

Display Category

NEW TECHNOLOGY: 4th Generation D.I.S.T.

JVC

D.I.S.T. Roadmap: Strategy for Best Picture Quality

2001

2002

2003

2004

2005

2006

2007~

1st Gen. D.I.S.T.
Improve resolution
1250i platform
I-P conversion, scaler

2nd Gen. D.I.S.T.
Colour Management
Dither control
Improve colour & contrast

3rd Gen. D.I.S.T.
Slim flat-screen
Picture quality improvement

4th Gen. D.I.S.T.
Dynamic picture
management

5th Gen. D.I.S.T.
Integrated D.I.S.T. system
1-chip backend system

Resolution

Colour
Contrast

Resolution
Colour
Contrast

Dynamic
Control

Evolution of D.I.S.T. and Related Technologies

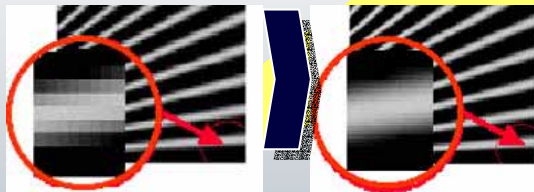
Improvements for:

Phase 1: CRT 2002

Higher Definition

- I-P Converter
- Formatter
- Super DigiPure

Phase 1: Precise pixel conversion



2002

Phase 2: PDP 2003

Colour & Contrast

- Colour Management
- Gamma Curve Control
- Dynamic Black Level Control

Phase 2: Colour Management



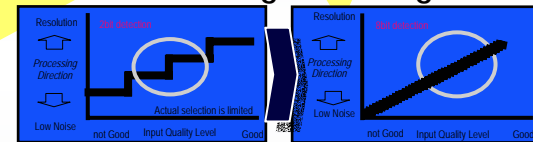
2003

Phase 3: CRT 2003, PDP 2004

Motion / Smear / Signal Reception

- Smart Frame Rate Conversion (New I-P Converter and Formatter)
- Colour DigiPure
- Best Signal Tuning

Phase 3: Best Signal Tuning

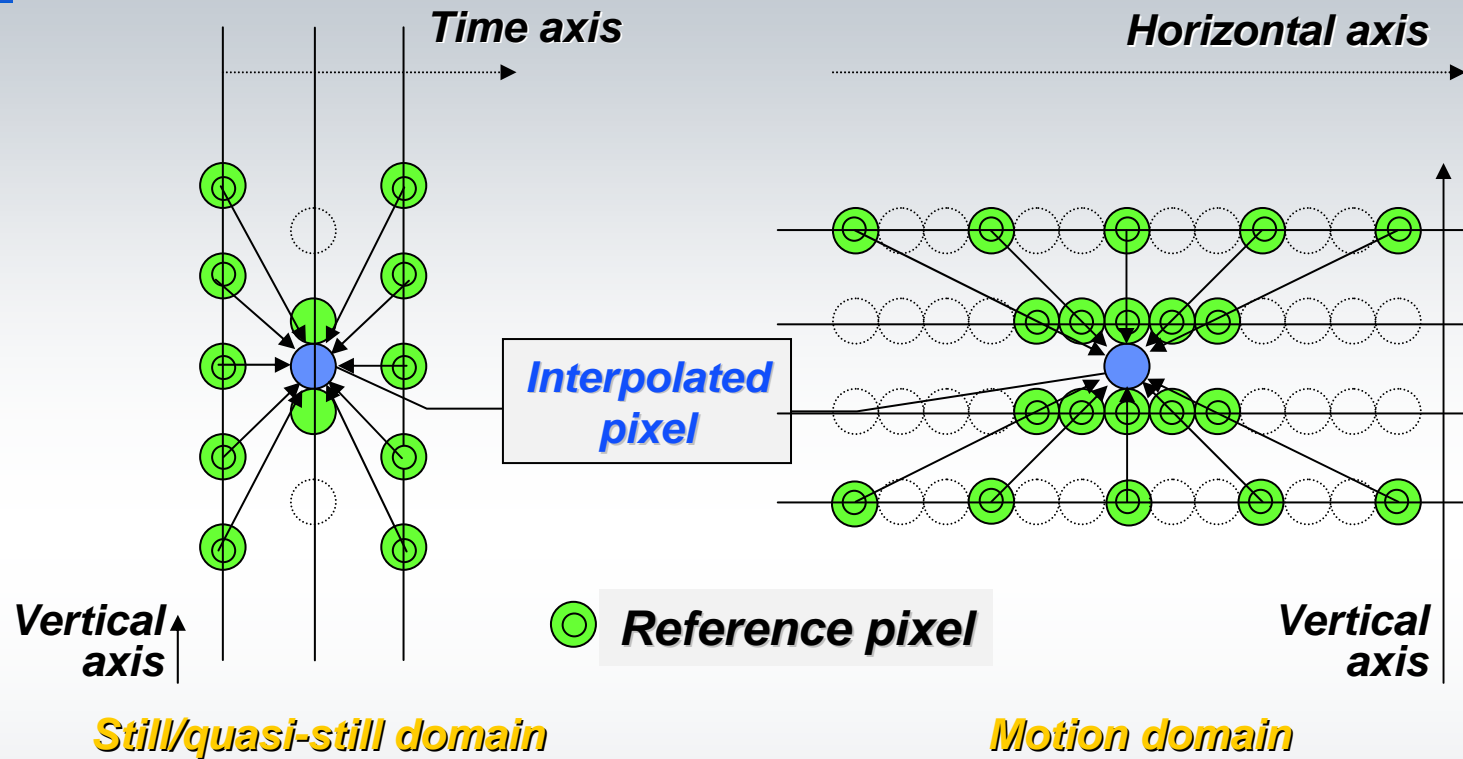


Phase 3: Colour DigiPure



2004

I-P conversion conceptual diagram: Natural Progressive 3D Interpolation



Time domain

Recreates natural picture for subtle movement

Within the field

Detects and interpolates diagonal movements for a natural picture with reduced jaggies

Super DigiPure Technology Enhancer

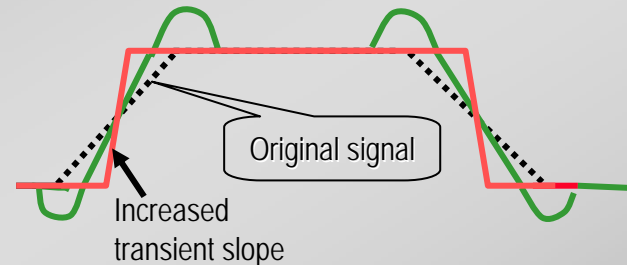
1 2 3

- *In-band shoot process*
- *Supplementary shoot-less process*
- *New algorithm*

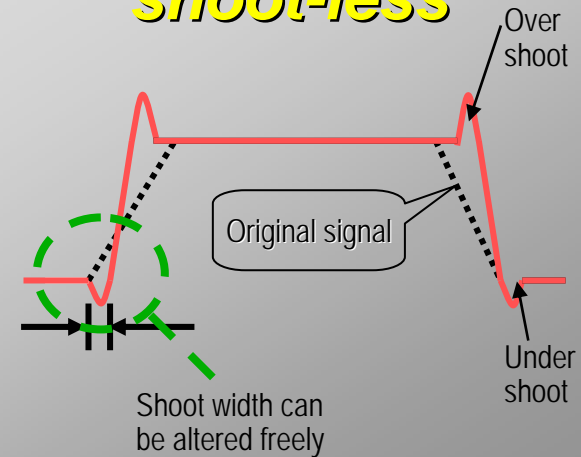
- ✓ *Natural, well-modulated picture*
- ✓ *Vivid and sharp contours*
- ✓ *Solid presence*
- ✓ *Corrects in diagonal direction separately*

Enhancer LSI
"Super DigiPure"

In-band shoot



Supplementary shoot-less



2nd Gen. D.I.S.T.: Colour Management

Conventional



Pin-point
colour control

Vivid colour
reproduction

Colour Management



Colour Management provides more vivid colour reproduction of specific colours without affecting other colour tones

3rd Gen. D.I.S.T: Colour DigiPure for CRTs

*Contour Control
(Conventional)*



Colour DigiPure



Colours become
smear-less

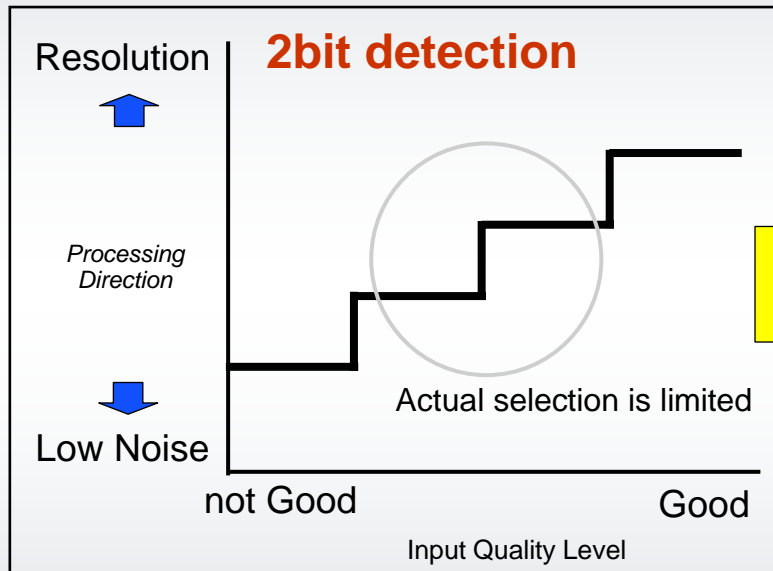
Recreates texture
for deep colours



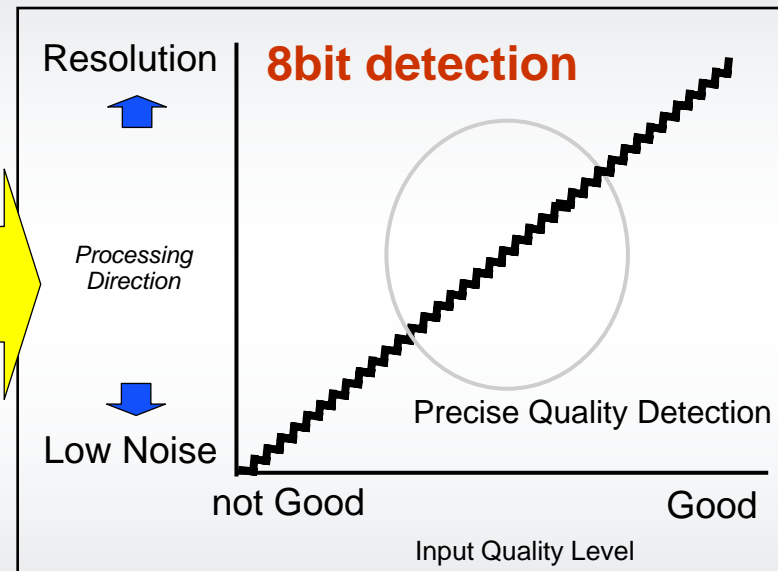
***Colour DigiPure realizes clear picture without colour smear,
and is effective for picture with deep colours.***

3rd Gen. D.I.S.T.: Best Signal Tuning for CRTs

1st D.I.S.T.



3rd D.I.S.T.



**Best signal processing with improved S/N detection
(4 steps to 256 steps) for better enhancement**

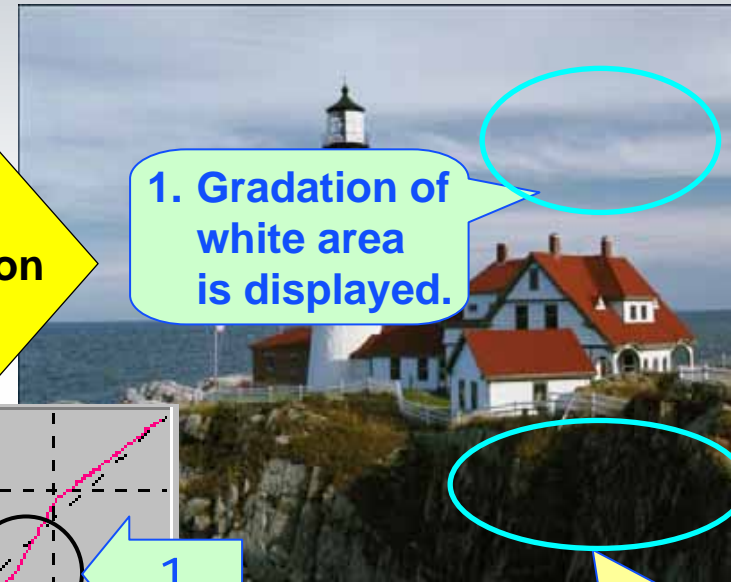
4th Gen. D.I.S.T.: Dynamic Gamma Control

Before



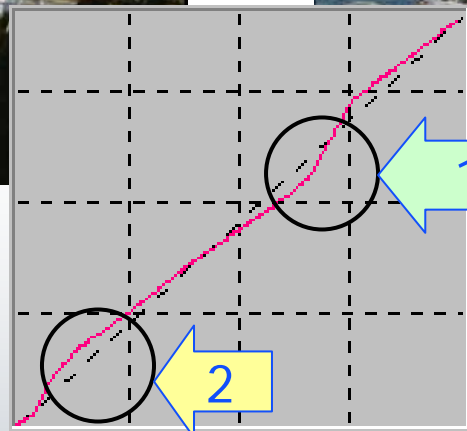
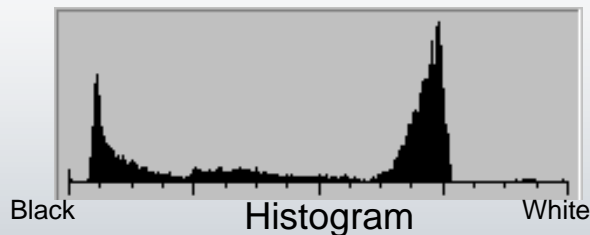
Correction

After



1. Gradation of white area is displayed.

2. Gradation of dark area is displayed.



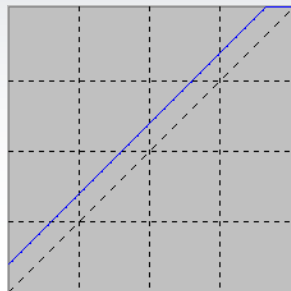
Dynamic Gamma Control fully rings out the digital display device's capability by automatically correcting the gamma curve from numerous information in the histogram

Technology: Dynamic Gamma Correction

Original picture:
Too dark, unable to see
the coffee beans

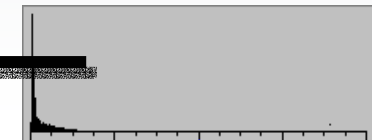
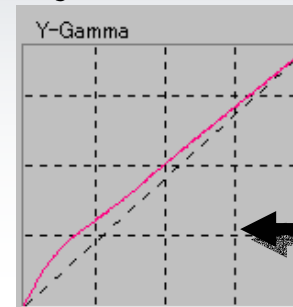
Existing brightness control

Looks at the picture and corrects the brightness



Dynamic Gamma Correction

Decides the correct gamma from histogram info



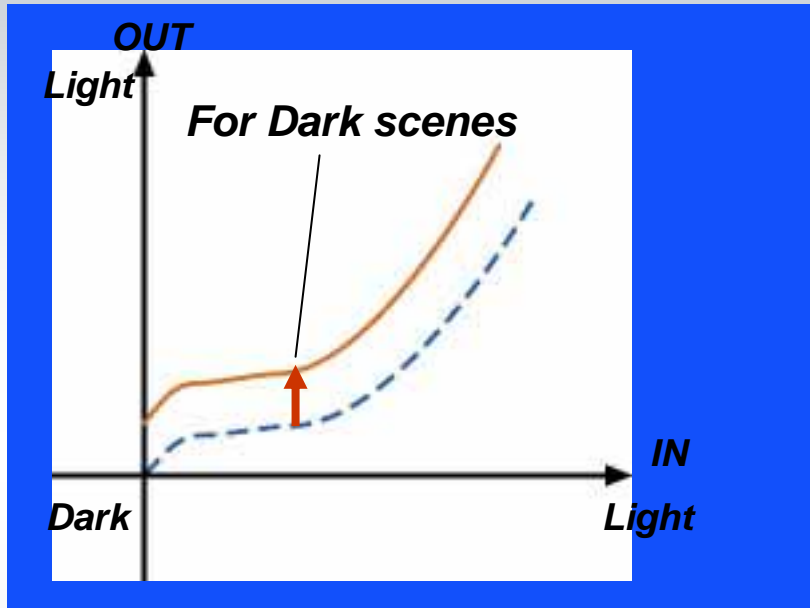
Beans become visible
but overall colours also fade



Beans are visible
with rich colours



4th D.I.S.T: Dynamic Black Level Control



Acts like the human eye to compensate for PDP/LCDs level of black by adjusting the amount of ambient light

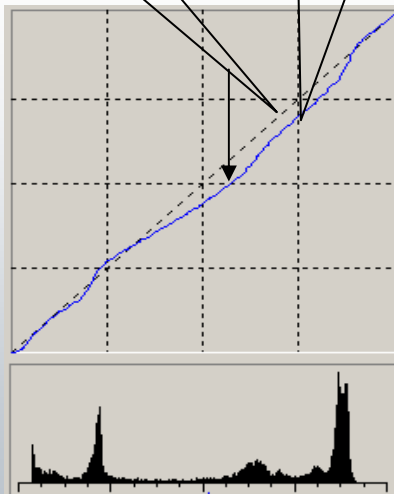
Technology: Improved Colour Management

When the background is bright, skin tones become dull

Improved Colour Management corrects only the dulled skin tones



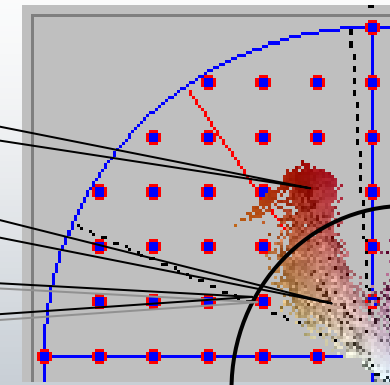
White
Skin tone



Red wardrobe portion

Skin tone portion

Newly added feature that detects direction of colour dispersion



- Suppresses dynamic gamma with high APL
- New detection point dedicated for skin tones

Technology: Summary and Comparison

- Reproduce vivid picture with full of contrast by calculating luminance distribution of the picture signal to correct its gamma curve.

	Feature name	Gradient process		Colour processor name	Advantages
		Technology name	DP*		
JVC	D.I.S.T.	<ul style="list-style-type: none"> ■ DynamicGamma (tentative name) 	A+	5C Colour Management	Detects luminance histogram by frame and automatically corrects gamma by each 16 regions of luminance
PIONEER SHARP	P.U.R.E. Drive ----	<ul style="list-style-type: none"> ■ Dynamic Range Expander ■ Active Contrast Control 	A	6C Color Management	3-step adjustment by expanding video signal to areas not used in the histogram
HITACHI	DIPP	<ul style="list-style-type: none"> ■ Dynamic Contrast 3000 	A	3C Digital Colour Management	Detects amplitude level per frame and adjusts contrast ratio per frame
PANASONIC	Plasma Reality	<ul style="list-style-type: none"> ■ Plasma AI ■ Real Black Drive Method ■ Real Gamma 	B	Not available	White balance by adjusting peak luminance. Drastic reduction of black level emission caused by precharge. 1024 gradient processing.
SONY	WEGA ENGINE	<ul style="list-style-type: none"> ■ Auto Pedestal ■ Dynamic Contrast 	B	Not available	Detects the bottom level of signal and adjusts the width of black level. Simultaneously, APL is detected to optimize DC transmission rate.

* Dynamic processing: A+=Excellent, A=Good, B=Satisfactory