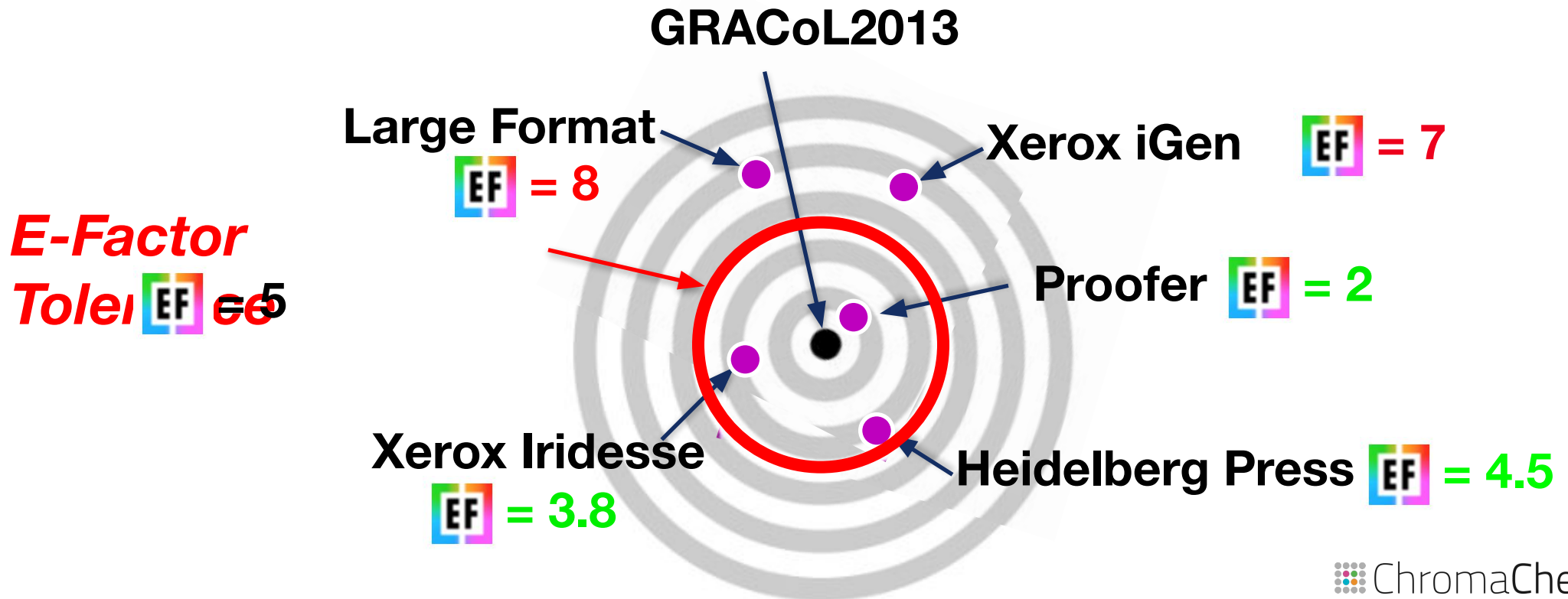
- ◇ Each printer is a dart, within tolerance?
- ◇ Do you know how your printers perform, every shift?



# Color Match- Quantify How Close?

## Define Plant Tolerance

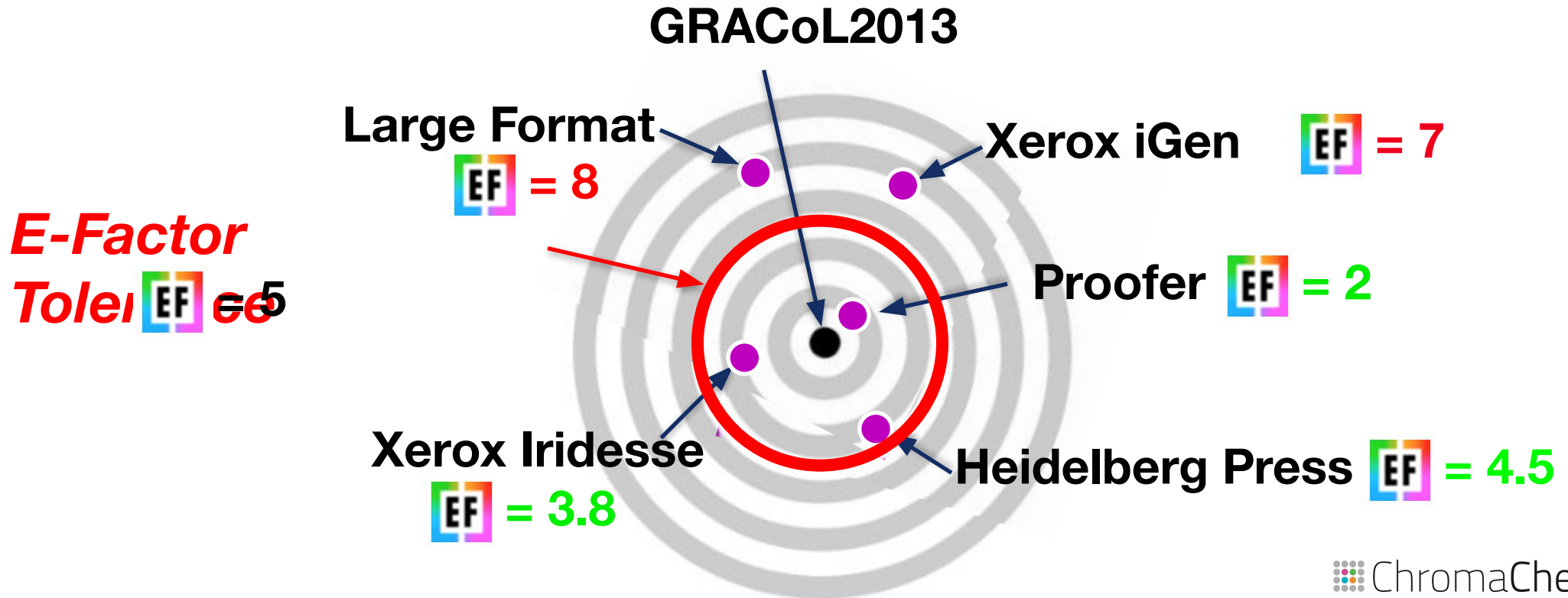
- ◇ How close is Required? E-Factor metric...



# Operator Reports, and Education

## *Operator Knows if Printer is Salable...*

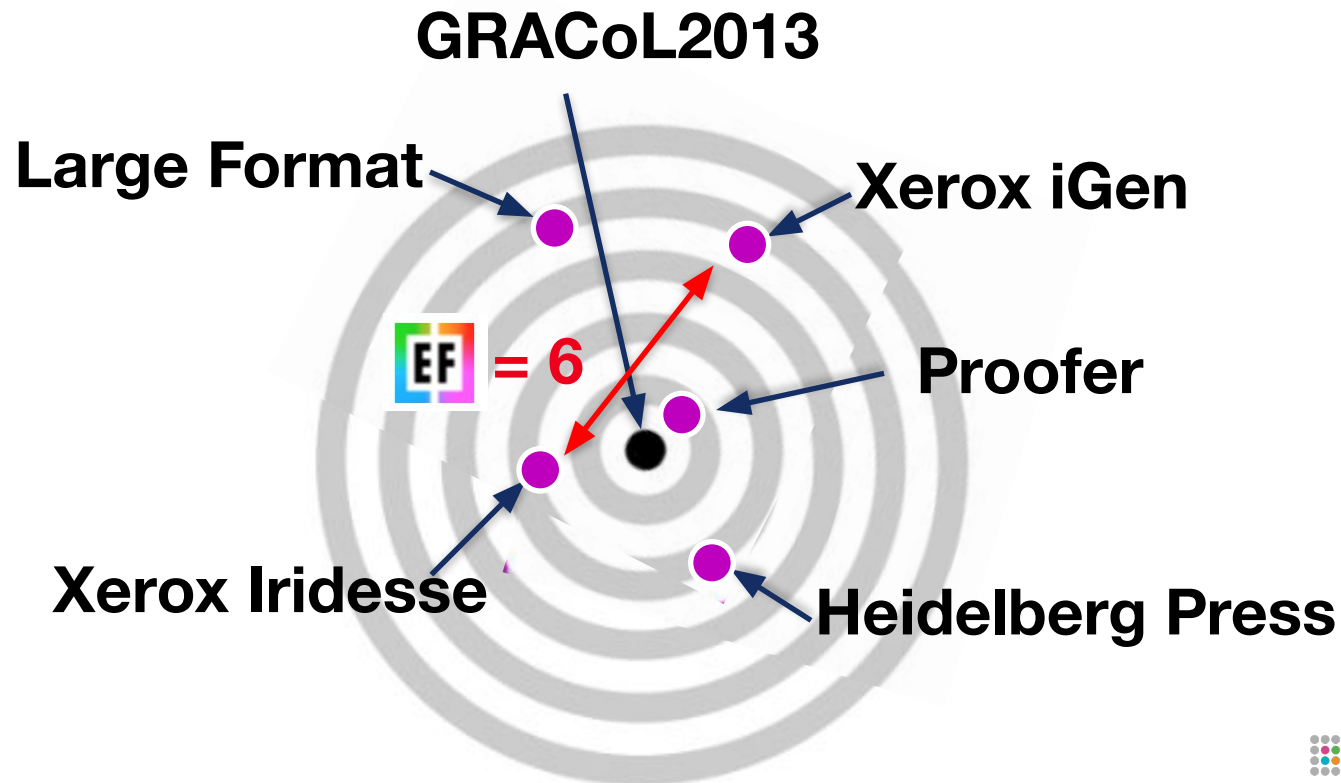
- ◇ Eliminate Waste Immediately!!!



# Color Match- Quantify How Close?

## *Match Printers to One Another*

- ◇ More important than matching reference, match each other





# Collecting Data from Printer... Challenge

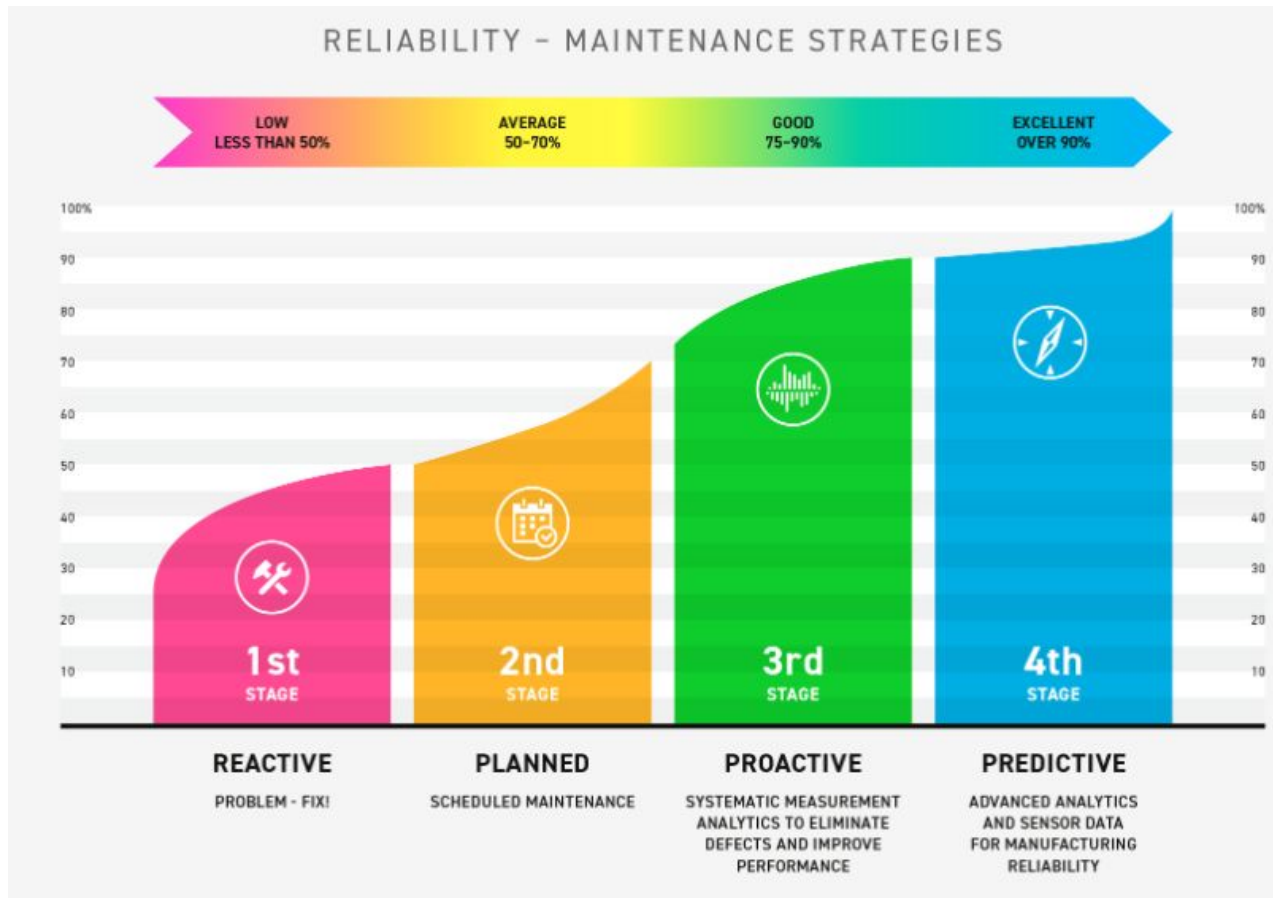
## ***Automation- Reduce Operator involvement***

- ◇ ChromaChecker Running with automated xy measurement devices
- ◇ Print and measure- no operator input
  
- ◇ ChromaCheck - Works with built in scanner for C9070 etc
- ◇ Push button, and feed print into scanner
- ◇ Show- ChromaCheck Video

# Without Data, Every Decision is a Guess

## *Today- Proactive Maintenance Model- Predictive...*

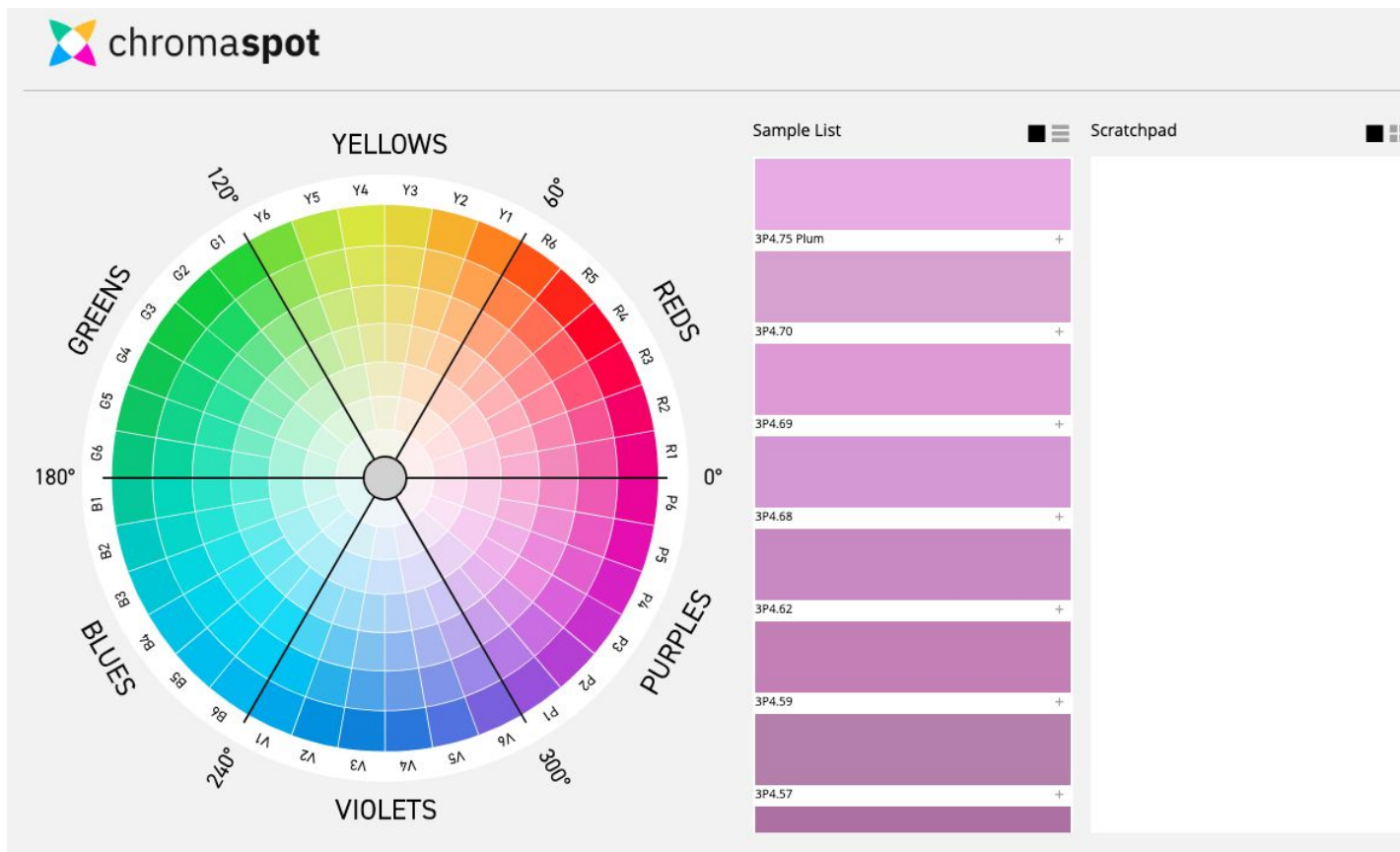
- ◇ Can instruct Operator what is broken and how to fix



# Open Color Library- Process Independent

## ChromaSpot

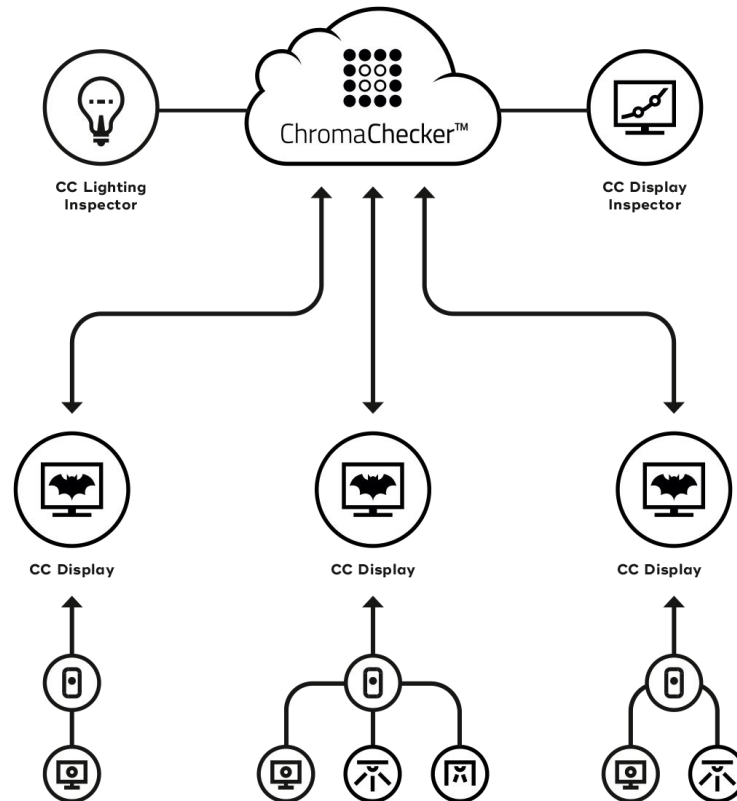
- ◇ Print accurate swatch books on Xerox printing devices
- ◇ Provide only printable colors for Xerox printers



# Display Inspector- Predict Color on Printer

## *Display Inspector*

- ◇ Centralized Configuration of the how you want Monitors to Display
- ◇ Auto calibrate and profile, and verify that display is accurate



# Sustainability for Consumables

## ***Traceable, and Procedures to Match color***

- ◇ Match substrates between printing technologies
- ◇ Traceable back to manufacturer for sustainability
- ◇ Know that color appearance matches, gloss, color, sheen, etc.
- ◇ Partnership with company certifying substrates for manufacturers

# Print Manufacturing Salable Number

## Road Map to Analytics Based Print Manufacturing

GRAPHIC ARTS

PRINT MANUFACTURING

SUBJECTIVE PERSONAL-BASED JUDGMENT

METRIC-BASED JUDGMENT SCIENTIFIC

VISUAL ASSESSMENT • COMPARATIVE COLOR MEASUREMENT • ADVANCED COLOR CONFORMANCE



### VISUAL

Personal perception-based comparison to physical standard

- no knowledge required
- expensive and time-consuming personal supervision
- dependent on the person
- lighting conditions related
- uncontrolled metamerism

**EF** = 9+

### BASIC INSTRUMENTAL

Instrument-based comparison to physical standard

- numerically expressed color differences
- expensive and time-consuming personal supervision
- uncontrolled metamerism
- initial swatch-book inaccuracy

**EF** = 6-8

### COLORIMETRIC AIM

Instrument-based comparison to colorimetric standard

- numerically expressed color differences
- stable color definition
- exchangeable color definition
- the possibility of remote control

**EF** = 4-5

### SPECTRAL AIM

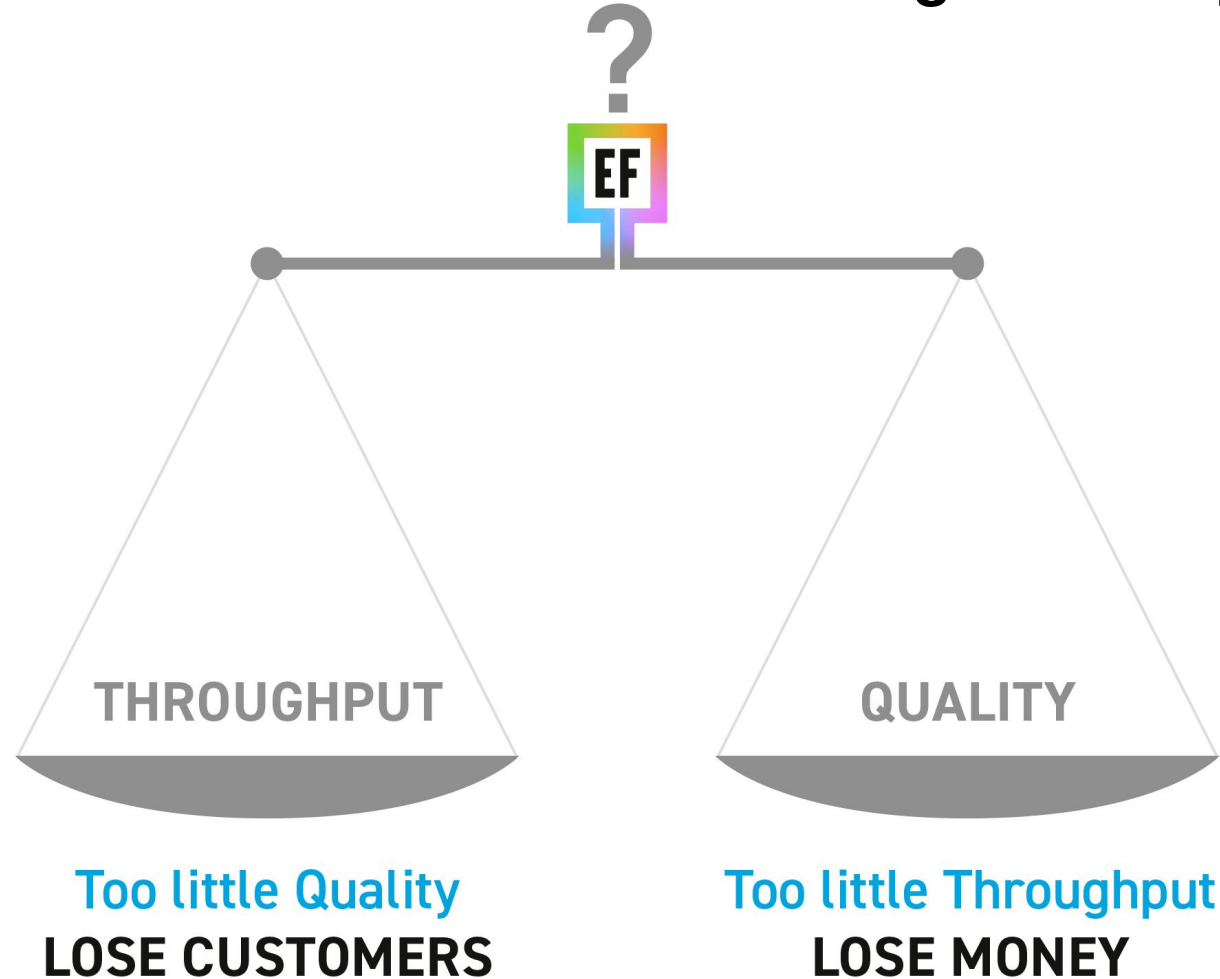
Instrument-based comparison to spectral standard

- numerically expressed color differences
- spot colors, SCTV, CxF/X-4 compliant
- exchangeable color definition
- lighting condition

**EF** = 2-3

# Establish Minimum Quality Requirements

**James Maxwell: It is a matter of balancing economy against quality**





ChromaChecker

Flexo

Digital

PrePress

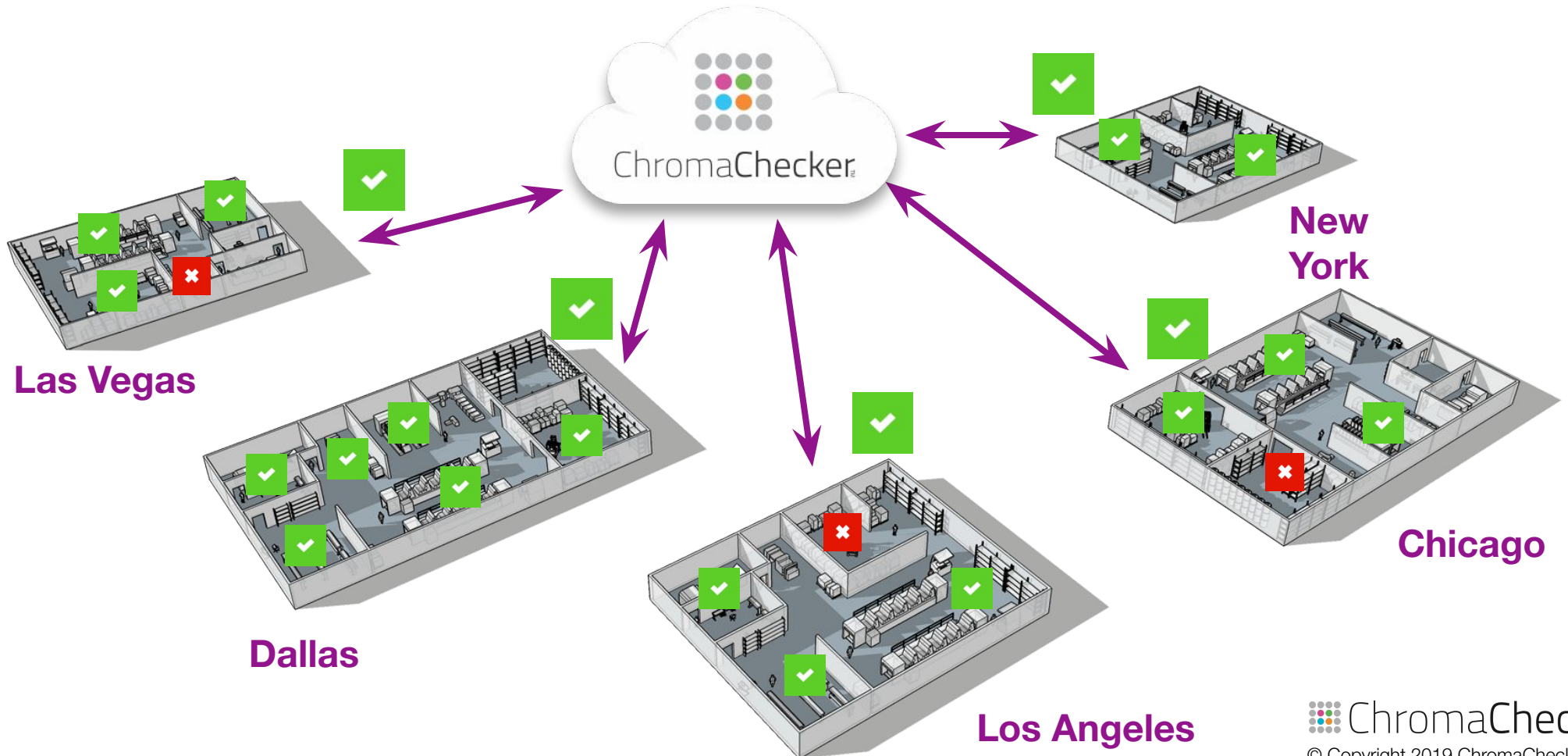
Press Room

Large Format



# ChromaChecker: Manage Your Manufacturing

*Any Plant – Anywhere in the World*



# ChromaChecker Manufacturing Framework

## Reports E-Factor for all Printing Devices

- ◇ Reports Performance- Holds Everyone Accountable
- ◇ **Green**- Salable, **Red**- Not Salable

EPSON PROOFER		Tools		Substrate		Reference Printing Condition		Details	
<input type="checkbox"/> Coated	1 files 3.0					GRACoL2006_Coated1v2	2.3		
SHOW HIDDEN SETUP ASSISTANT									

HP INDIGO		Tools		Substrate		Reference Printing Condition		Details	
<input type="checkbox"/> Coated	1 files 7.0					SCCA GRACoL2006_Coated1v2	2.0		
SHOW HIDDEN SETUP ASSISTANT									

KOMORI		Tools		Substrate		Reference Printing Condition		Details	
<input type="checkbox"/> Coated	5 files 6.0					SCCA GRACoL2013_CRPC6 V2	3.8		
<input type="checkbox"/> Uncoated	0 files 8.0			C15	0.9	SCCA GRACoL2013UNC_CRPC3 V2			
SHOW HIDDEN SETUP ASSISTANT									

# Weekly Report Cards for Managers/Operators

## Reporting Salability- Continuous Improvement

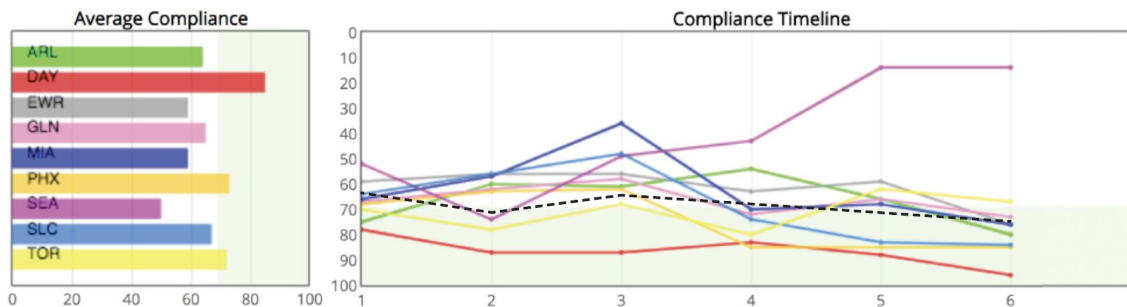
### ◇ Manager/Operator- KPI:

- *Dotted line shows average, only get data from their printers*
- *6 Week trend line- showing improvement (lower is better)*



Dear John Smith,

The table below is your weekly manufacturing report that you have requested to receive regularly.



2019, Week 1 - 6

Device	Type	Number of Measurements	E-Factor	Compliance	Salability	Productivity
ALL	ALL	15887	3.2	92%	85%	58%
ARL	Sheetfed offset	4558	3.8	88%	72%	54%
DAY	Proofer	48	2.2	98%	100%	59%
EWR	Sheetfed offset	551	3.8	78%	72%	54%
GLN	Sheetfed offset	55	8.7	88%	72%	54%

# Ever Pass G7 But Color Not Salable?

## ***Process Control is NOT Color Conformance***

- ◇ PC is Operational- keep device operating within accepted variation
- ◇ Color Conformance- Is it Salable? Meet Expectations?
- ◇ Quantify Level of Color Quality- No more Tribal Knowledge

Both Prints Pass G7  
Not Acceptable Match

 = 6.6



# Learn What Your Printers Accuracy is...

## ***ChromaChecker Capture, print target, measure:***

◆ **Green is salable, Red is not**

The screenshot displays the 'Print Inspector' software interface. At the top, there's a navigation bar with icons for Print, Scan, Print, Measure, and Home, along with a user profile 'user'. Below this, a control panel includes 'Mode' set to 'Scan', 'Patch width' set to '8', a timer at '11 min', and buttons for 'Recalibrate' and 'Substrate'. The main area contains input fields for 'Job Name', 'Customer', 'Sheet nr' (set to '3'), and 'Production'. Below these are 'Track' (set to '170g CG 750x530 Euroart\_Glossy') and 'Template' (set to 'MinG7 eXact 8 mm').

A color calibration strip is shown below the control panel. The main display area features a central target with a green center and a value of '2.2 [5]'. To the left, a green sidebar shows a checkmark, a timer at '00:33', and icons for info, G7, and print. The main display is divided into four sections:

- E-Factor:** Shows two color patches with values 2.2 and 2.1, both marked with green checkmarks.
- Solids · Optimal Density:** Shows four color patches (blue, magenta, yellow, black) with values 1.0, 2.2, 1.9, and 2.7. The magenta and yellow patches also show density deviations of -0.13D and -0.06D respectively.
- Overprints · G7®:** Shows four color patches (red, green, blue, black) with values 1.4, 2.5, 3.0, and 8.4. The red, green, and blue patches are marked with green checkmarks, while the black patch is marked with a red 'x'.
- TVI / Dot Gain:** Shows four dot patterns with varying colors and densities, all marked with green checkmarks.

At the bottom, a navigation bar includes buttons for 'Capture', 'Timeline', 'Inkzones', 'Summary', and a home icon.

# ChromaChecker Collecting Data

## Non-Proprietary/Agnostic. Works with Existing Software!

### ChromaChecker™ Ready Software\*

- ChromaChecker™ Capture
- HP ColorBeat
- ChromaChecker™ Uploader
- Barbieri Gateway
- Rutherford Closed Loop
- baslCColor Catch 5
- Print Measure
- Babelcolor Patch Tool
- Digital Information

### ChromaChecker™ Compatible Software\*

- Alwan Print Verifier (APV) / Alwan Print Standardizer (APS)
- Rutherford

### CC Uploader Compatible Software\*

- Heidelberg Image Control with Quality Monitor
- X-Rite IntelliTrax
- X-Rite EasyTrax
- X-Rite ColorCert
- X-Rite eXact Manager
- Digital Information Ink Zone Move
- Bodoni Press Sign
- QuadTech SpectralCam
- QuadTech ColorTrack
- AVT/GMI
- EFI Fiery XF
- Techkon Espresso
- KBA software with the export option
- GMG
- ORIS CGS
- Measure Color
- SpotOn
- PrintFlow

### Supported Instruments\*

#### Handheld Instruments

- X-Rite i1 Pro 1 & 2
- X-Rite eXact / eXact Scan
- X-Rite Spectro densitometer 530
- X-Rite SP6X
- GretagMacbeth Spectro lino
- Techkon Spectrodens
- Konica Minolta Myiro1, and 9
- Color Sentinel CSS-110
- Nix Spectro2
- Variable Spectro1
- Color Munki, Color Studio
- CC Sphere D8 Sphere

#### XY Instruments

- X-Rite i1iO 1 & 2
- X-Rite i1 iSis 1 & 2
- Konica Minolta FD-9
- Barbieri Spectro LFP

#### Press/ Printer Built-in Instruments

- X-Rite Intellitrax 1 & 2
- X-Rite EasyTrax
- Techkon SpectroJet
- Techkon SpectroDrive
- Heidelberg Image Control
- Heidelberg Axis Control
- Heidelberg Inpress Control 2
- Epson SpectraProofer
- QuadTechSpectralCam
- KBA Hardware/Software (2013+)
- Komori PDC-SX / S1 / S2
- HP Indigo 12000 Color Beat
- Xeikon Inline
- AVT/GMI

### Supported Measurement File Formats

Virtually any instrument that measures spectral or colorimetric data can be used with ChromaChecker™ Cloud if it can save measurements data in on of listed bellow file formats:

- CGATS (.txt/.it8)
- SVF (.svf)
- XML (ISO 28178) (.xml)
- CxF (Multiple versions)
- GMG

Colorimetric data provide limited analysis. Most ChromaChecker™ features require spectral data.

# Understand Production Manufacturing

## *What is Your “Normal” E-Factor for all Printers*

- ◇ Implement Lean Manufacturing- Eliminate Waste
- ◇ Implement Process Control procedures to improve if necessary
- ◇ Quantify Level of Color Quality- eliminate tribal knowledge
- ◇ Required to automate and transition to manufacturing mode
- ◇ One number for Operators, Sales, Managers, Customers!!!

◇ Benchmark today!!

◇ [chromachecker.com/free](http://chromachecker.com/free)



# PRINTING DEVICES

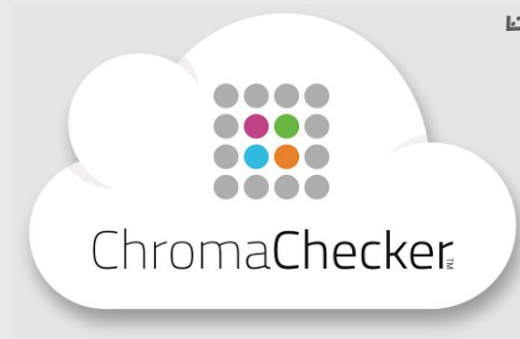
## Flexographic Press

SPOT, PROCESS, EXTENDED GAMUT, SPOT SIMULATION



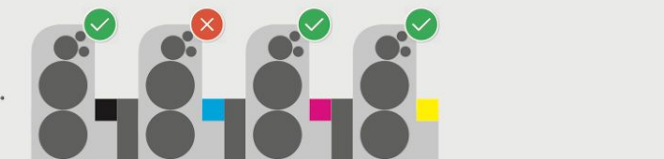
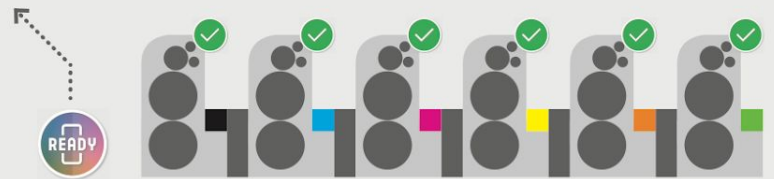
## Digital Press

SPOT SIMULATION, PROCESS, RGB, EXTENDED GAMUT



## Conventional Offset / Screen Press

SPOT, PROCESS, EXTENDED GAMUT



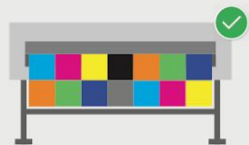
KOMORI, X-RITE INTELLITIRAX, TECHKON SPECTRODRIVE, HEIDELBERG QUALITY EXPORT, KBA WITH COLOR EXPORT, MEASURECOLOR ...

## PrePress



## Large / Grand Format

SPOT SIMULATION, PROCESS, RGB, EXTENDED GAMUT





# Summary

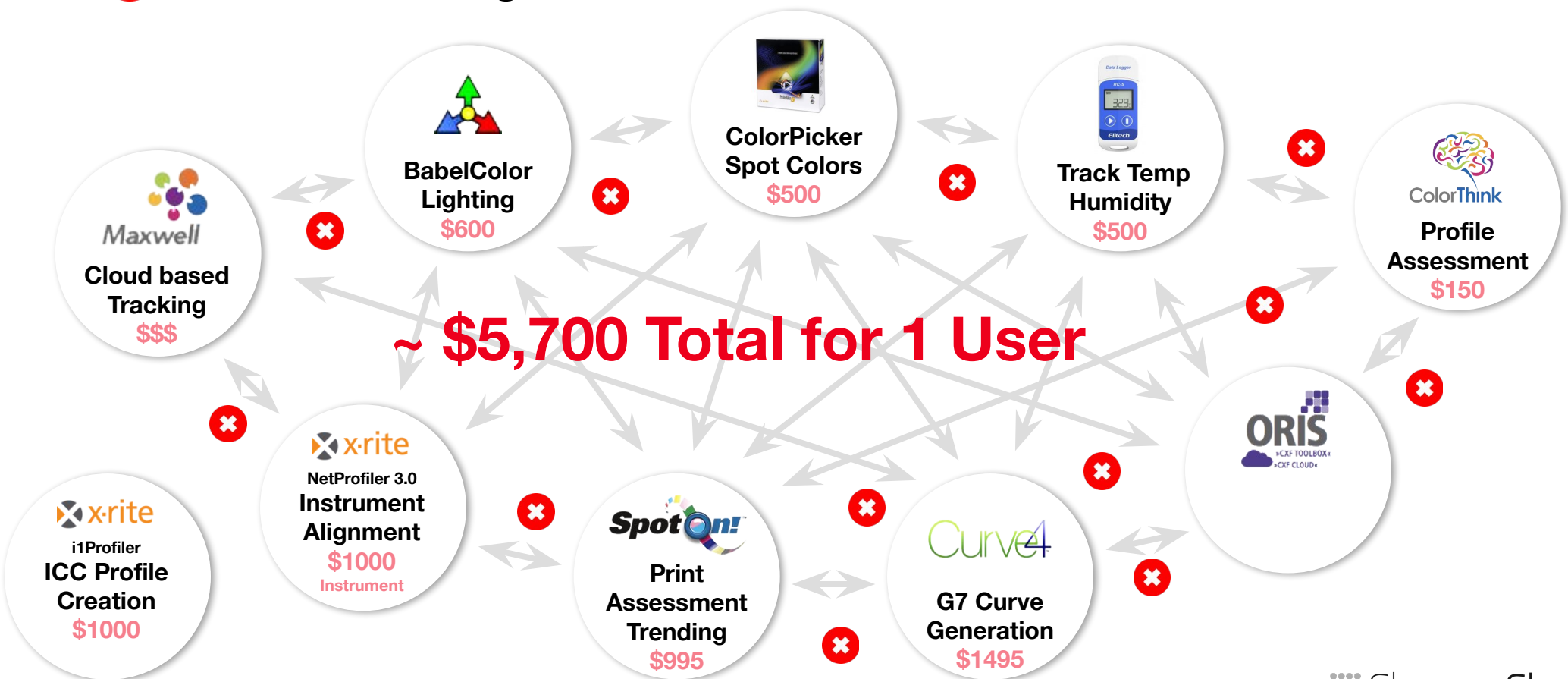
## ***ChromaChecker- Complete Print Quality Platform***

- ◇ Implement Lean Manufacturing- Eliminate Waste
- ◇ Implement Process Control procedures to improve if necessary
- ◇ Quantify Level of Color Quality- eliminate tribal knowledge
- ◇ Required to automate and transition to manufacturing mode
- ◇ One number for Operators, Sales, Managers, Customers!!!
- ◇ Proactive Maintenance quickly moving to Predictive with AI
- ◇ Minimize service calls, make operators more knowledgable, active

# ChromaChecker Color Conformance Platform

## Replace Individual Software Components

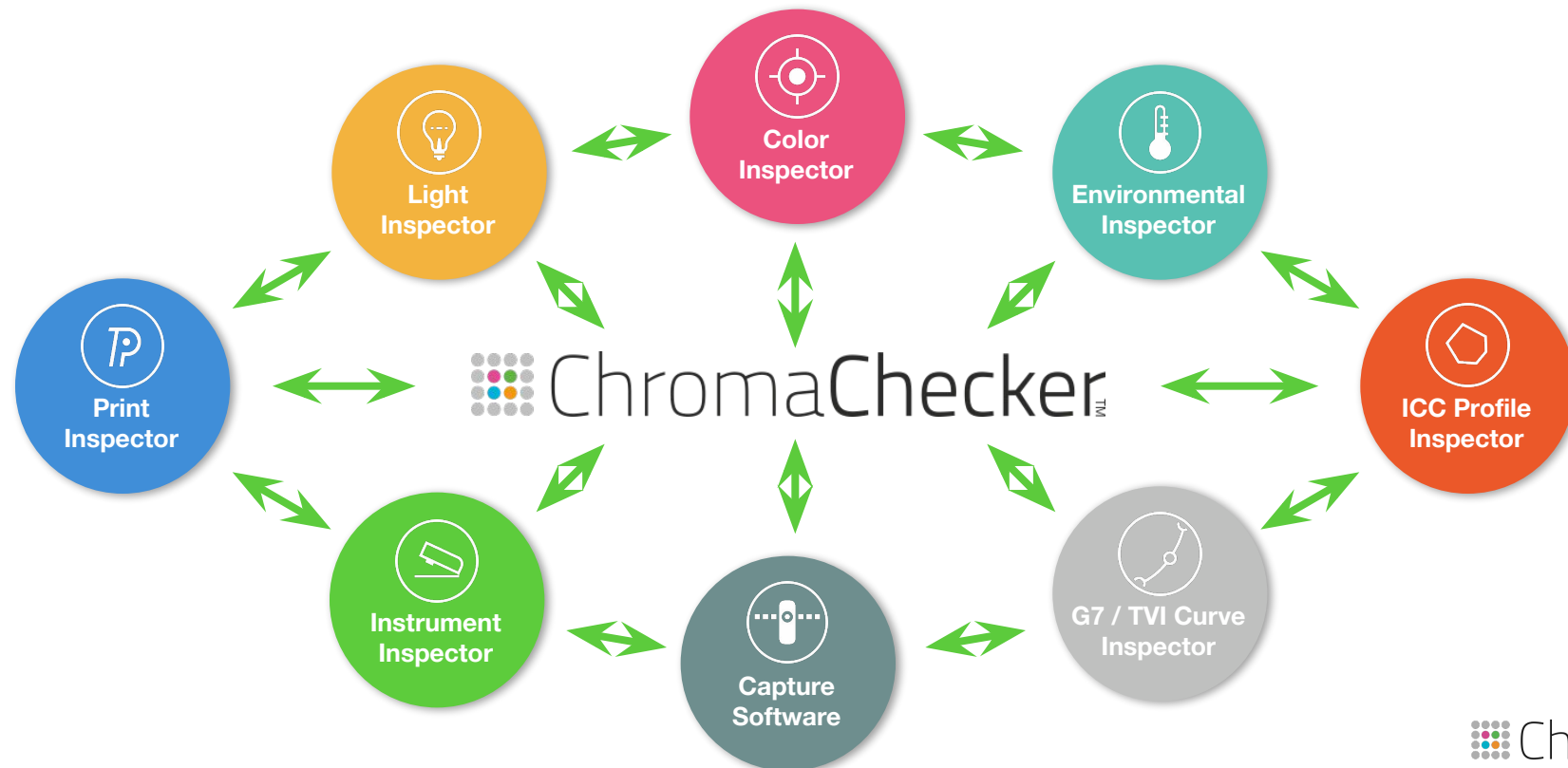
✘ That don't integrate with one another



# ChromaChecker Color Conformance Platform

## ***Print Ecosystem with ChromaChecker!***

- ✔ Manages complex relationships, between devices and environment, enabling all elements to function as a cohesive unit
- ✔ One Dashboard shows status of all conditions



EPSON PROOFER										
Track name			Tools	Substrate	EF	Reference Printing Condition	EF	Details		
<input type="checkbox"/> Coated	815 files	3.0		Epson Inline SUB	0.1	GRACoL2013_CRPC6	2.1			
<input type="checkbox"/> Uncoated	21 files	3.0		Epson Inline		GRACoL2013UNC_CRPC3	2.0			

SHOW HIDDEN SETUP ASSISTANT

HP INDIGO 09										
Track name			Tools	Substrate	EF	Reference Printing Condition	EF	Details		
<input type="checkbox"/> Coated	23 files	3.0				SCCA GRACoL2013_CRPC6	2.0			
<input type="checkbox"/> Uncoated	4 files	3.0				SCCA OK Average	2.5			
<input type="checkbox"/> Indigo Baseline	7 files	3.0				SCCA GlobalHPIndigoTarget_v2	1.7			

SHOW HIDDEN SETUP ASSISTANT

CANON_ARIZONA 360										
Track name			Tools	Substrate	EF	Reference Printing Condition	EF	Details		
<input type="checkbox"/> Coated	4 files	4.0			3.0	GRACoL2013_CRPC6	3.4			
<input type="checkbox"/> Canon_Arizona_Full Gamut	3 files	4.0				SCCA Arizona360_Styrene_V816_1.txt	0.5			

SHOW HIDDEN SETUP ASSISTANT

MANROLAND										
Track name			Tools	Substrate	EF	Reference Printing Condition	EF	Details		
<input type="checkbox"/> Coated	15 files	4.0		ABC Litho House	1.2	SCCA GRACoL2013_CRPC6	3.6			
<input type="checkbox"/> PP film	9 files	5.0				SCCA CGATS21_CRPC5	3.8			
<input type="checkbox"/> Metalized (printed white)	14 files	6.0				SCCA CGATS21_CRPC4	4.0			
<input type="checkbox"/> Uncoated Offset	33 files	6.0				SCCA GRACoL2013UNC_CRPC3	6.1			

SHOW HIDDEN SETUP ASSISTANT

EPSON PROOFER										
Track name			Tools	Substrate	EF	✓/✗	Reference Printing Condition	EF	✓/✗	Details
<input type="checkbox"/> Coated	815 files	3.0		Epson Inline SUB	0.1		GRACoL2013_CRPC6	2.1	✓	
<input type="checkbox"/> Uncoated	21 files	3.0		Epson Inline	0.3		GRACoL2013UNC_CRPC3	2.0	✓	

SHOW HIDDEN SETUP ASSISTANT

HP INDIGO 09										
Track name			Tools	Substrate	EF	✓/✗	Reference Printing Condition	EF	✓/✗	Details
<input type="checkbox"/> Coated	23 files	3.0		High-Gloss	0.5		SCCA GRACoL2013_CRPC6	2.0	✓	
<input type="checkbox"/> Uncoated	4 files	3.0		Cougar_Smooth_Text	0.3		SCCA OK Average	2.5	✓	
<input type="checkbox"/> Indigo Baseline	7 files	3.0		PVC	1.2		SCCA GlobalHPIndigoTarget_v2	1.7	✓	

SHOW HIDDEN SETUP ASSISTANT

CANON_ARIZONA 360										
Track name			Tools	Substrate	EF	✓/✗	Reference Printing Condition	EF	✓/✗	Details
<input type="checkbox"/> Coated	4 files	4.0		Textile Banner	1.7		GRACoL2013_CRPC6	3.4	✓	
<input type="checkbox"/> Canon_Arizona_Full Gamut	3 files	4.0		Water Resistant Matte Canvas 375	0.3		SCCA Arizona360_Styrene_V816_1.txt	0.5	✓	

SHOW HIDDEN SETUP ASSISTANT

MANROLAND										
Track name			Tools	Substrate	EF	✓/✗	Reference Printing Condition	EF	✓/✗	Details
<input type="checkbox"/> Coated	15 files	4.0		ABC Litho House	1.2		SCCA GRACoL2013_CRPC6	3.6	✓	
<input type="checkbox"/> PP film	9 files	5.0		Film Ultra-white Gloss	0.3		SCCA CGATS21_CRPC5	3.8	✓	
<input type="checkbox"/> Metalized (printed white)	14 files	6.0		MW-24	1.7		SCCA CGATS21_CRPC4	4.0	✓	
<input type="checkbox"/> Uncoated Offset	33 files	6.0		Williamsburg Offset	0.3		SCCA GRACoL2013UNC_CRPC3	6.1	✓	

SHOW HIDDEN SETUP ASSISTANT

EPSON PROOFER									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	815 files		Epson Inline SUB	0.1		GRACoL2013_CRPC6	2.1		
<input type="checkbox"/> Uncoated	21 files		Epson Inline	0.3		GRACoL2013UNC_CRPC3	2.0		

SHOW HIDDEN SETUP ASSISTANT

HP INDIGO 09									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	23 files		High-Gloss	0.5		SCCA GRACoL2013_CRPC6	2.0		
<input type="checkbox"/> Uncoated	4 files		Cougar_Smooth_Text	0.3		SCCA OK Average	2.5		
<input type="checkbox"/> Indigo Baseline	7 files		PVC	1.2		SCCA GlobalHPIndigoTarget_v2	1.7		

SHOW HIDDEN SETUP ASSISTANT

CANON_ARIZONA 360									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	4 files		Textile Banner	1.7		GRACoL2013_CRPC6	3.4		
<input type="checkbox"/> Canon_Arizona_Full Gamut	3 files		Water Resistant Matte Canvas 375	0.3		SCCA Arizona360_Styrene_V816_1.txt	0.5		

SHOW HIDDEN SETUP ASSISTANT

MANROLAND									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	15 files		ABC Litho House	1.2		SCCA GRACoL2013_CRPC6	9.3		
<input type="checkbox"/> PP film	9 files		Film Ultra-white Gloss	0.3		SCCA CGATS21_CRPC5	3.8		
<input type="checkbox"/> Metalized (printed white)	14 files		MW-24	1.7		SCCA CGATS21_CRPC4	4.0		
<input type="checkbox"/> Uncoated Offset	33 files		Williamsburg Offset	0.3		SCCA GRACoL2013UNC_CRPC3	6.1		

SHOW HIDDEN SETUP ASSISTANT

EPSON PROOFER									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	815 files  3.0		Epson Inline SUB	0.1		GRACoL2013_CRPC6	2.1		
<input type="checkbox"/> Uncoated	21 files  3.0		Epson Inline	0.3		GRACoL2013UNC_CRPC3	2.0		

SHOW HIDDEN SETUP ASSISTANT

HP INDIGO 09									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	23 files  3.0		High-Gloss	0.5		SCCA GRACoL2013_CRPC6	2.0		
<input type="checkbox"/> Uncoated	4 files  3.0		Cougar_Smooth_Text	0.3		SCCA OK Average	2.5		
<input type="checkbox"/> Indigo Baseline	7 files  3.0		PVC	1.2		SCCA GlobalHPIndigoTarget_v2	1.7		

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CANON_ARIZONA 360									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	4 files  4.0		Textile Banner	1.7		GRACoL2013_CRPC6	3.4		
<input type="checkbox"/> Canon_Arizona_Full Gamut	3 files  4.0		Water Resistant Matte Canvas 375	0.3		SCCA Arizona360_Styrene_V816_1.txt	0.5		

SHOW HIDDEN SETUP ASSISTANT

MANROLAND										
Track name		Tools	Substrate			Reference Printing Condition			Details	
<input type="checkbox"/> Coated	15 files  4.0		ABC Litho House	4.3		SCCA GRACoL2013_CRPC6	9.3			
<input type="checkbox"/> PP film	9 files  5.0		Film Ultra-white Gloss	0.3		SCCA CGATS21_CRPC5	3.8			
<input type="checkbox"/> Metalized (printed white)	14 files  6.0		MW-24	1.7		SCCA CGATS21_CRPC4	4.0			
<input type="checkbox"/> Uncoated Offset	33 files  6.0		Williamsburg Offset	0.3		SCCA GRACoL2013UNC_CRPC3	6.1			

SHOW HIDDEN SETUP ASSISTANT

EPSON PROOFER									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	815 files	3.0	Epson Inline SUB	0.1		GRACoL2013_CRPC6	2.1		
<input type="checkbox"/> Uncoated	21 files	3.0	Epson Inline	0.3		GRACoL2013UNC_CRPC3	2.0		

SHOW HIDDEN SETUP ASSISTANT

HP INDIGO 09									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	23 files	3.0	High-Gloss	0.5		SCCA GRACoL2013_CRPC6	2.0		
<input type="checkbox"/> Uncoated	4 files	3.0	Cougar_Smooth_Text	0.3		SCCA OK Average	2.5		
<input type="checkbox"/> Indigo Baseline	7 files	3.0	PVC	1.2		SCCA GlobalHPIndigoTarget_v2	1.7		

SHOW HIDDEN SETUP ASSISTANT

CANON_ARIZONA 360									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	4 files	4.0	Textile Banner	1.7		GRACoL2013_CRPC6	3.4		
<input type="checkbox"/> Canon_Arizona_Full Gamut	3 files	4.0	Water Resistant Matte Canvas 375	0.3		SCCA Arizona360_Styrene_V816_1.txt	0.5		

SHOW HIDDEN SETUP ASSISTANT

MANROLAND										
Track name		Tools	Substrate			Reference Printing Condition			Details	
<input type="checkbox"/> Coated	15 files	4.0	ABC Litho House	1.2		SCCA GRACoL2013_CRPC6	3.6			
<input type="checkbox"/> PP film	9 files	5.0	Film Ultra-white Gloss	0.3		SCCA CGATS21_CRPC5	3.8			
<input type="checkbox"/> Metalized (printed white)	14 files	6.0	MW-24	1.7		SCCA CGATS21_CRPC4	4.0			
<input type="checkbox"/> Uncoated Offset	33 files	6.0	Williamsburg Offset	0.3		SCCA GRACoL2013UNC_CRPC3	6.1			

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EPSON PROOFER									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	815 files  3.0		Epson Inline SUB	0.1		GRACoL2013_CRPC6	2.1		
<input type="checkbox"/> Uncoated	21 files  3.0		Epson Inline	0.3		GRACoL2013UNC_CRPC3	2.0		

SHOW HIDDEN SETUP ASSISTANT

HP INDIGO 09									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	23 files  3.0		High-Gloss	0.5		SCCA GRACoL2013_CRPC6	2.0		
<input type="checkbox"/> Uncoated	4 files  3.0		Cougar_Smooth_Text	0.3		SCCA OK Average	2.5		
<input type="checkbox"/> Indigo Baseline	7 files  3.0		PVC	1.2		SCCA GlobalHPIndigoTarget_v2	1.7		

SHOW HIDDEN SETUP ASSISTANT

CANON_ARIZONA 360									
Track name		Tools	Substrate			Reference Printing Condition			Details
<input type="checkbox"/> Coated	4 files  4.0		Textile Banner	1.7		GRACoL2013_CRPC6	3.4		
<input type="checkbox"/> Canon_Arizona_Full Gamut	3 files  4.0		Water Resistant Matte Canvas 375	0.3		SCCA Arizona360_Styrene_V816_1.txt	0.5		

SHOW HIDDEN SETUP ASSISTANT

MANROLAND										
Track name		Tools	Substrate			Reference Printing Condition			Details	
<input type="checkbox"/> Coated	15 files   4.0		ABC Litho House	1.2		SCCA GRACoL2013_CRPC6	3.6			
<input type="checkbox"/> PP film	9 files   5.0		Film Ultra-white Gloss	0.3		SCCA CGATS21_CRPC5	3.8			
<input type="checkbox"/> Metalized (printed white)	14 files   6.0		MW-24	1.7		SCCA CGATS21_CRPC4	4.0			
<input type="checkbox"/> Uncoated Offset	33 files   6.0		Williamsburg Offset	0.3		SCCA GRACoL2013UNC_CRPC3	6.1			

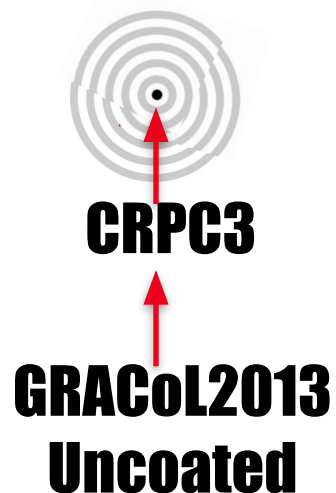
SHOW HIDDEN SETUP ASSISTANT

# Defining Your Printing Reference

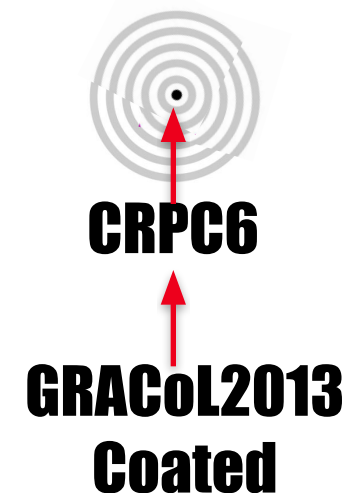
## *What Target are you aiming for?*

- What substrate are you printing on...

### Uncoated References



### Coated References



← **Smaller** — **Gamut Size** — **Larger** →

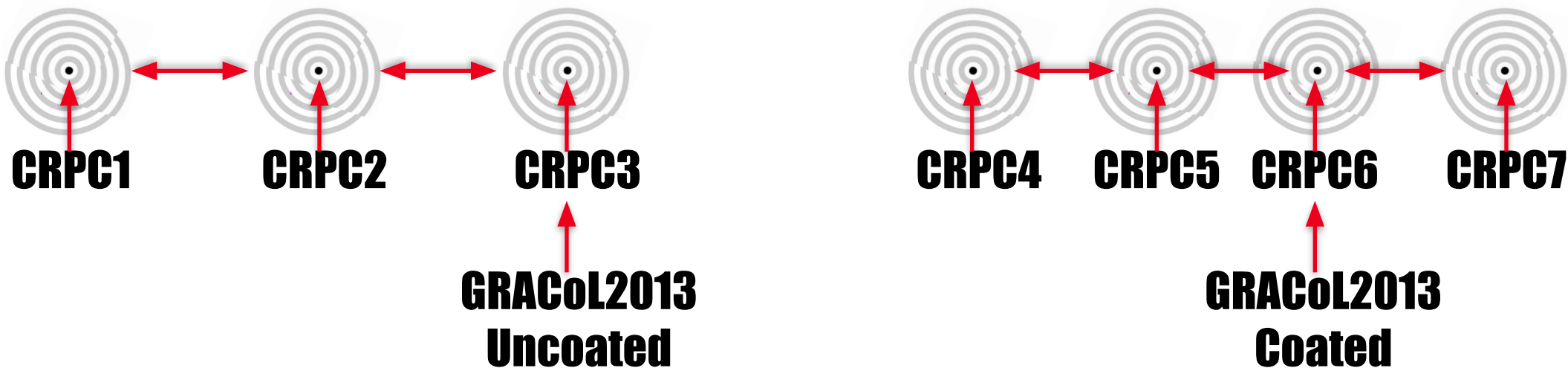
# Defining Your Printing Reference

## *What Target are you aiming for? ISO 15339*

- What substrate are you printing on...

### Uncoated References

### Coated References



Smaller — Gamut Size — Larger

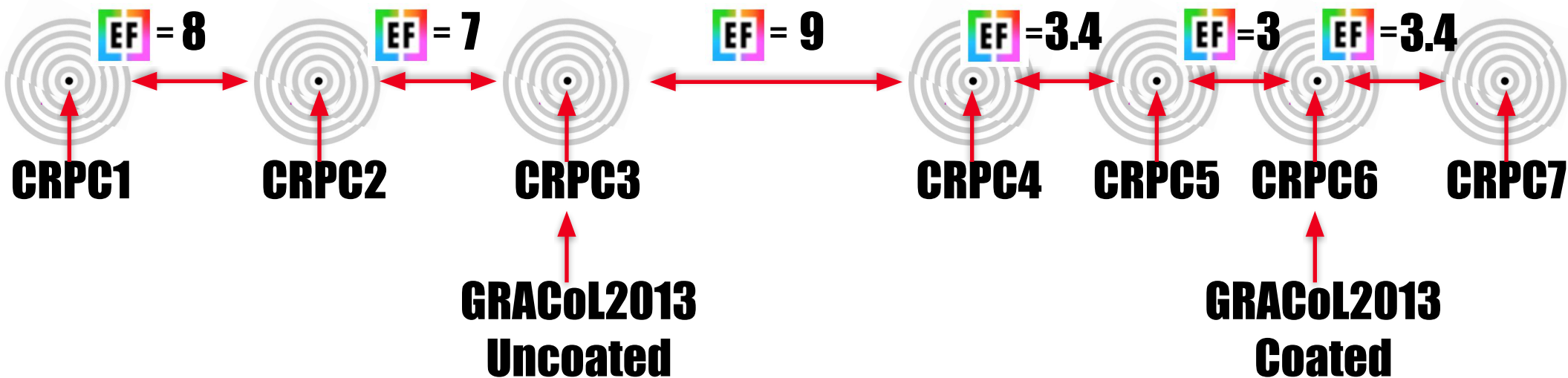
# Defining Your Printing Reference

## *What Target are you aiming for?*

- What substrate are you printing on...

### Uncoated References

### Coated References



Smaller — Gamut Size — Larger

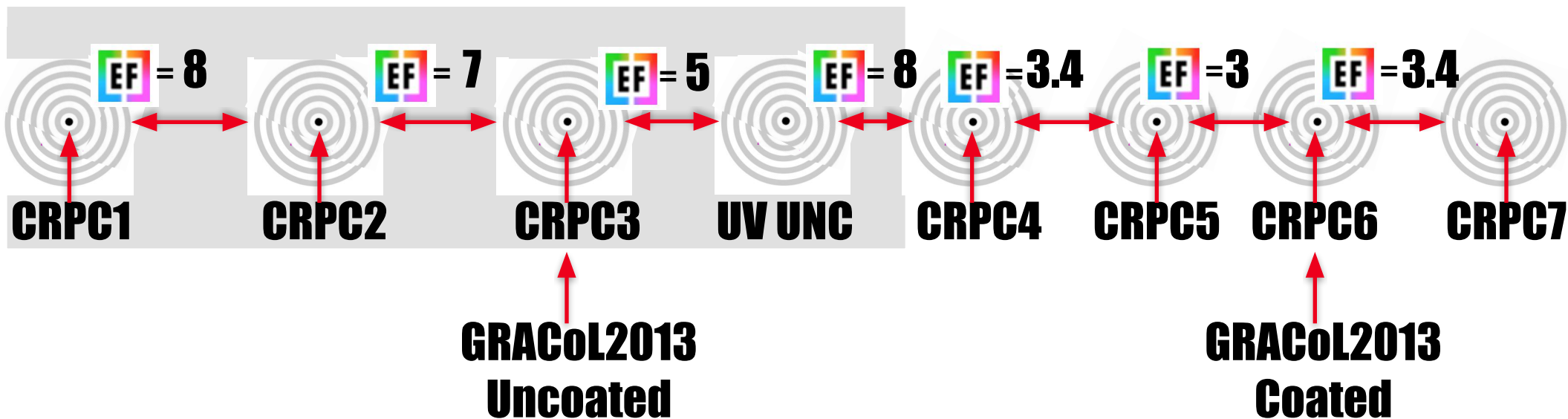
# Defining Your Printing Reference

## *What Target are you aiming for?*

- What substrate are you printing on...

### Uncoated References

### Coated References



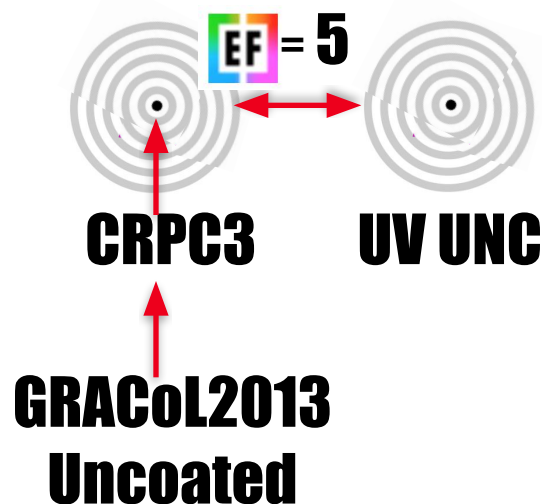
← Smaller — Gamut Size — Larger →

# Defining Your Printing Reference

## *What Target are you aiming for?*

- What substrate are you printing on...

### Uncoated References

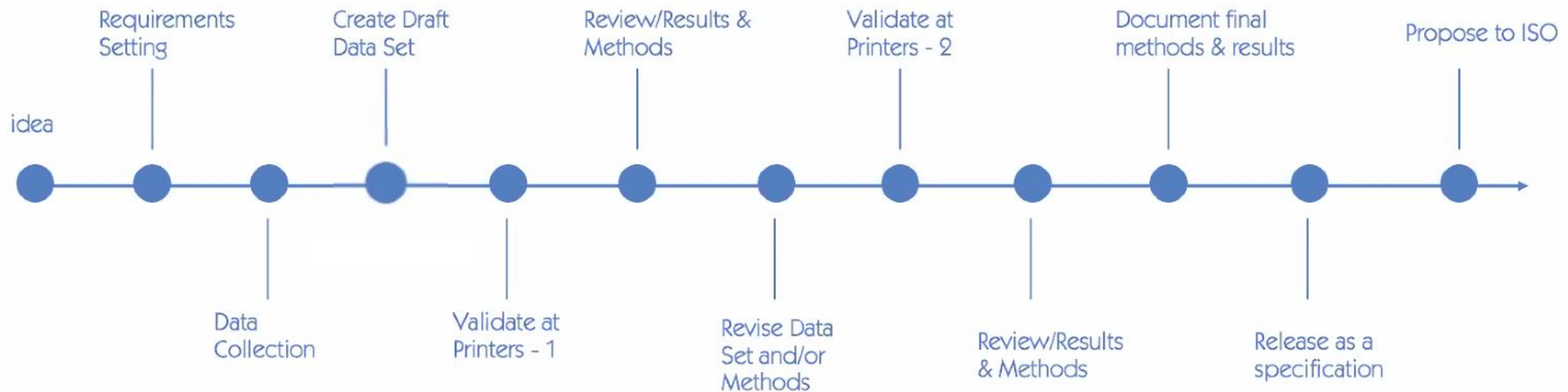


**41%+ Larger Gamut**  
per ISO Gamut Calc

Smaller — Gamut Size — Larger

# Where are We in the process

## *Multiple of Actual Press Runs*



# Contact Us

## ***Larry Jones***

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- 610-972-9446 - direct line

## ***Technical Support***

- [support@chromachecker.com](mailto:support@chromachecker.com)