

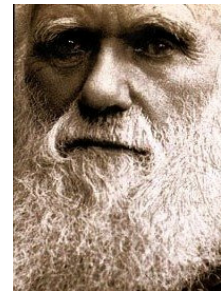


High volume digital printing on corrugated board

Wilbert Streefland

**“It is not the strongest Industry that survives
but the most adaptive!”**

Charles Darwin



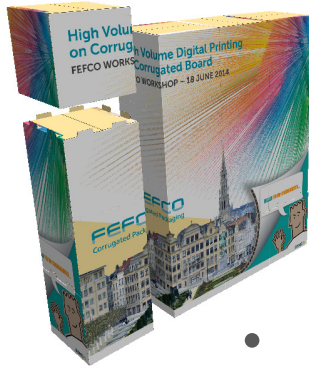
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FEFCO
Corrugated Packaging



Fefco Digital Print Seminar Brussels, 18 June 2014

Title: High volume digital printing on corrugated board



The win/win approach using traditional printing technology and digital print

- 8 Speakers (Including myself):

- 1 user printing digital on corrugated
- 1 repro expert (From the UK)
- 5 digital print manufacturers:

It is about high volume digital printing!!

- 3 Building conventional equipment for corrugated printing digital technology
- 3 Building digital print equipment entering the corrugated market



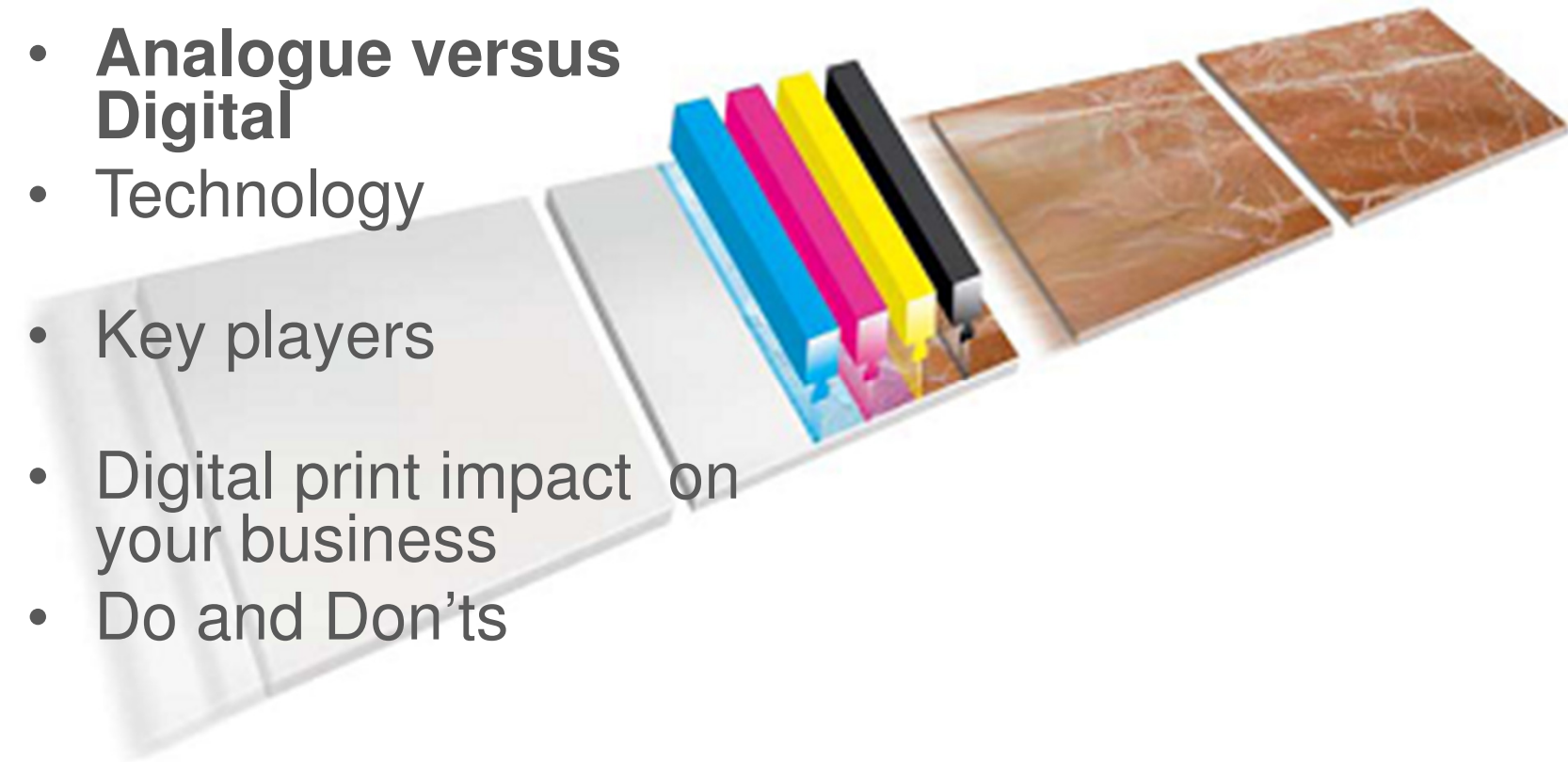
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Digital Printing in Brief

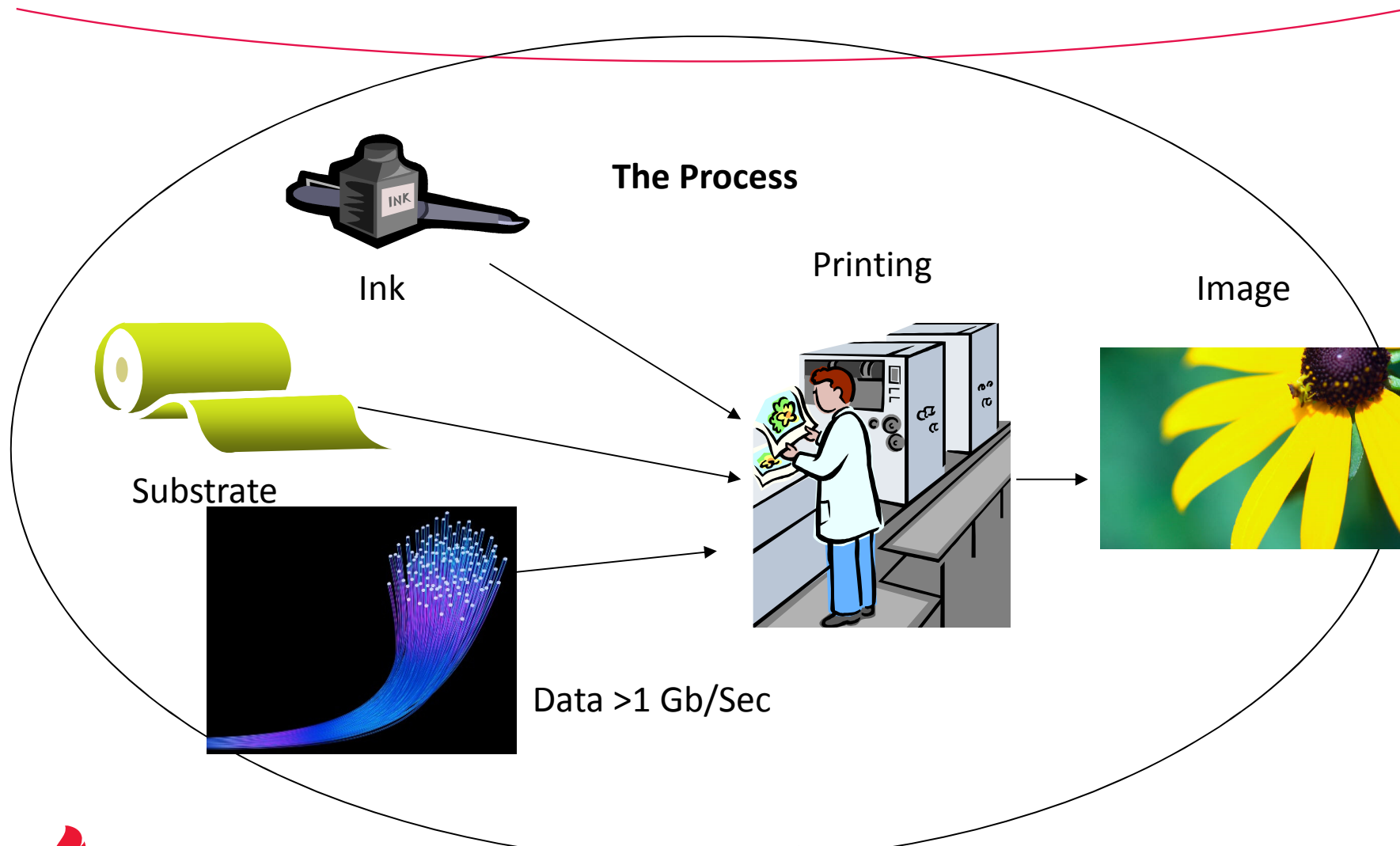
- **Analogue versus Digital**
- Technology
- Key players
- Digital print impact on your business
- Do and Don'ts



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Analogue versus Digital Printing



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Definitions

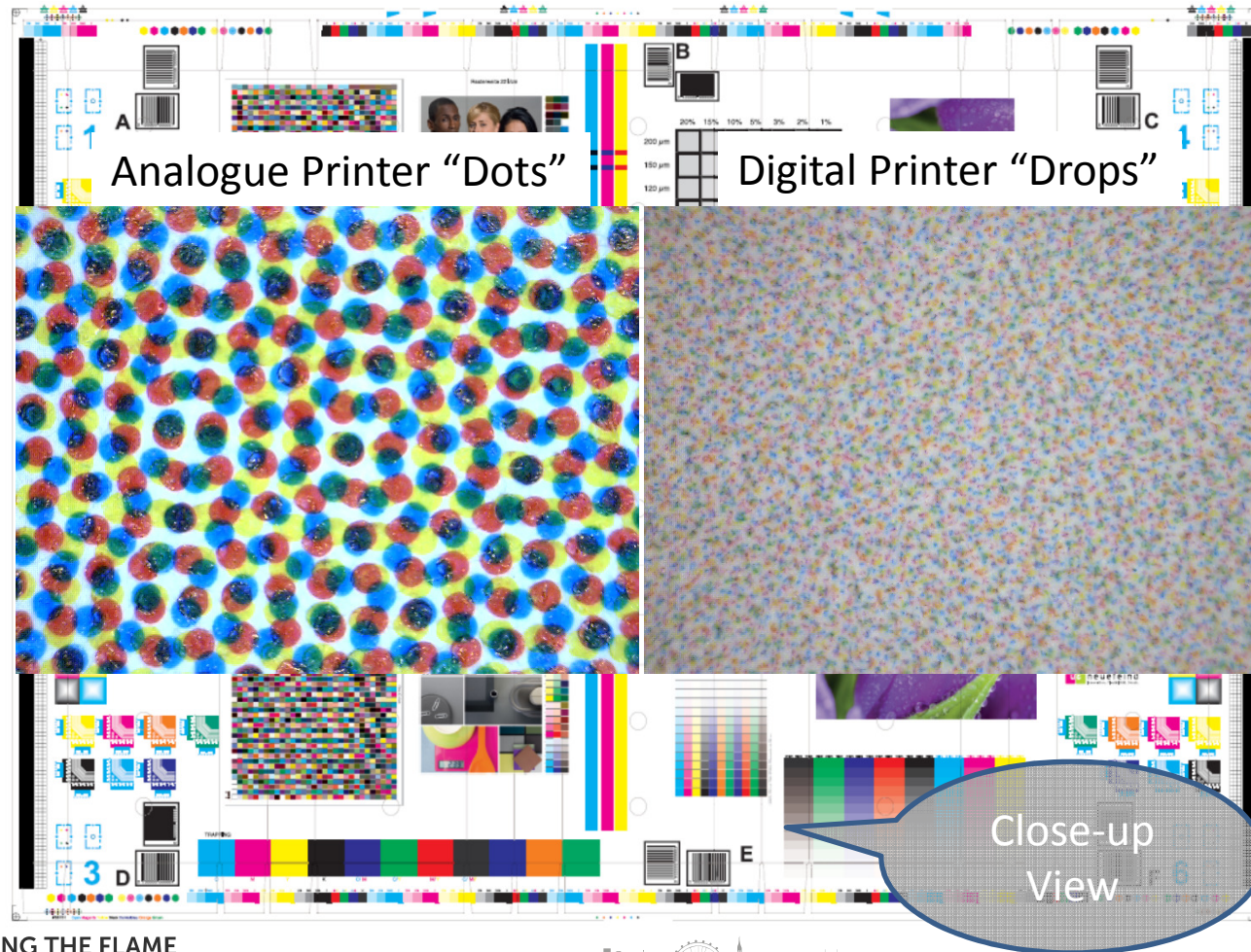
Analogue printing

- Contact with substrate (strips might be visible)
- Every repeat the same source transferred as one
- Resolution in L/cm (lines per centimetre)
- Spot colours and process colours (1 to 7 or more)
- Inline printing of lacquer
- Inline die cutting and/or folding is possible

Digital inkjet printing

- Non contact (Low paper grammage, no strips!)
- Every repeat made from (new) data (Data: >1Gb/sec)
- Resolution in DPI (dots per inch)
- Process colours mostly 4 (CMYK)
- Pre-coating might be needed
- Offline (Dust and warp sensitive)

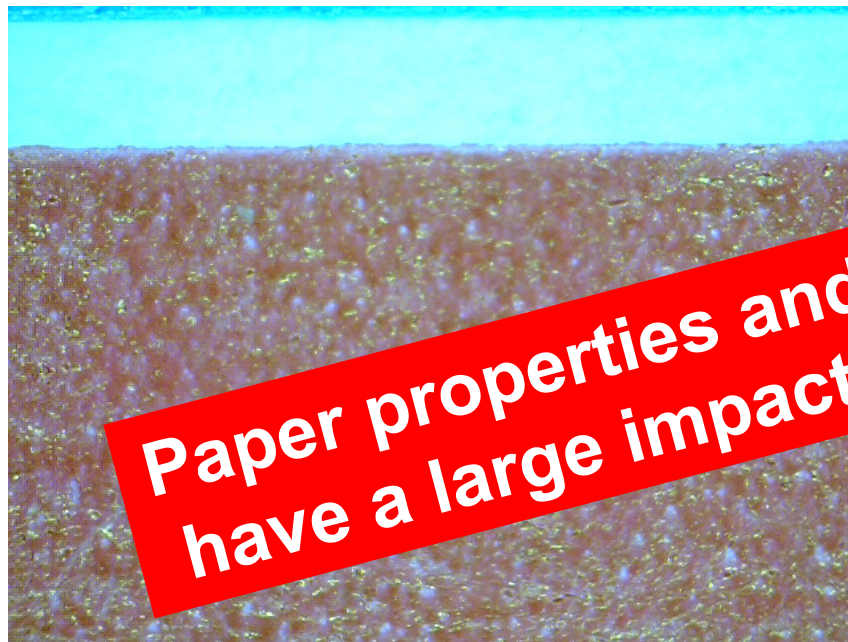
Visual Difference Digital/Analogue



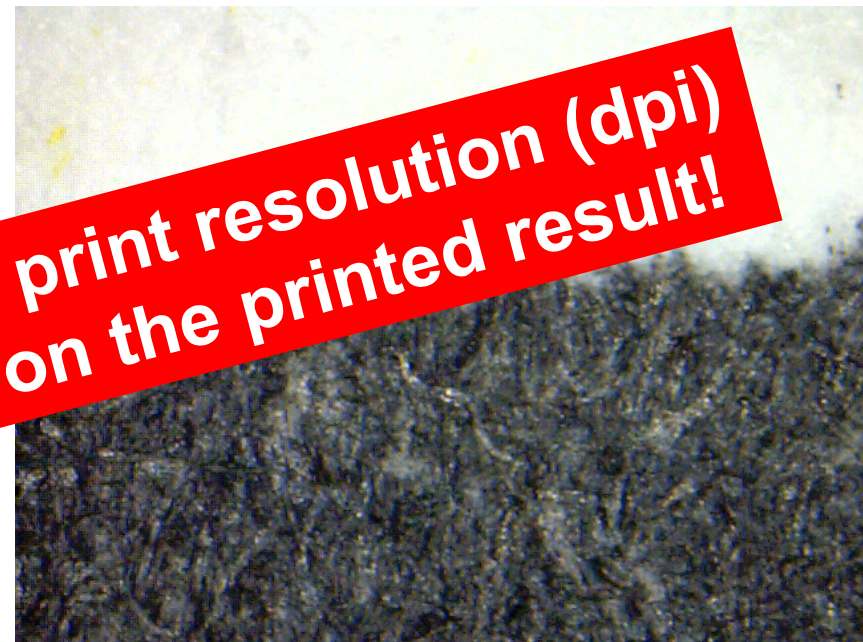
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Edge sharpness (Barcode)

Analogue



Digital



**Paper properties and print resolution (dpi)
have a large impact on the printed result!**



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Digital Printing in Brief

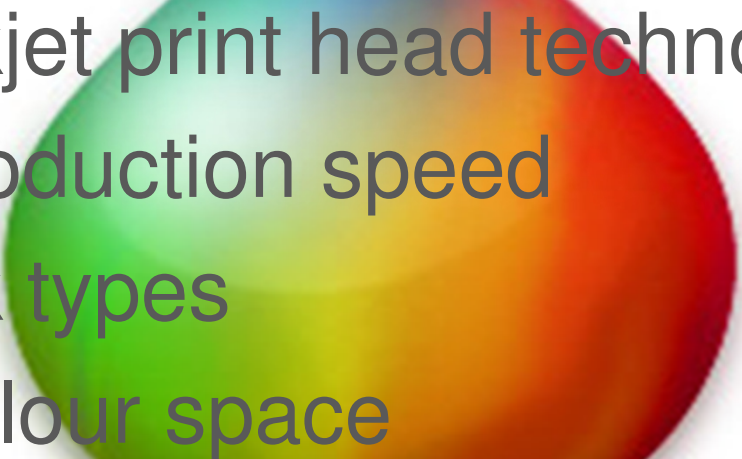
- Analogue versus Digital
- From print tool to print data
- **Technology**
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Digital Print Technology

- 
- Inkjet print head technology
 - Production speed
 - Ink types
 - Colour space

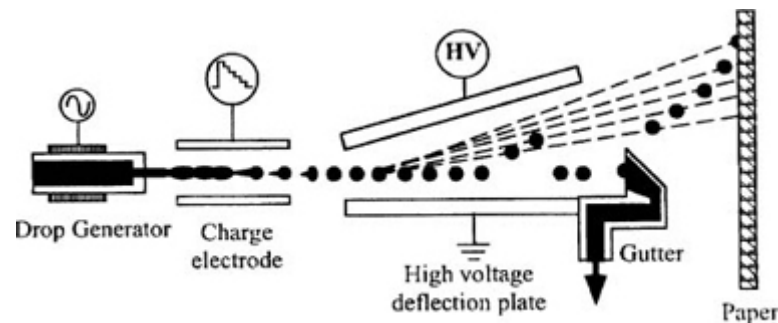


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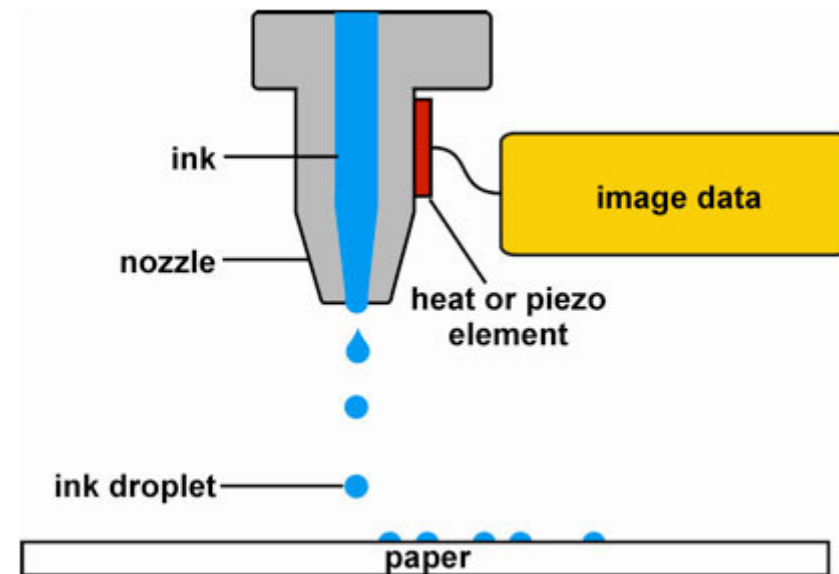
Inkjet Head Technology

**Continuous inkjet, CIJ 1951
(Marking Coding)**



Distance head to substrate
can be large

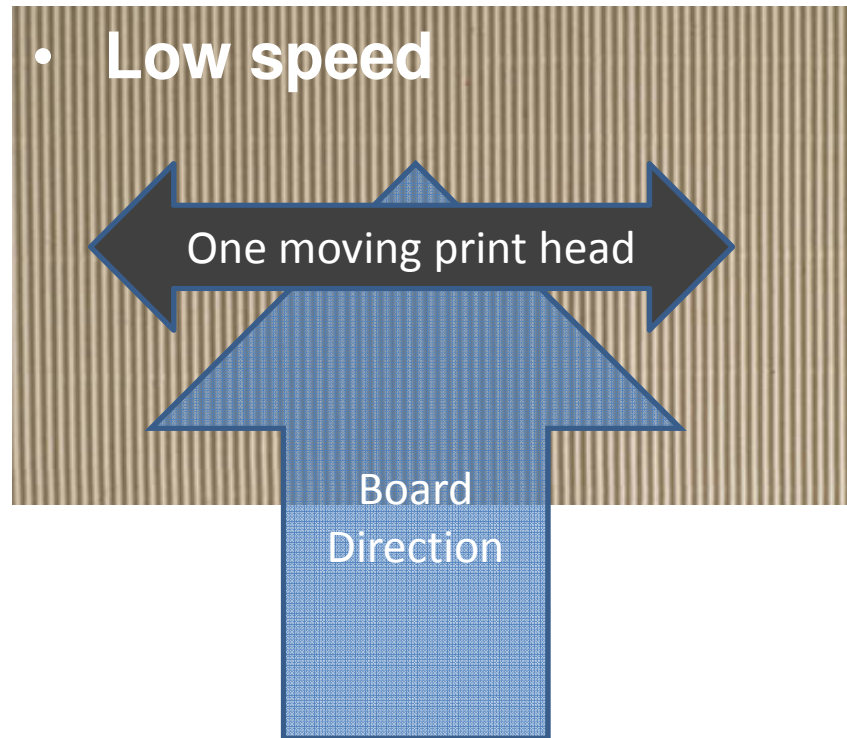
**Drop On Demand, DOD 1957
(Thermal, Piezo)**



Inkjet Printing on Corrugated Board

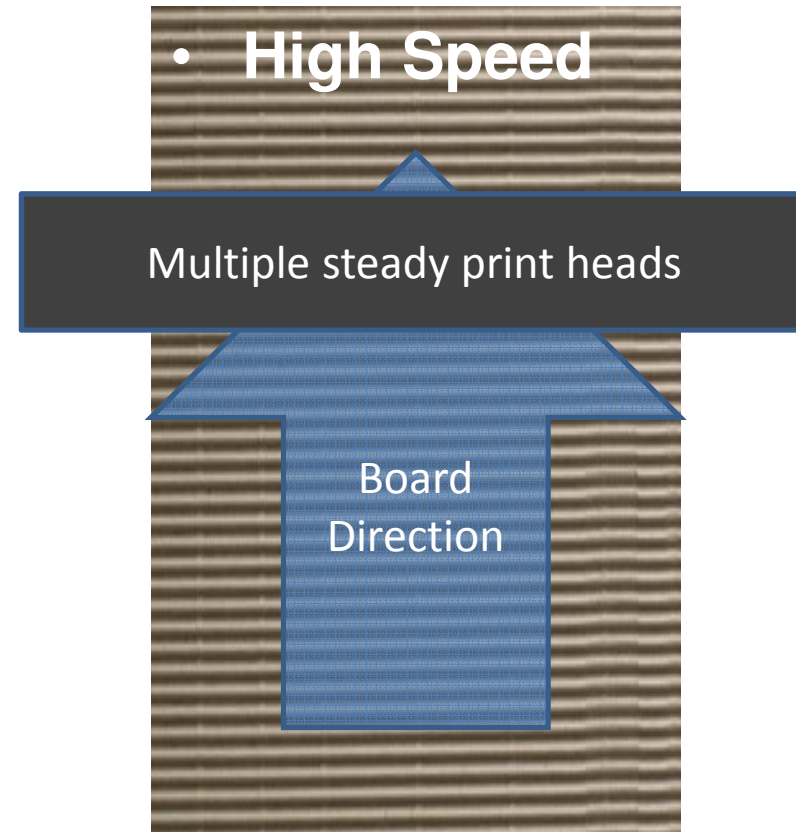
Moving print head (Display Printers)

- Low speed



Steady print head (High volume/data)

- High Speed



How many pixels are printed/sec

- Assume:
 - Printing width: 1 meter
 - Speed: 70 meter/min
 - Resolution: 600 dpi (dots per inch)
 - 4 colour (Yellow, Magenta, Cyan, Black)
- 2,600,000,000 pixels/sec
- 2.6 gigapixels/sec



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Ink Technology

UV

- UV drying (safety)
- Odour
- High gloss where ink is printed
- Prints on most substrates
- Sometimes pre-coating
- Food contact?

Aqueous (Water based)

- IR drying might be needed depending on substrate and/or speed
- Low gloss
- Pre-coating depending on substrate

**Ink waste is minimal for digital printing!!
This is not the case for conventional printing!!**



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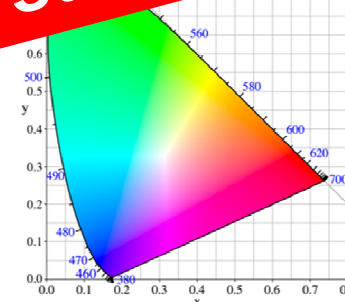
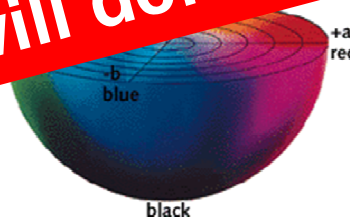
Colour Space

Digital
RGB/CMYK space



Analogue
Lab space

Discussions about colour??
Facts and figures will define the standard



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Digital Printing in Brief

- Analogue versus Digital
 - Technology
 - **Key players**
 - The impact of digital print on our business
 - Do and Don'ts
- From print tool to print data
 - Adopt to the new technology



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Key Players

Display (Large size)

- AGFA
- Durst
- Engico Aqua
- HP
- INCA

Box/Tray (High volume)

- Barberán
- **Bobst**
- HP
- **Sun Automation**
- Xanté



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Mapping of Print Processes

- Digital
- Flexo Post Print
- Flexo Pre Print
- Litho Laminated
- Mapping Criteria:
 - Print Level
 - Production cost in function of order size



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Level/Quality

- Mostly we say **Quality** where we need to say **Level**
- **Quality** is a True/False property indicating if we meet or not customer expectation
- **Level** is measurable and indicates if there is a difference in performance for what ever reason



Production Cost and Order Size

Key parameter:

- Analogue → Print Tool Cost and Waste
- Digital → Ink Cost

The Result:

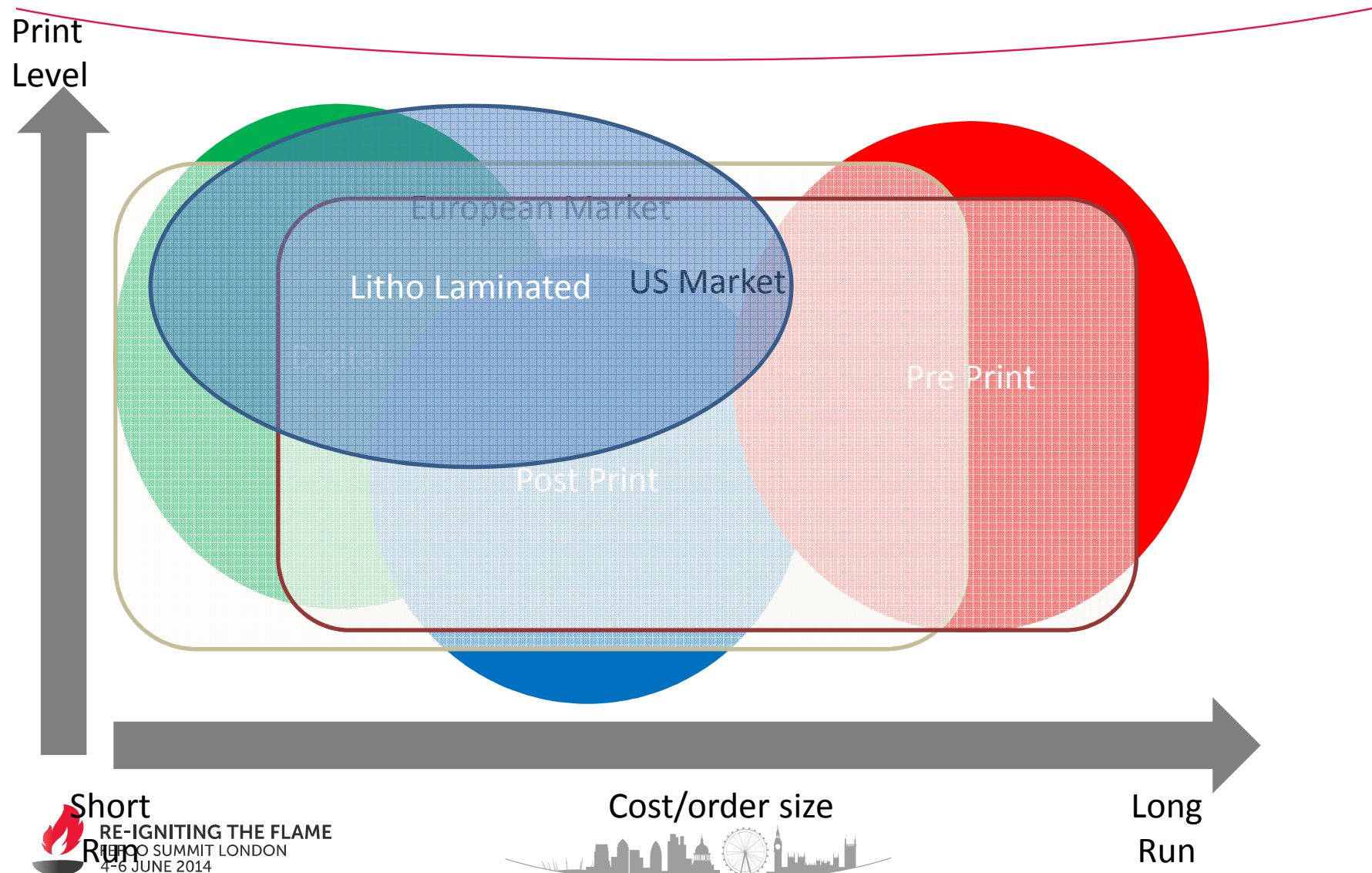
- Short order → Digital
- Medium order → Depending on print area
- Long order → Analogue



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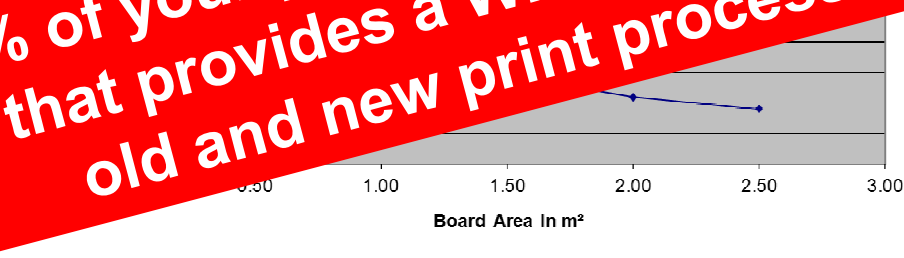
Mapping of Print Processes



Digital Printing Business Impact

- The **Breakeven** relation between Digital and Analogue printing in function of printed area and order size can be calculated
- The line is different depending on equipment used (Analogue and Digital)

It is about converting the 5% business volume that takes 30% of your production time to digital print that provides a WIN/WIN for the old and new print process!!



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Changing Role of Repro House

- The role of a Repro House will change!!
 - Current → Tool supplier

Are Repro Houses aware?



- Future → Data supplier



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- Adopt to the new technology
- Select what is best for you
- Make it a win/win



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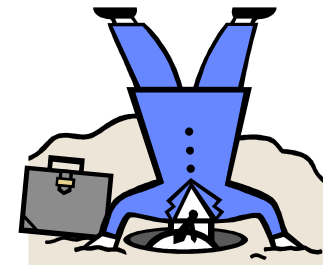
Do and Don'ts

Do

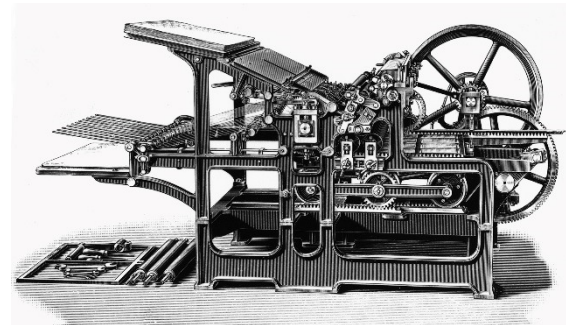
- Analyse your production data (ERP database)
- Find out what part of your order portfolio would benefit by digital printing
- Also calculate the improvement for existing equipment

Don'ts

- Ignore digital printing



- Scrap old equipment



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- Select what is best for you
- Make it a win/win
- Don't ignore digital



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Thank you for your attention

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