Panasonic

ideas for life

"Display Workshop"
Stuttgart 4th July 2009

Picture Quality Activities
Arne Wild

Panasonic Europe Ltd.
Panasonic AVC Langen Development Centre (PLDC)

Panasonic
ideas for life

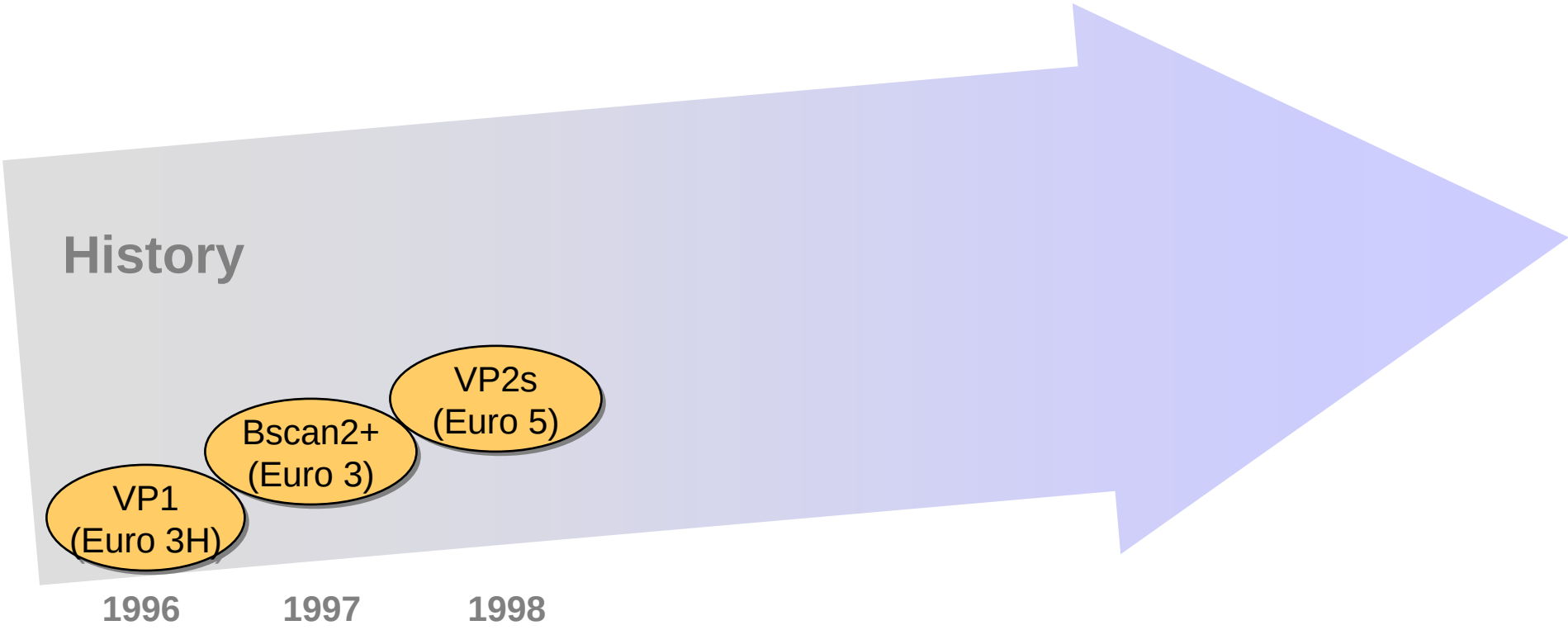
Table of Content

Vita „Arne Wild“

- 1991-1996 Studium der Elektrotechnik an der FH Wiesbaden Fachrichtung Fernsehtechnik
- 1991-1996 Tontechniker im Bereich Hörfunk beim SWR in Mainz
- 1997-2009 Entwicklungs-Ingenieur bei Panasonic in Langen (Hessen)
  - Entwicklungs-Ingenieur im Bereich HW & SW (VP1 – VP2)
  - Abteilung & Projektleitung (EFC, EFCII, HQ1 + FRC)
  - Manager SW Qualifizierung für Continental PDP & LCD (TV’s mit DVB-T, DVB-C, DVB-S/S2 Tuner)

Panasonic Entwicklungsstandort
in Langen (Hessen)
existiert seit 1. September 1991

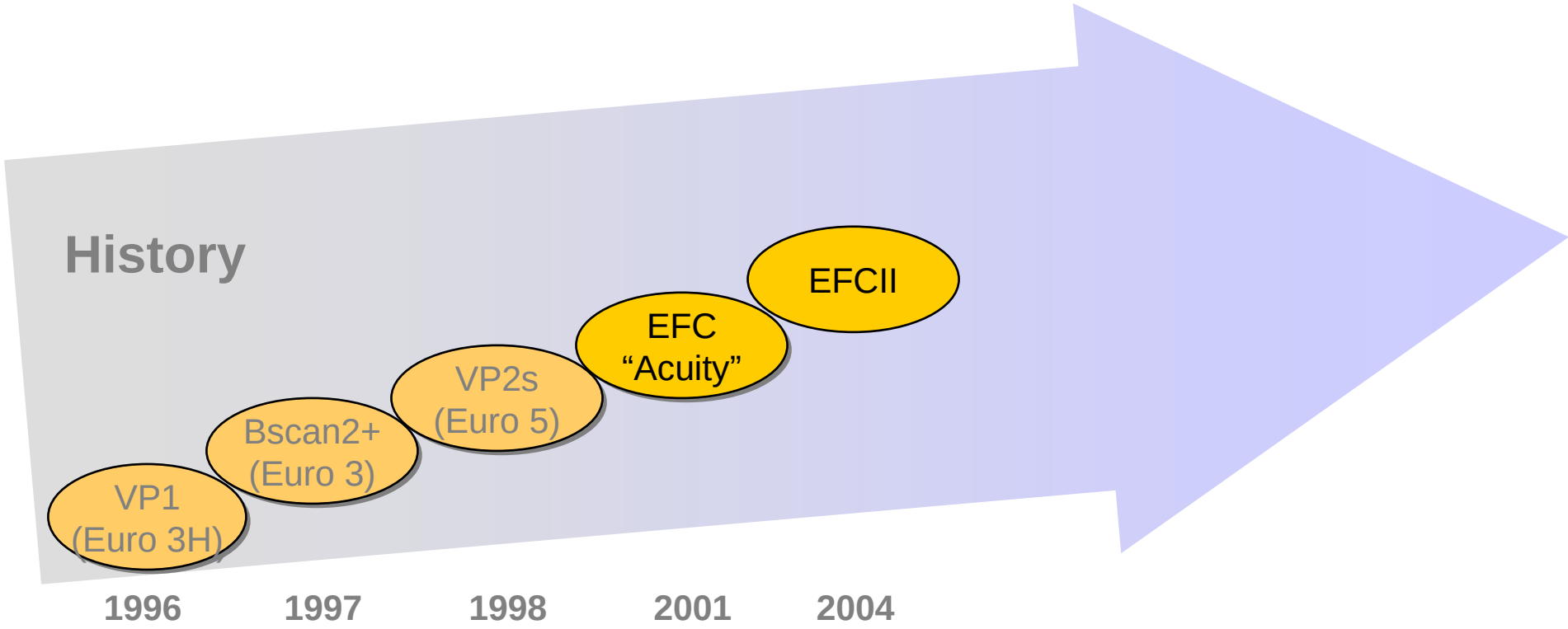
Algorithm / LSI development



Algorithm / LSI & Memory - Development:

Motion Adaptive Field / Frame-based Conversion
temporal Noise Filter

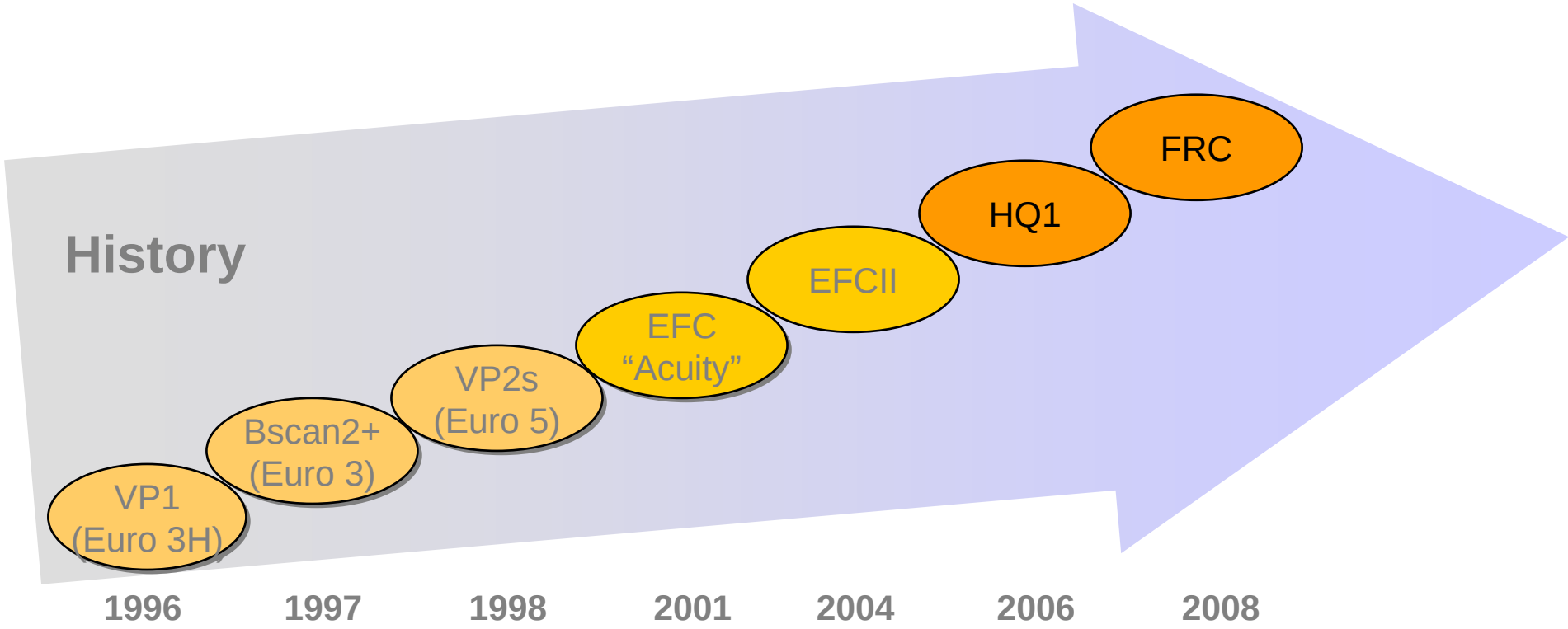
Algorithm / LSI development



Algorithm & LSI - Development:

Motion compensated frame rate conversion.
Interlaced & progressive output / Film Mode Detection

Algorithm development

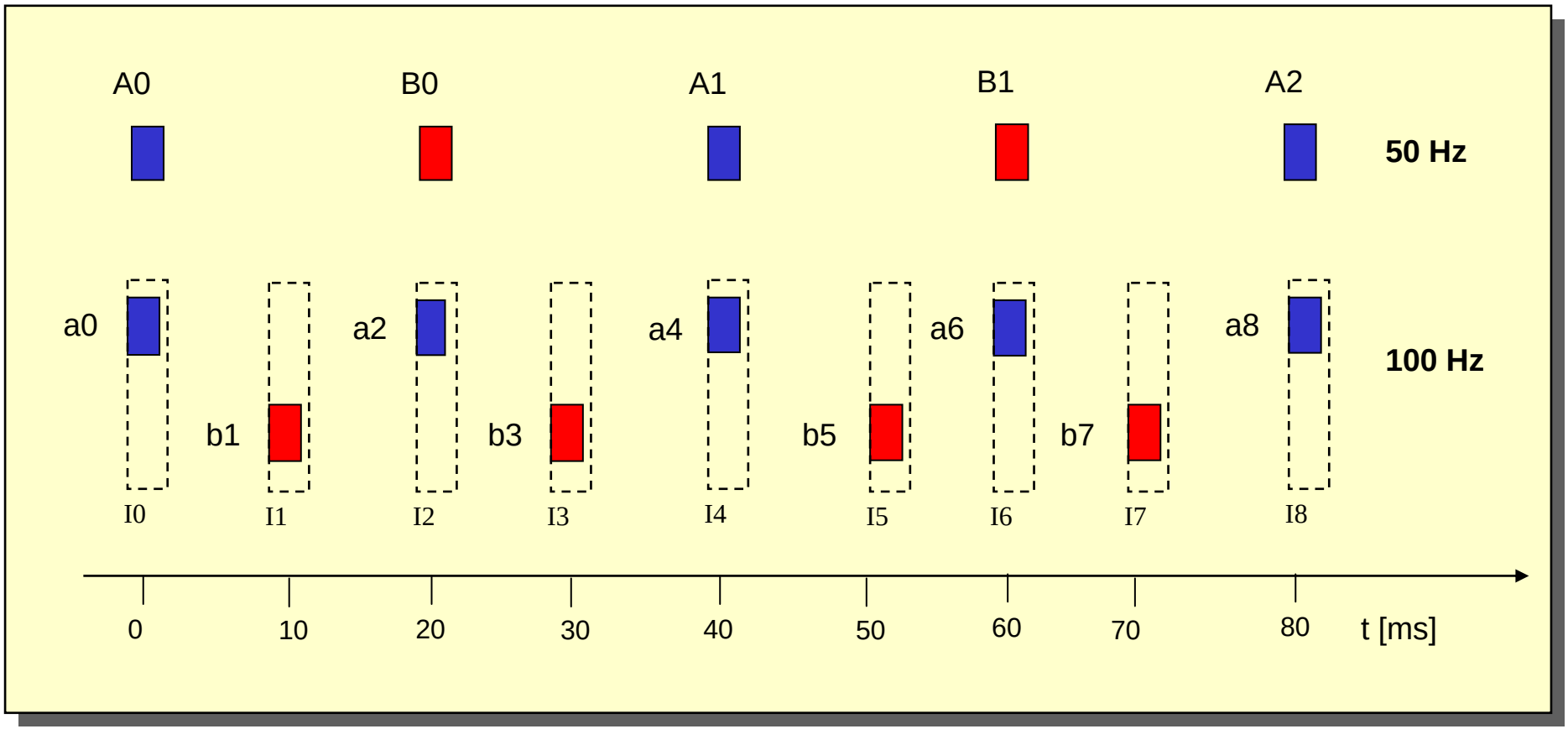


Algorithm - Development:

Motion compensated frame rate conversion.
Interlaced & progressive output / Film Mode Detection

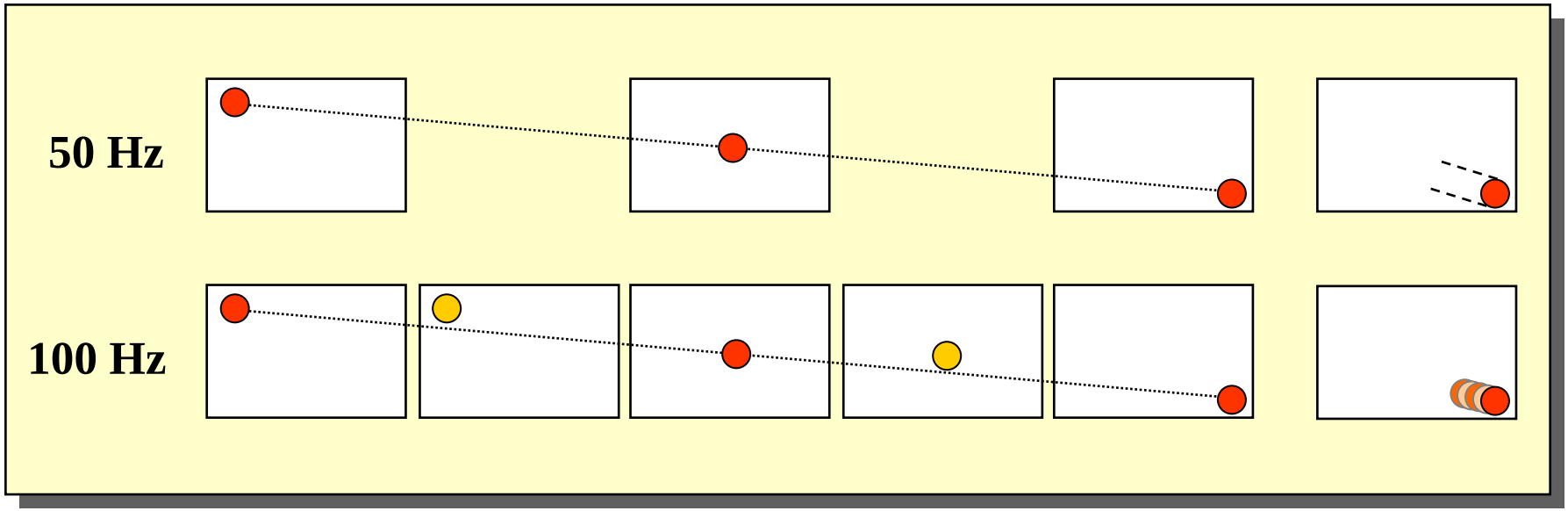
Up-Conversion

100Hz Principle



Up-Conversion

Simple 100Hz AABB



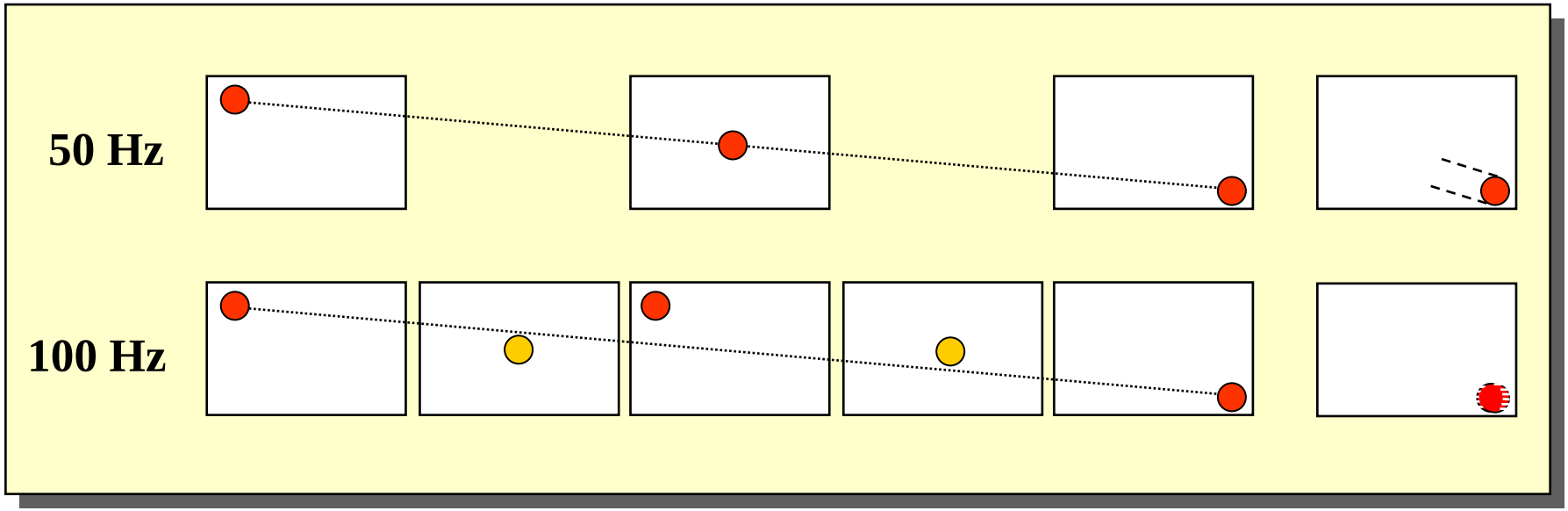
characteristics:

+ large area flicker reduction
+ motion processing

- motion jerkiness (double contours)
- line flicker

Up-Conversion

Simple 100Hz ABAB



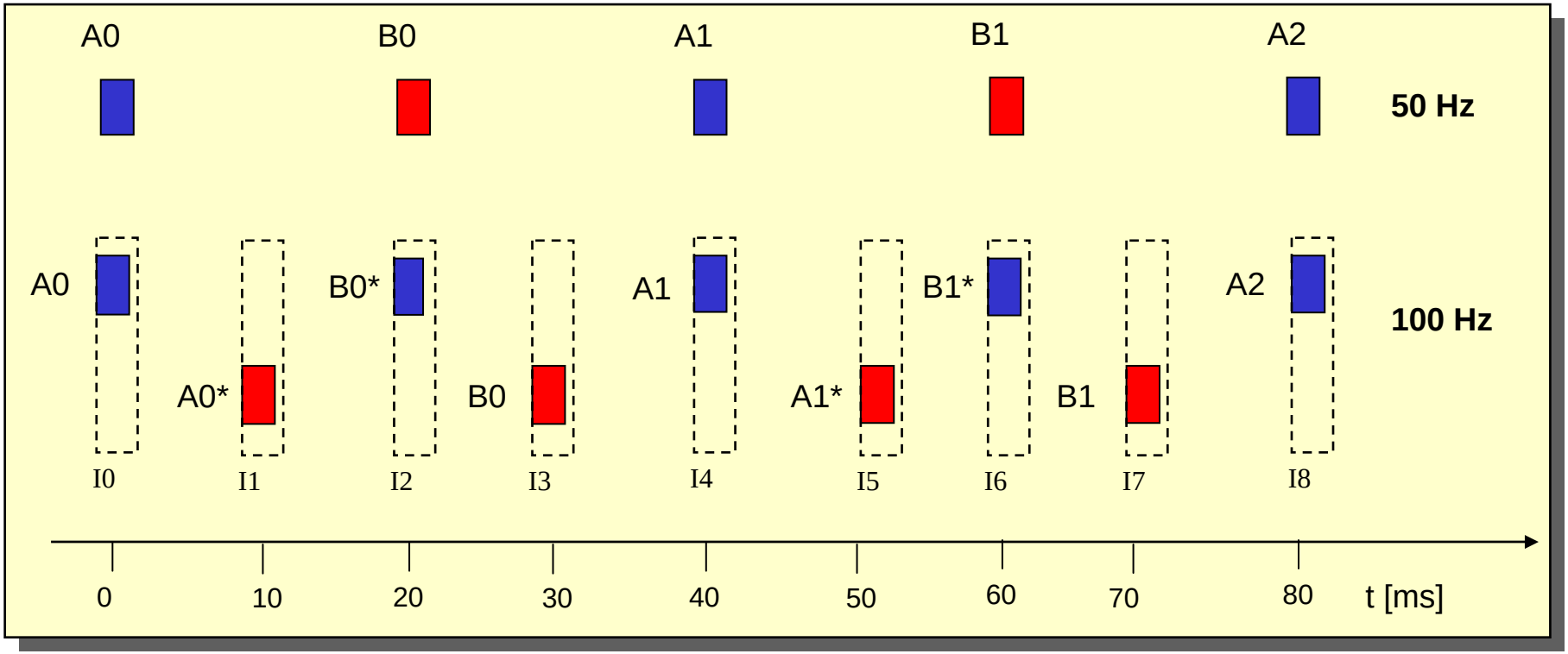
characteristics:

+ large area flicker reduction
+ line flicker reduction

- motion artefacts (saw-toothed)
- motion judder

Up-Conversion

Motion Adaptive 100Hz



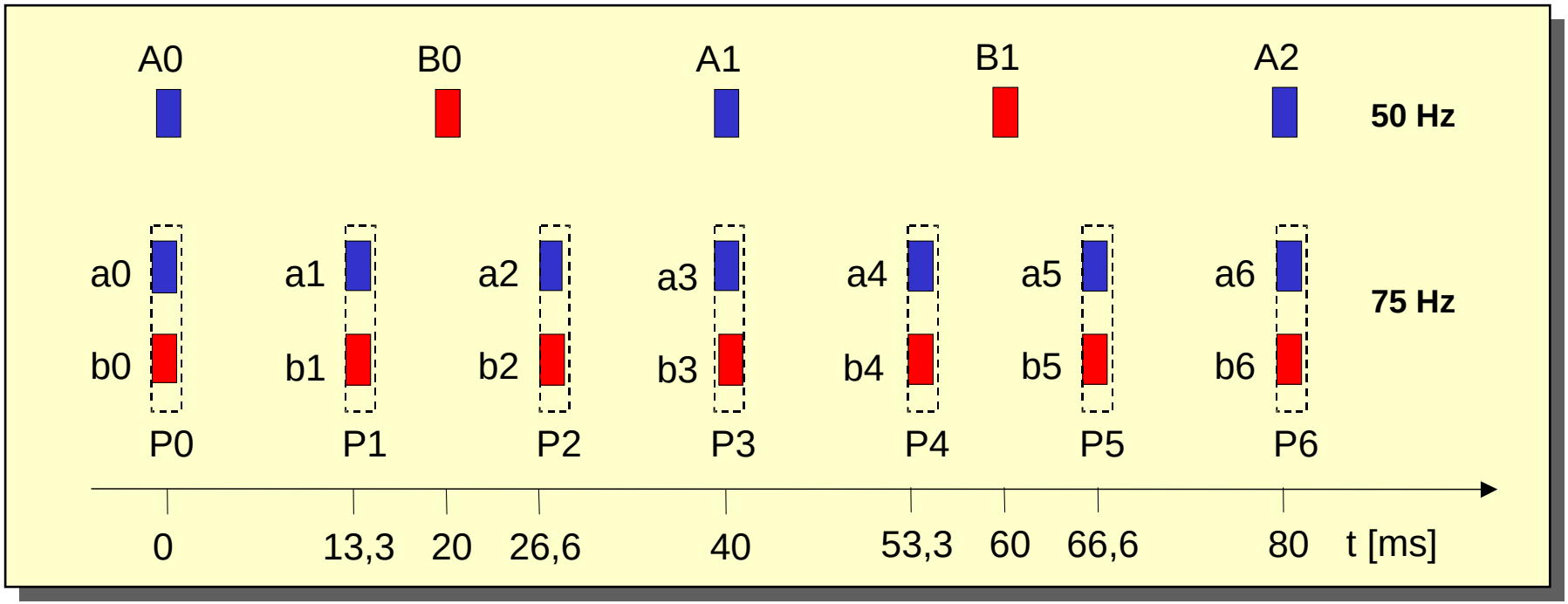
characteristics:

+ large area flicker reduction
+ line flicker reduction
+ motion processing

- artefacts in high motion areas

Up-Conversion

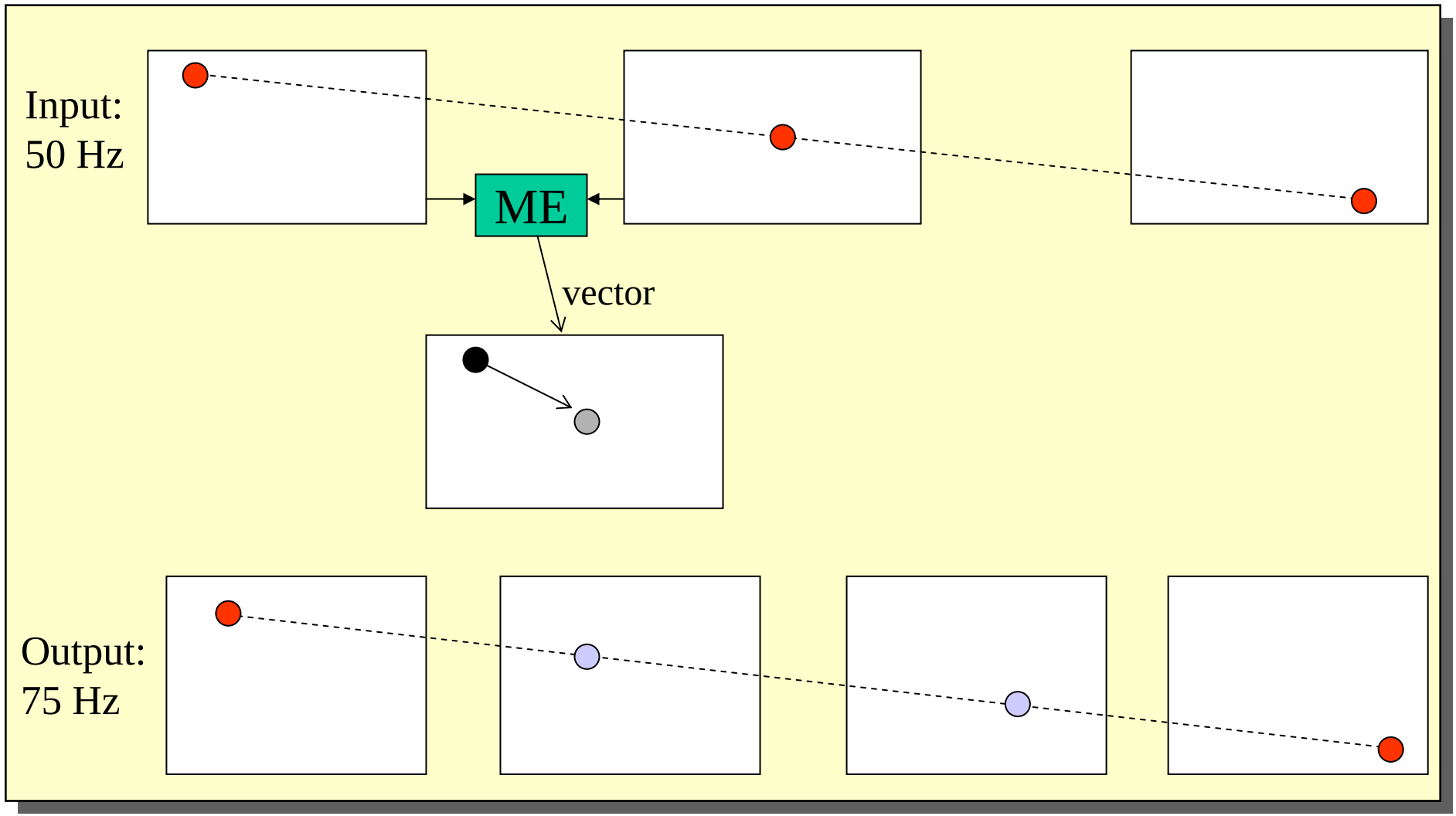
Vector Based e.g. 75Hz



characteristics:
+ large area flicker reduction
+ line flicker reduction (progressive)
+ motion processing

Vector based Up-Conversion

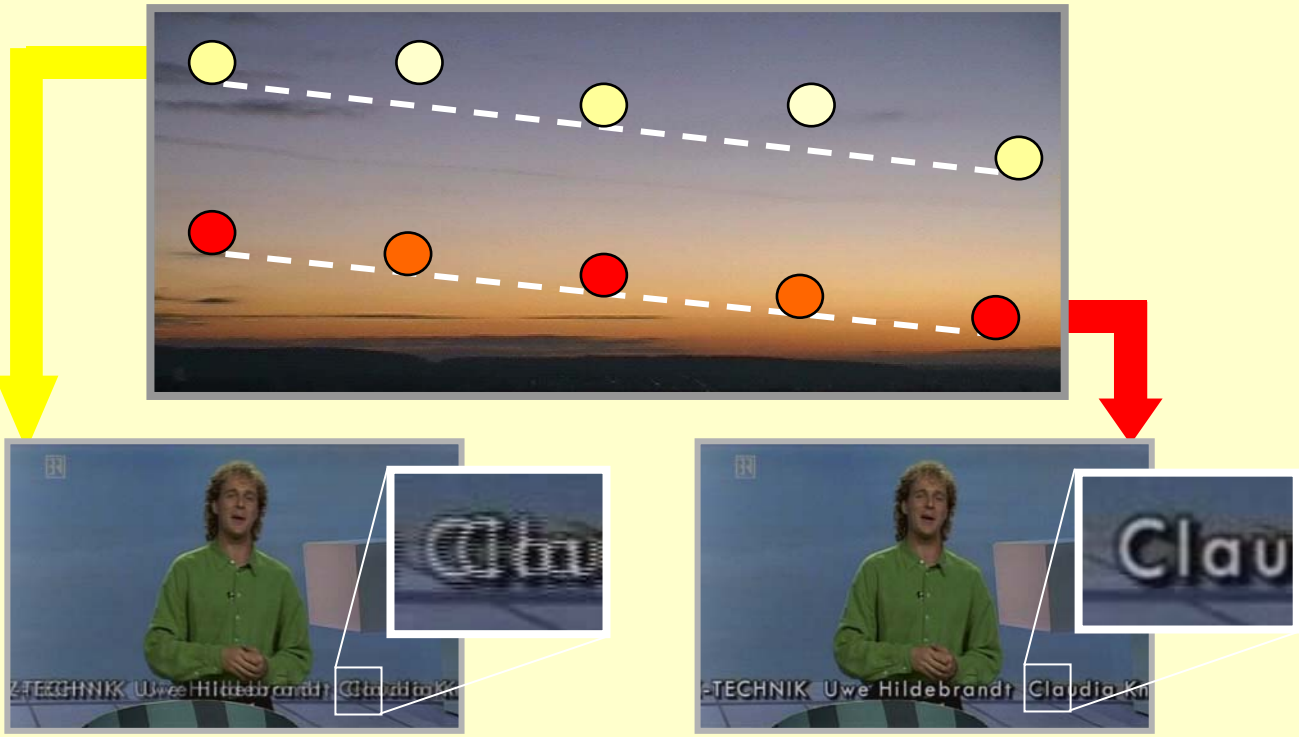
Conversion 50 Hz → 75 Hz



Vector based Up-Conversion

Principles of Motion Compensated Frame Rate Conversion

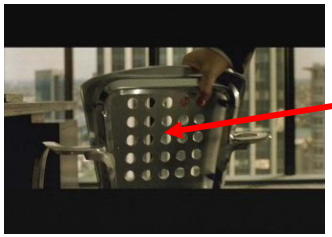
Frame rate conversion without motion judder or double contour effects requires motion estimation between two successive fields and to shift pixels depending on the measured motion.



Conventional Frame Rate Conversion

Motion Compensated Frame Rate Conversion

Critical sequences



- Motion artefacts in fast ticker
- Motion artefacts in areas of obscured and revealed background
- Motion artefacts in fast movies
- Motion artefacts in movie or camera parts
- Pictures with maximum resolution e.g. 1 by 1 Pixel

Summary

Algorithm Development for Improved Picture Quality

Mixed Pictures Mode

- Block based Algorithms to handle a mixture of areas (Movie, Camera and Still)

Full Film Mode Compensation

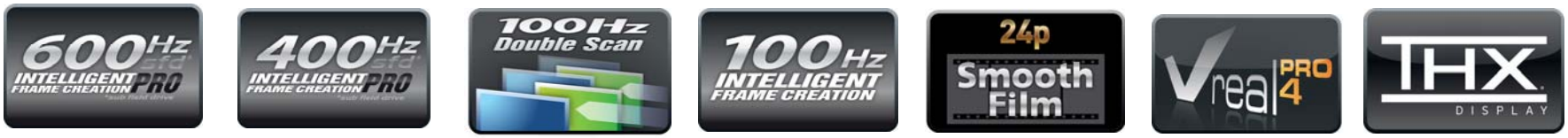
- Processing of all Pull-Down modes (NTSC / PAL)

Display Adaptive Output

- Scaler, Framerate Conversion, Progressive output, HDTV capability to adapt to various types of displays (CRT, PDP, DLP, TFT)

Multiple Signal & Format Interface

- SDTV, HDTV, progressive 50Hz/60Hz



Vielen Dank für Ihre Aufmerksamkeit!

Fragen ?

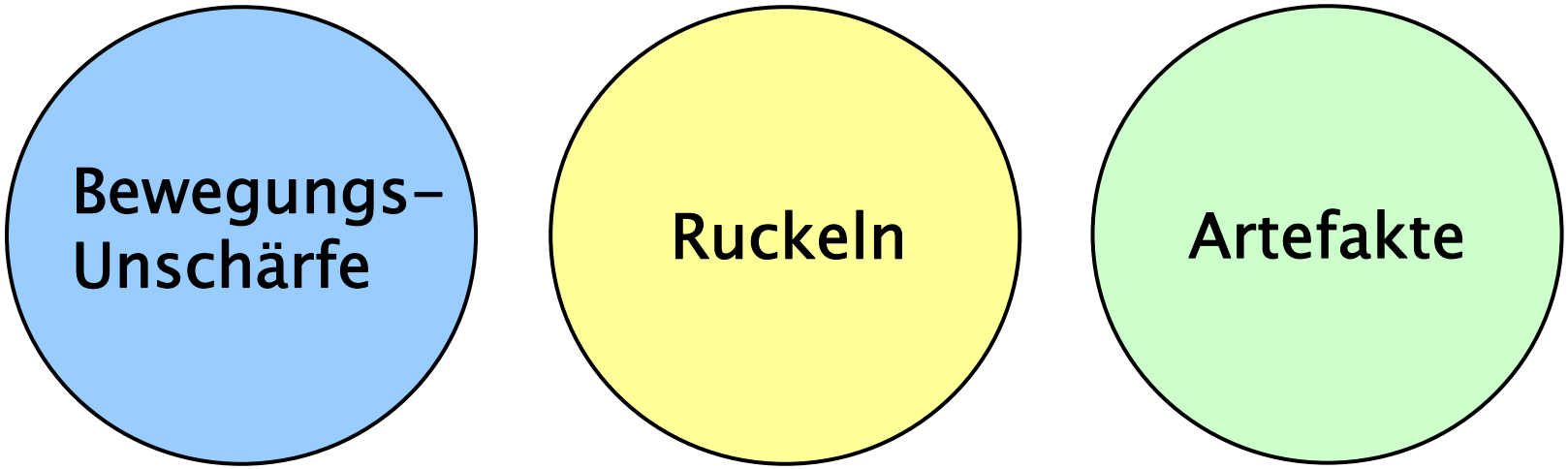
Panasonic
ideas for life

eco ideas

Bewegtbilddarstellung 2009

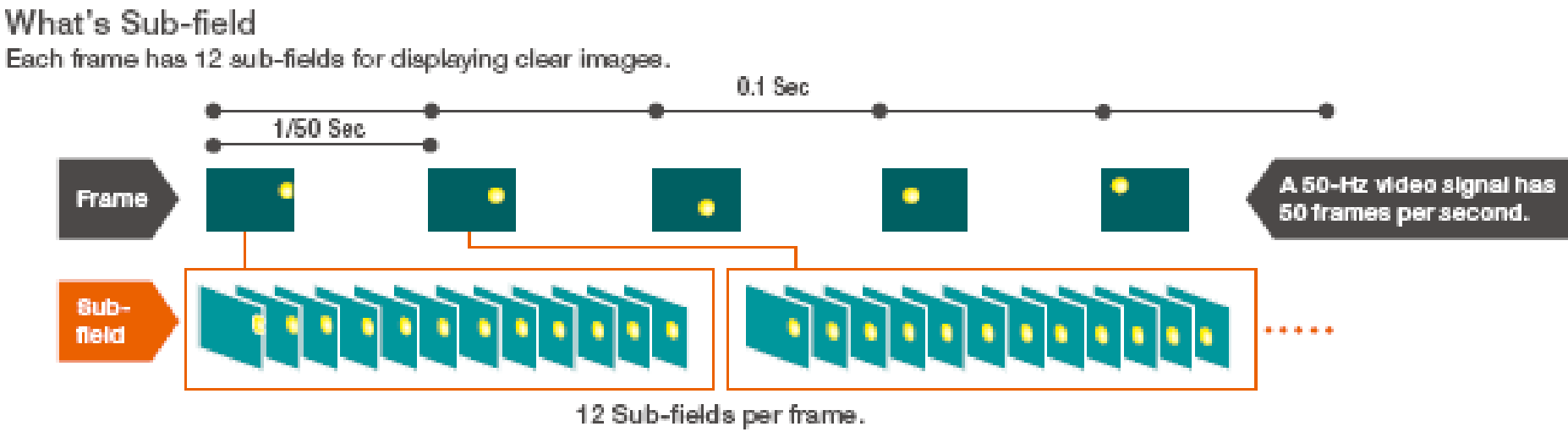
Markus Wagenseil
Technical Marketing Manager
Panasonic Marketing Europe GmbH

Die drei großen Themen in der Bewegtbilddarstellung



Exzellente Bewegtbilddarstellung mit dem NeoPDP

600Hz SFD IFC Pro



1 Sekunde

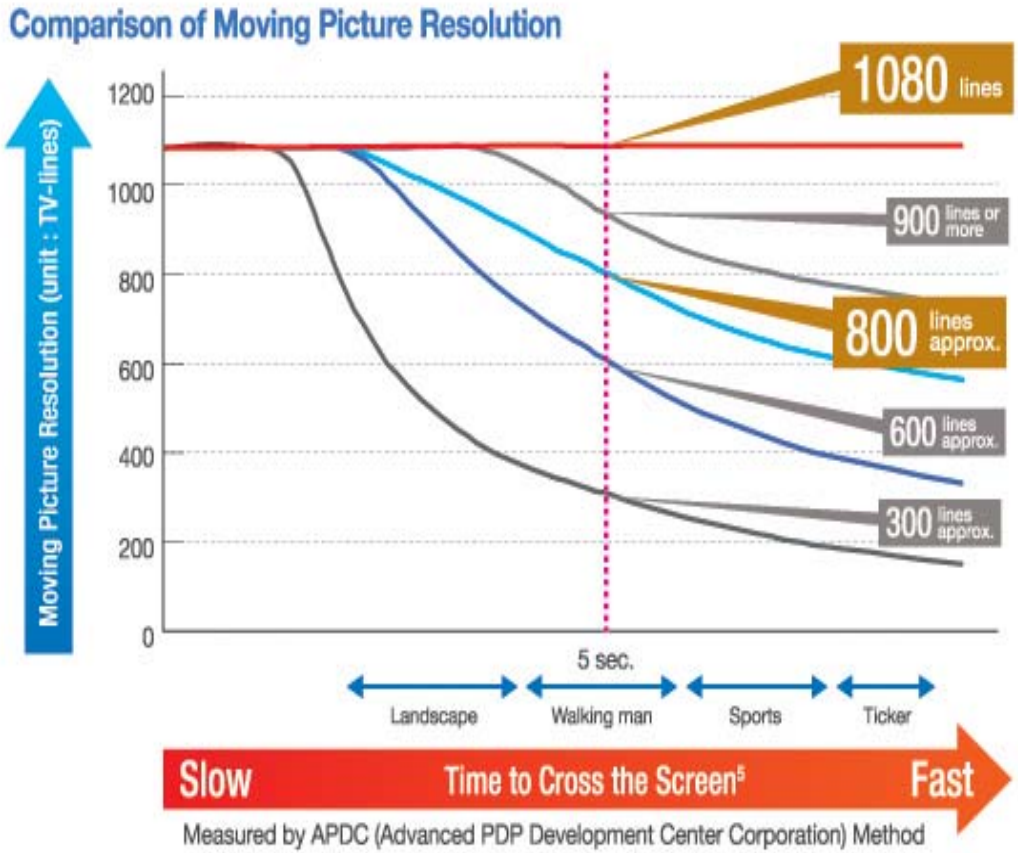
X 50 Bilder

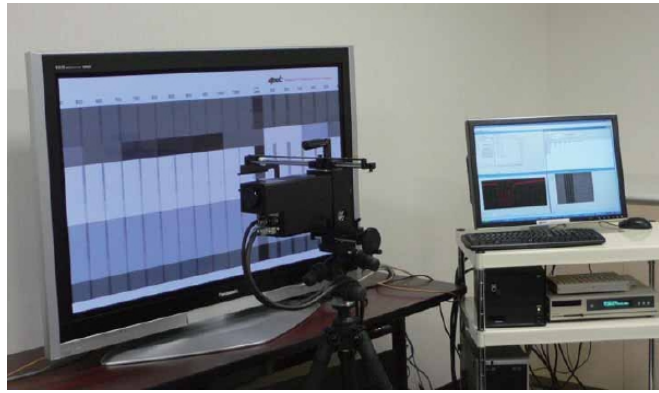
X 12 Sub-fields

= 600 unterschiedliche Bewegungsphasen

Exzellente Bewegtbilddarstellung mit dem NeoPDP

Vergleichende Bewegtbildanalyse mit APDC Messaufbau

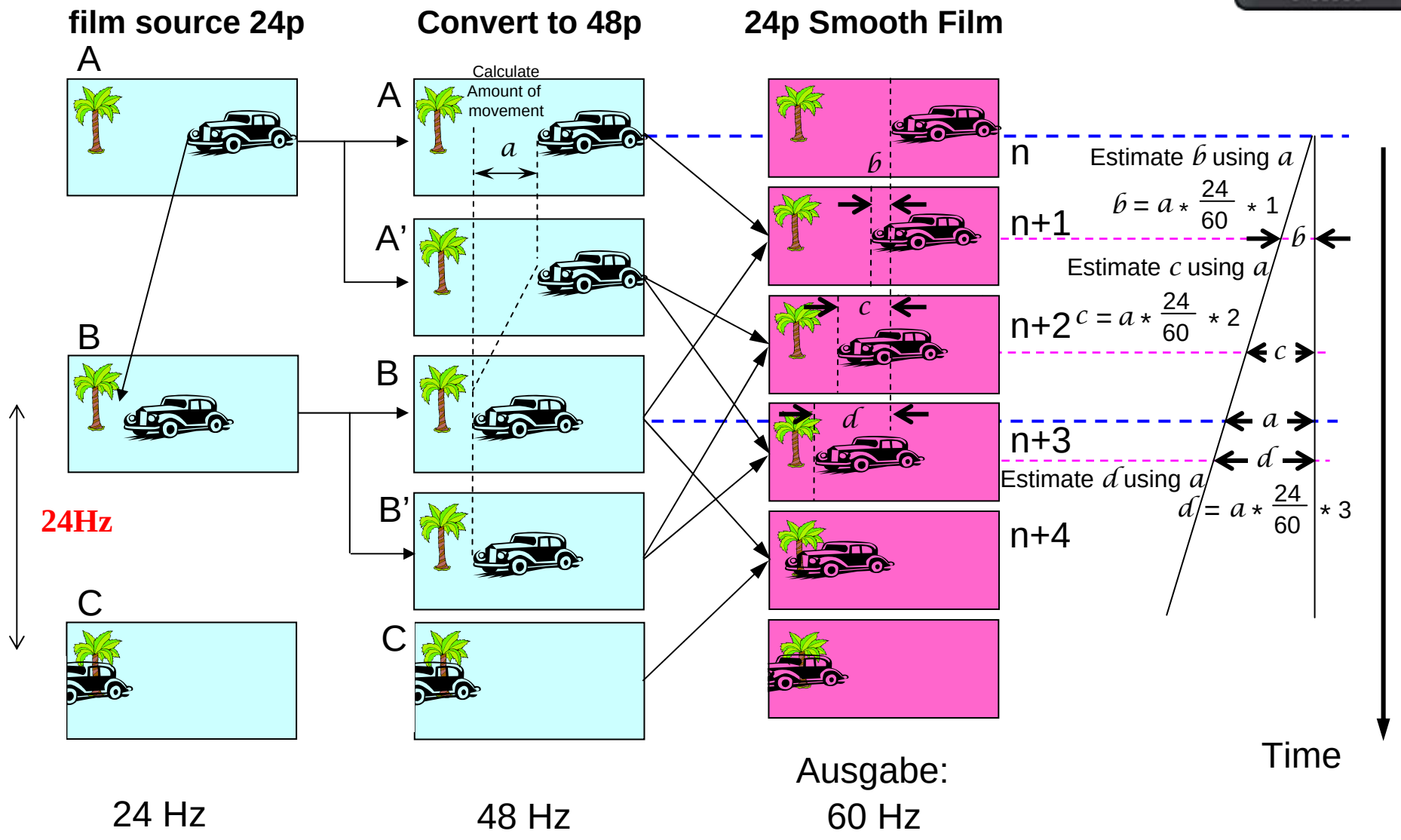




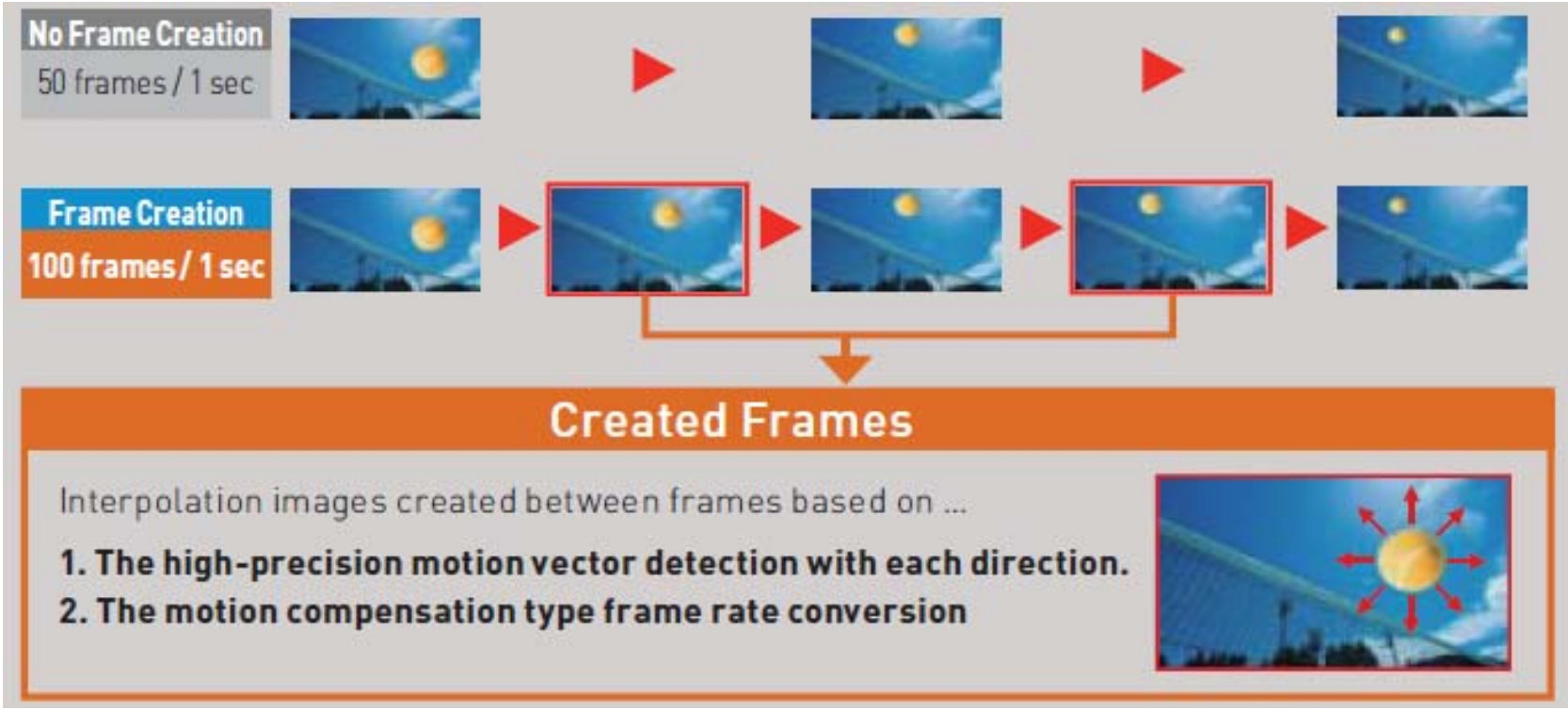
- 2009 VIERA Full-HD PDP[1]
- 2008 VIERA Full-HD PDP[2]
- 2009 VIERA 100Hz Full-HD LCD (IPS Alpha Panel)[3]
- 100Hz Full-HD LCD[4]
- 50Hz Full-HD LCD[4]

[1] PDP Z, V, G15, G10 Series
[2] PZ85 Series
[3] LCD V, G15, G10 Series
[4] Typical Model
[5] Time for the image to move from the edge of the screen to the others (sec.)

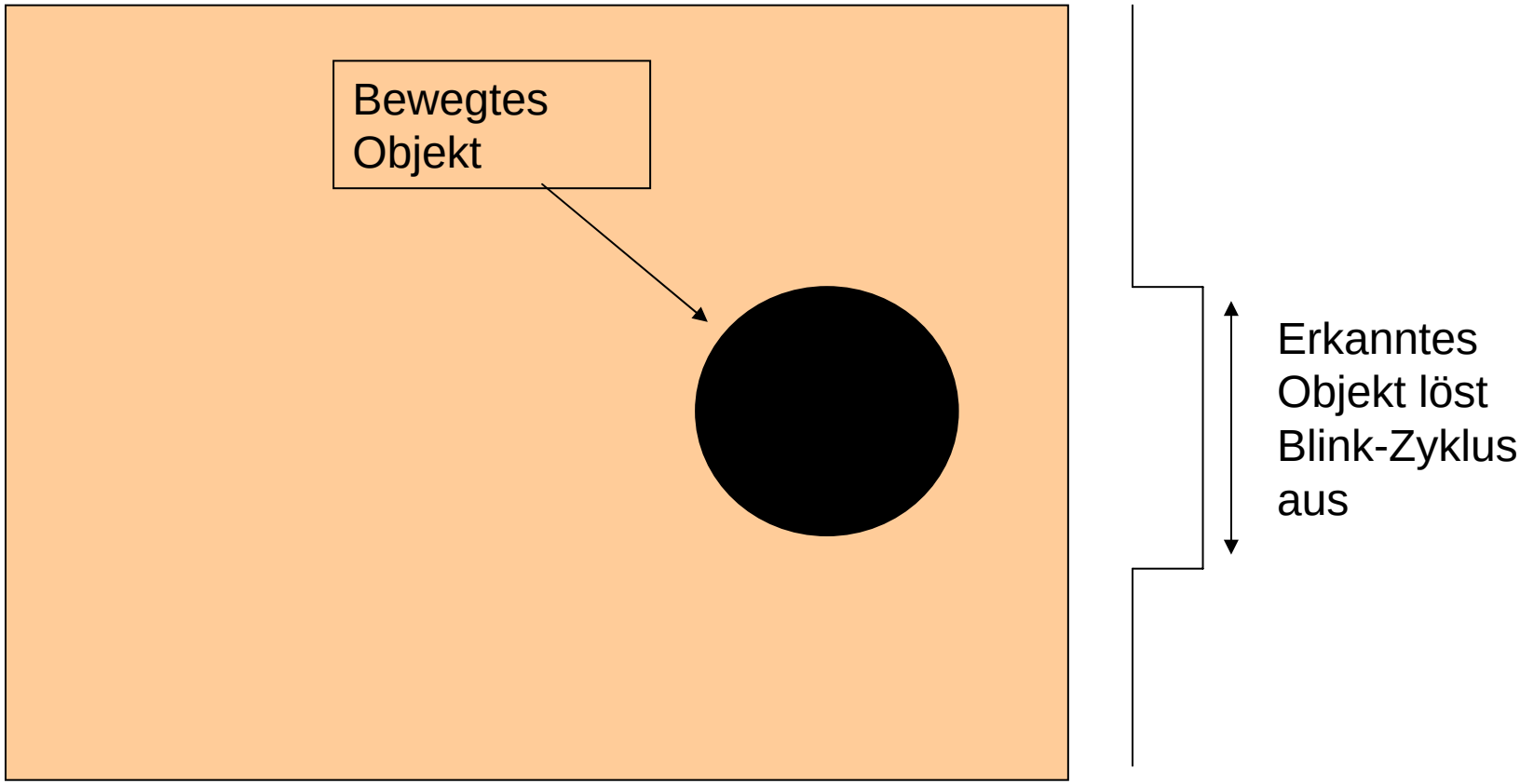
Weicher Film – wenn der Kameramann schlampt



Die intelligentere 100 Hertz Lösung der LCD-TVs

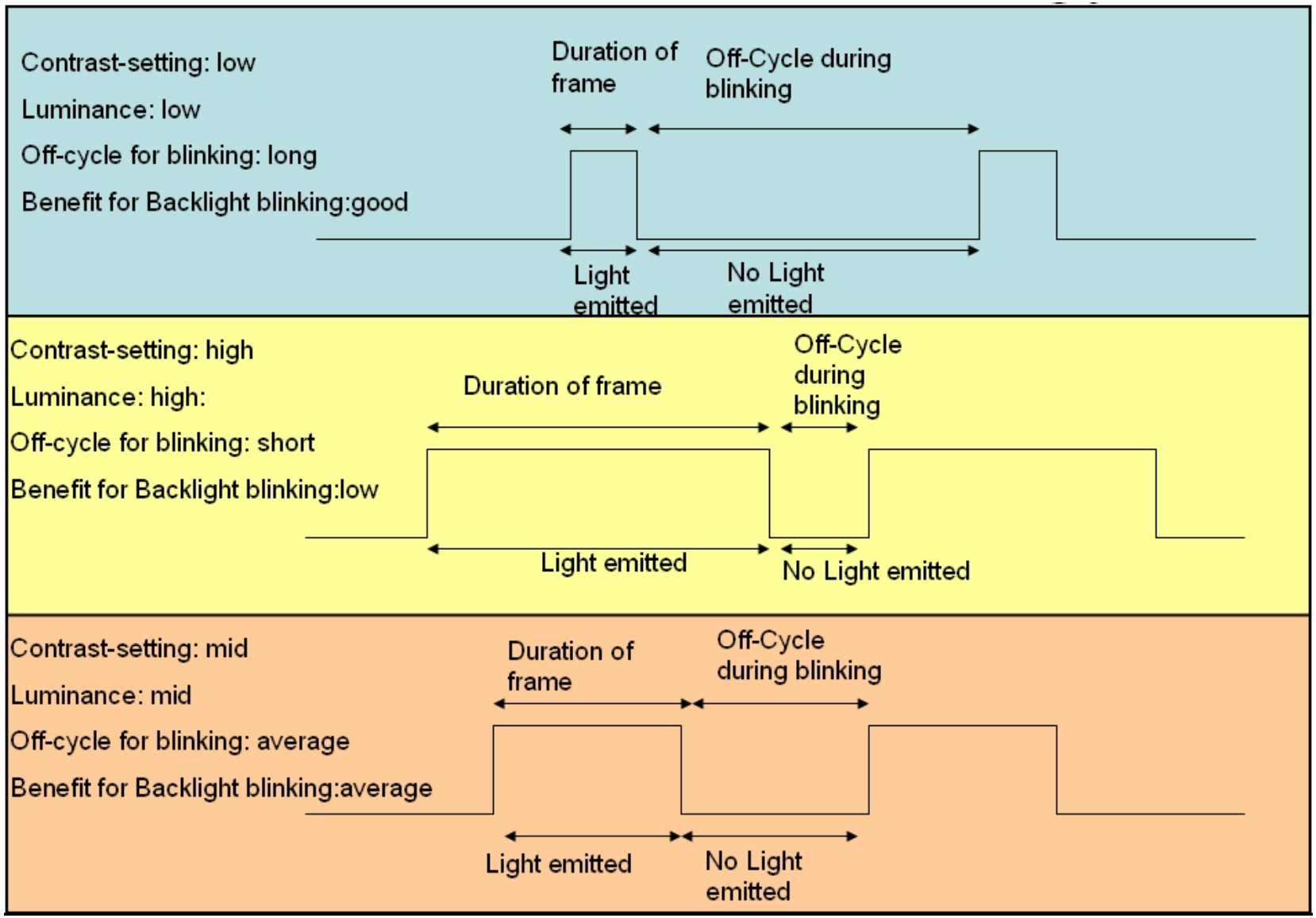


Die intelligentere 100 Hertz Lösung der LCD-TVs

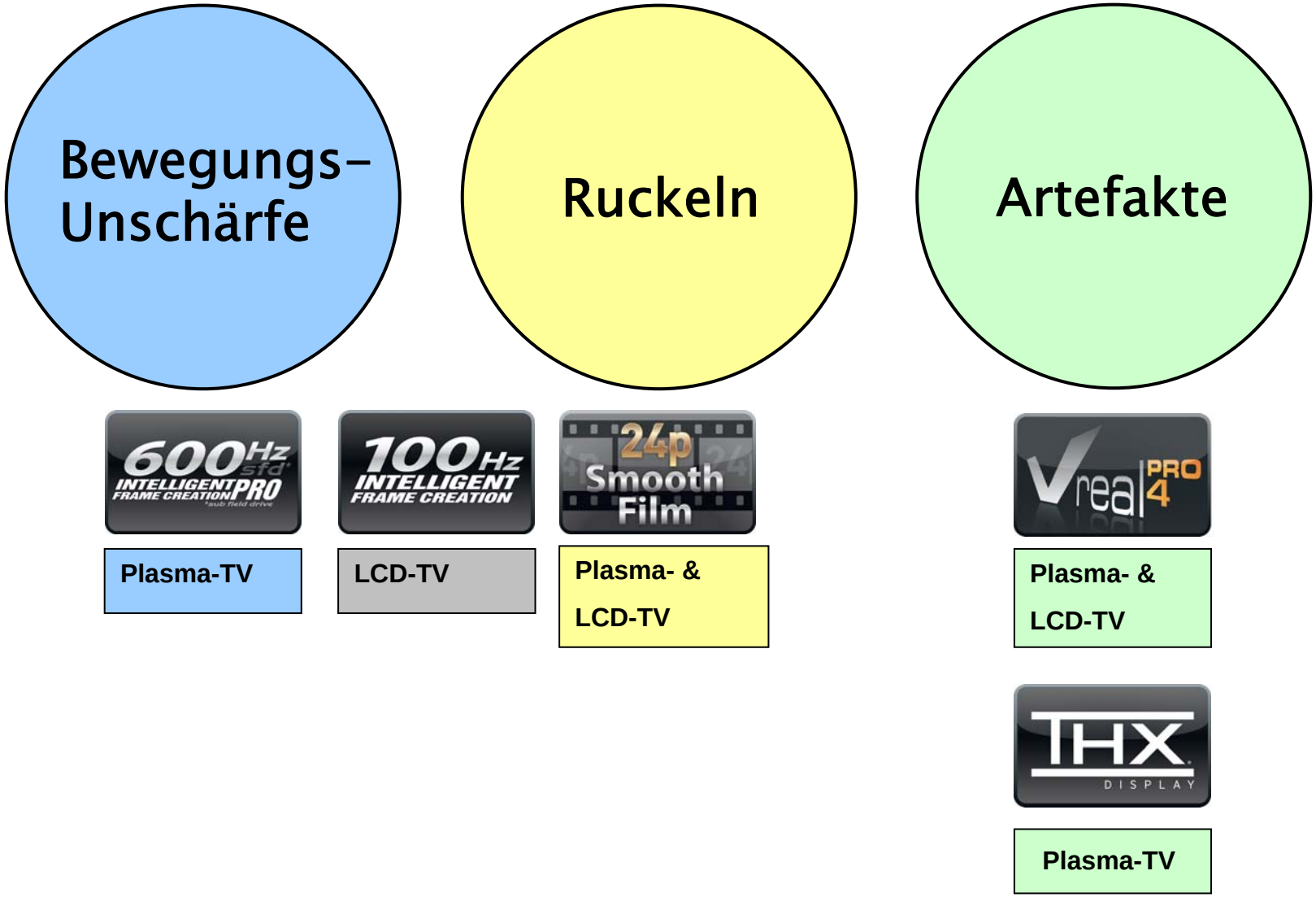


-> Kein Helligkeitsverlust, da Blinkdauer von der eingestellten Helligkeit abhängt

Die intelligentere 100 Hertz Lösung der LCD-TVs



Panasonic 2009 – die passende Antwort auf jedes Thema



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