

# HP Indigo LEP Technology

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Media Manager for the Americas

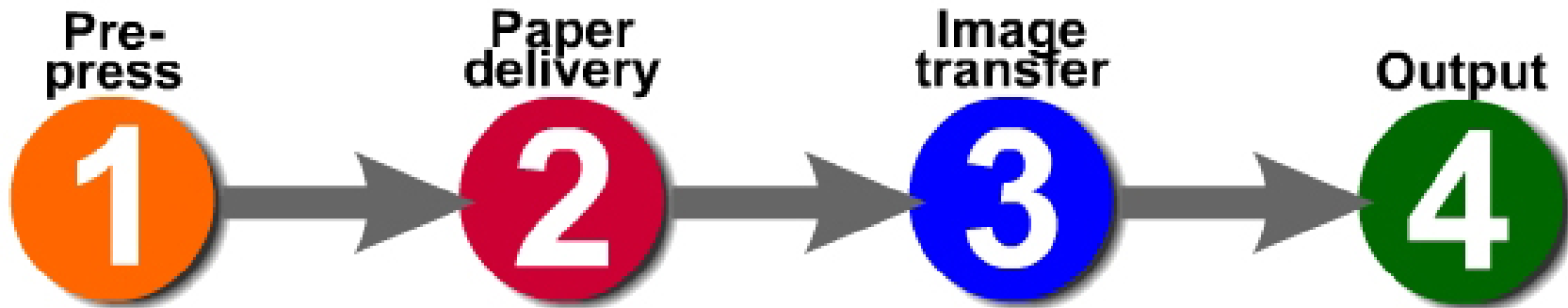
**PaperCon '09**

St. Louis, Missouri  
May 31 - June 3, 2009



***Gateway to Success:  
People, Planet and Innovation***

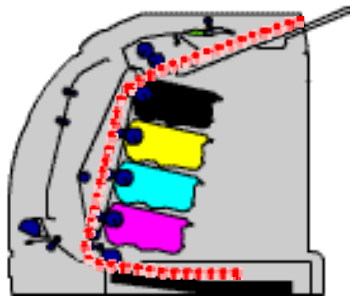
# Basic Printing Process



# Process comparison with other technologies

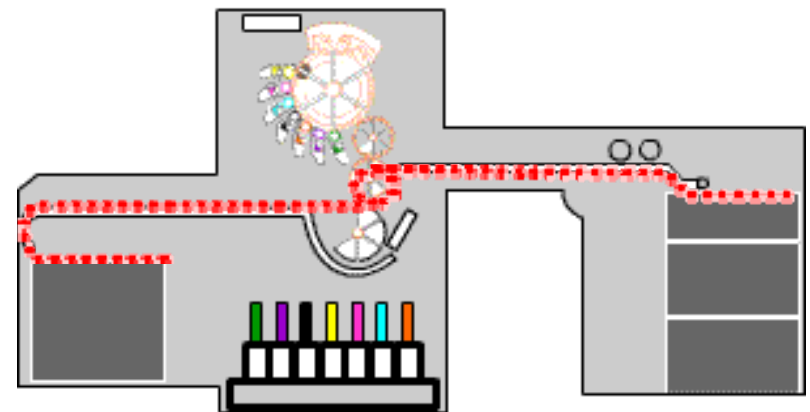
Toner – dry xerography  
Fuser melts toner onto paper

**HP Color LaserJet**



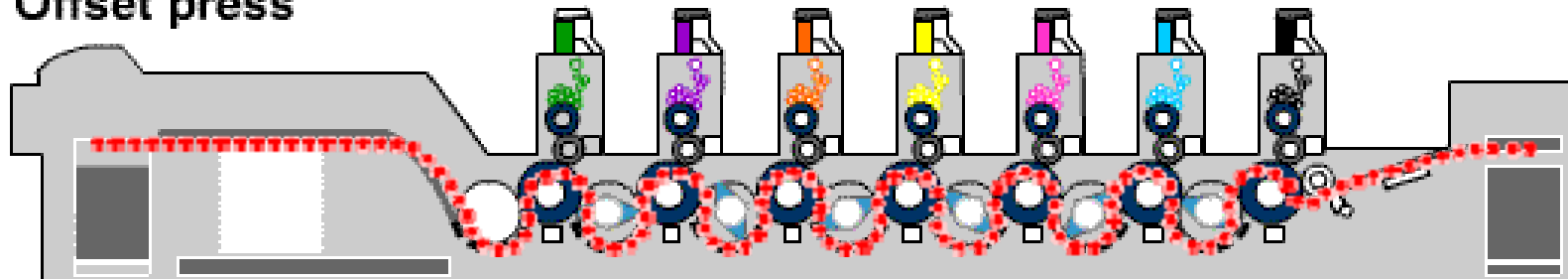
Liquid Electrophotographic (LEP)  
Electroink 4.0 forms a film

**Digital press**

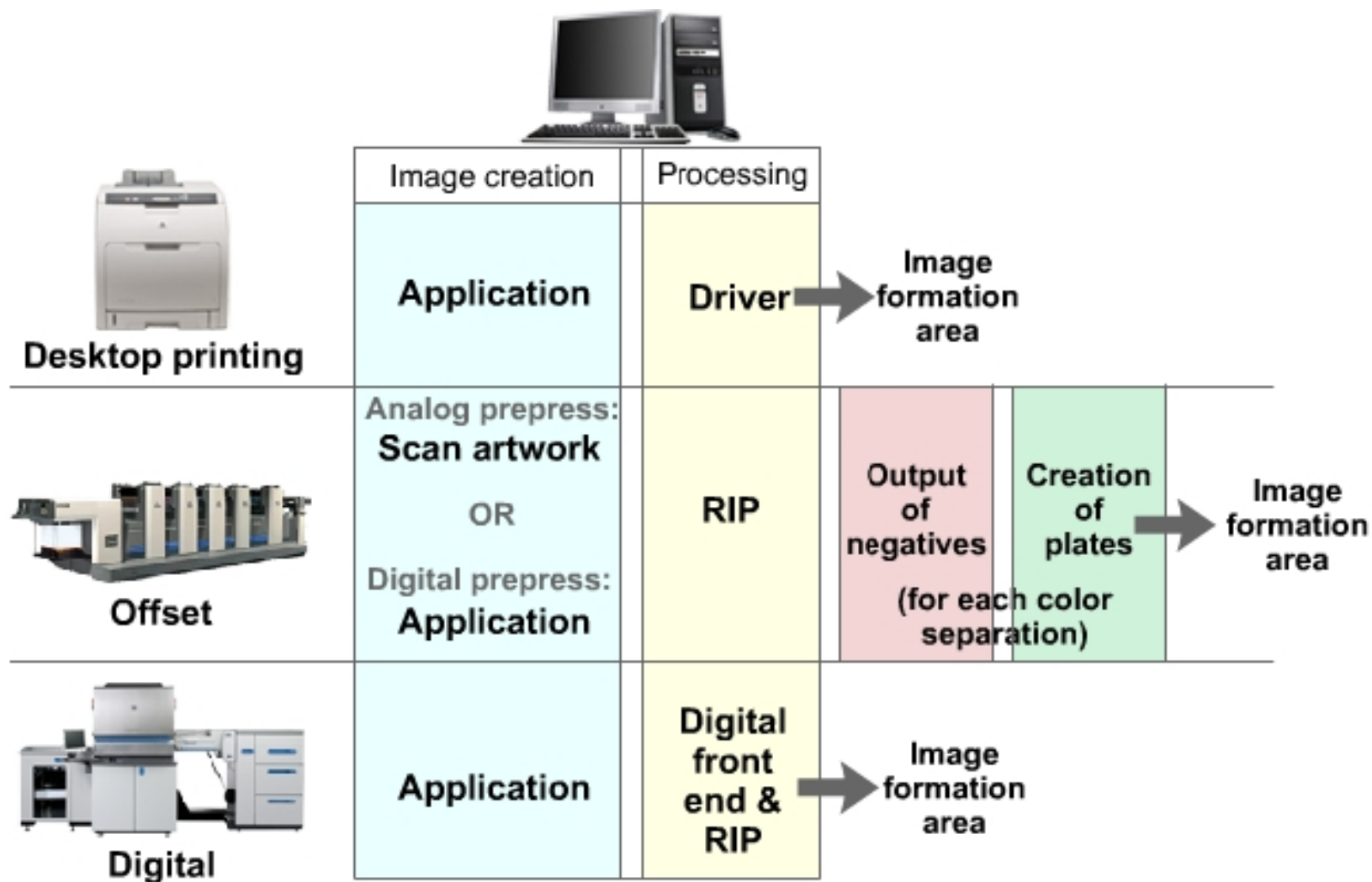


Offset  
Ink  
absorption

**Offset press**



# Pre-press



# “RIPing” a file into CMYK

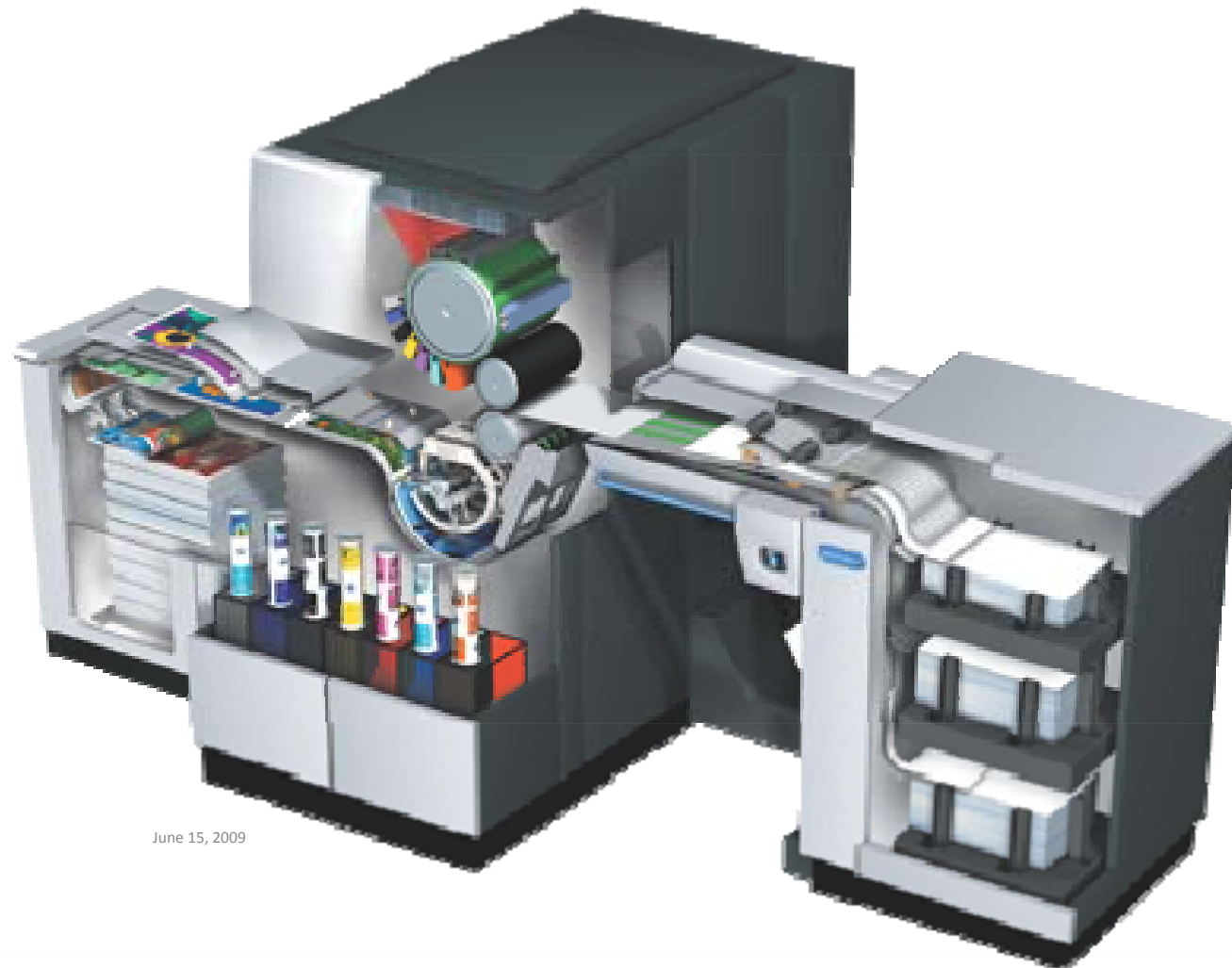


C = cyan  
M = Magenta  
Y = Yellow  
K = Black



When printed, the overlapping dots of the colors reproduce the full color image.

# Image transfer components

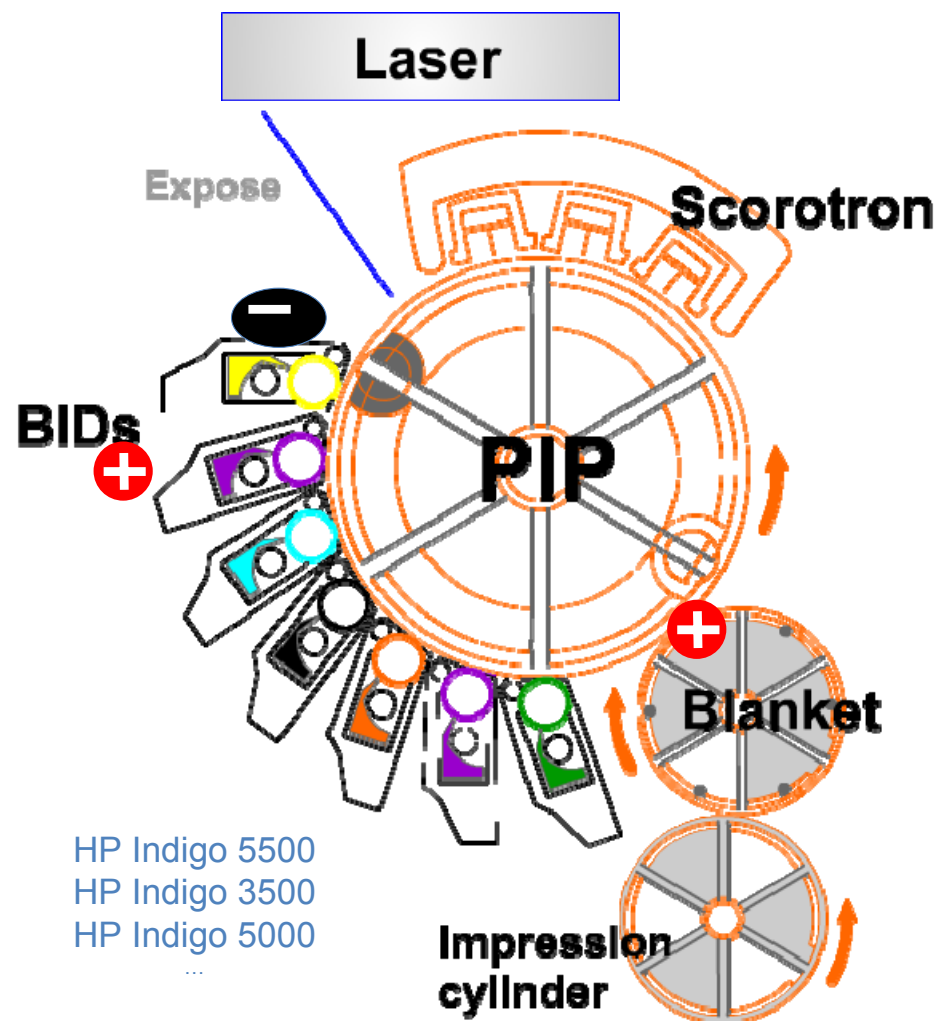


June 15, 2009

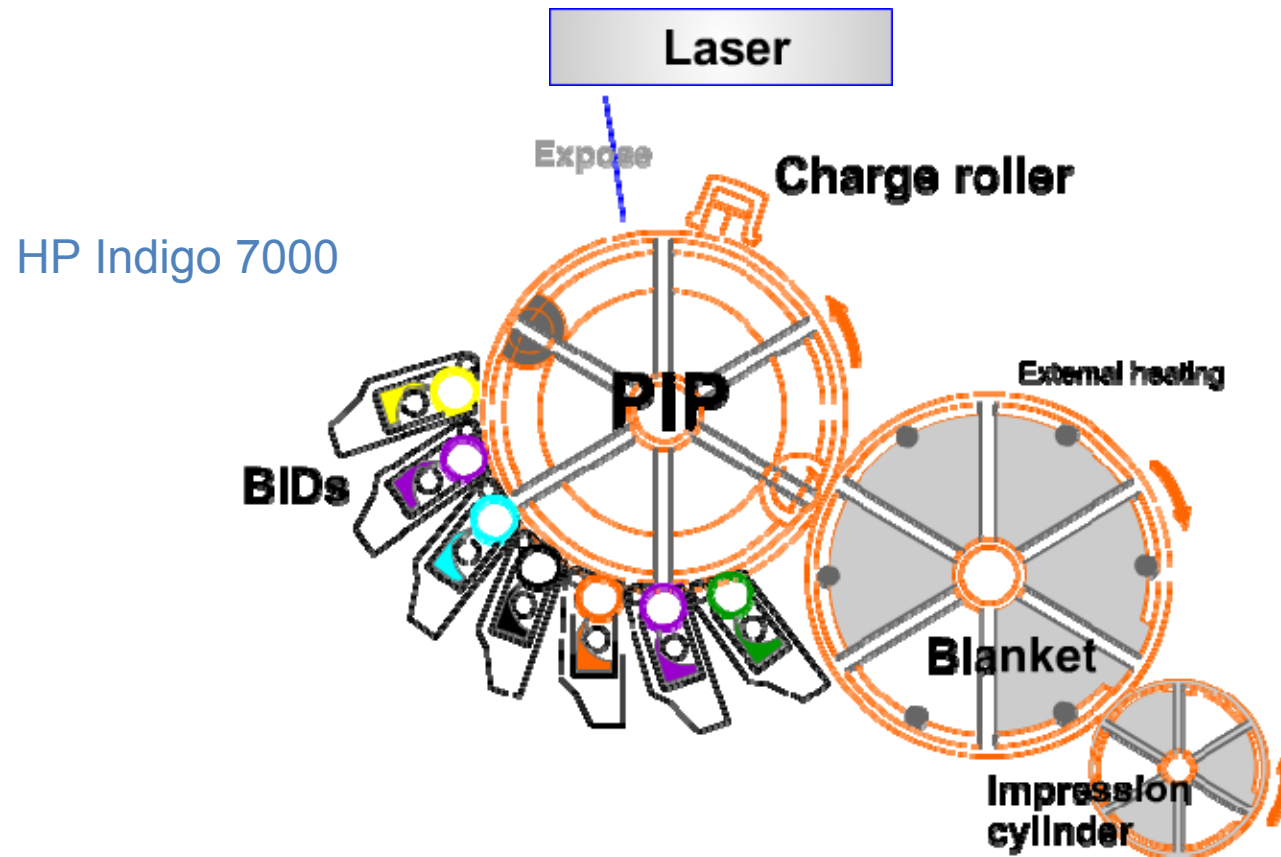
# Image transfer process

## Electrostatic forces moves the ink

1. PIP is negatively charged but VERY negative - up to 1000 volts!
2. When laser strikes the PIP it discharges almost all of its charge
3. Ink is negatively charged but is positive in comparison and is attracted to the less positive areas of the PIP.
4. PIP transfers ink to blanket through temperature differences AND pressure



# New Commercial Press Transfer Process



# Indigo generations: one shot and four shot

- [Image transfer process four-shot](#)

Commercial presses:

–7000

–5500

–3500

–5000

–3050

–1050

- [Image transfer process one-shot](#)

–All web presses: w3250, w7200

–All Industrial presses: ws4500, s2000, ws6000

# LEP – Liquid Electrophotographic ink

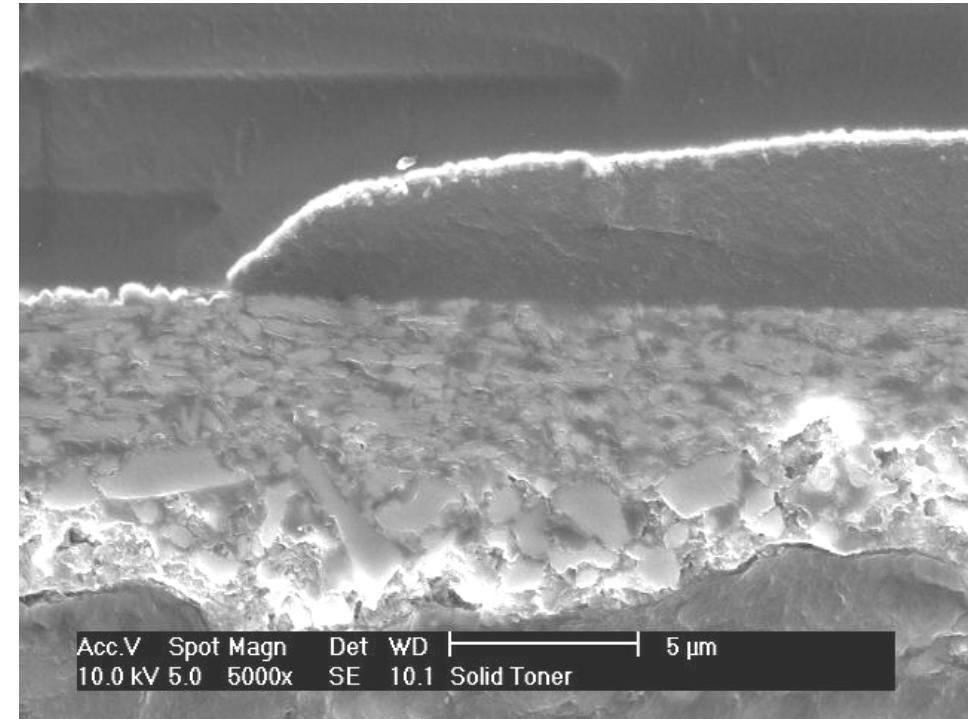
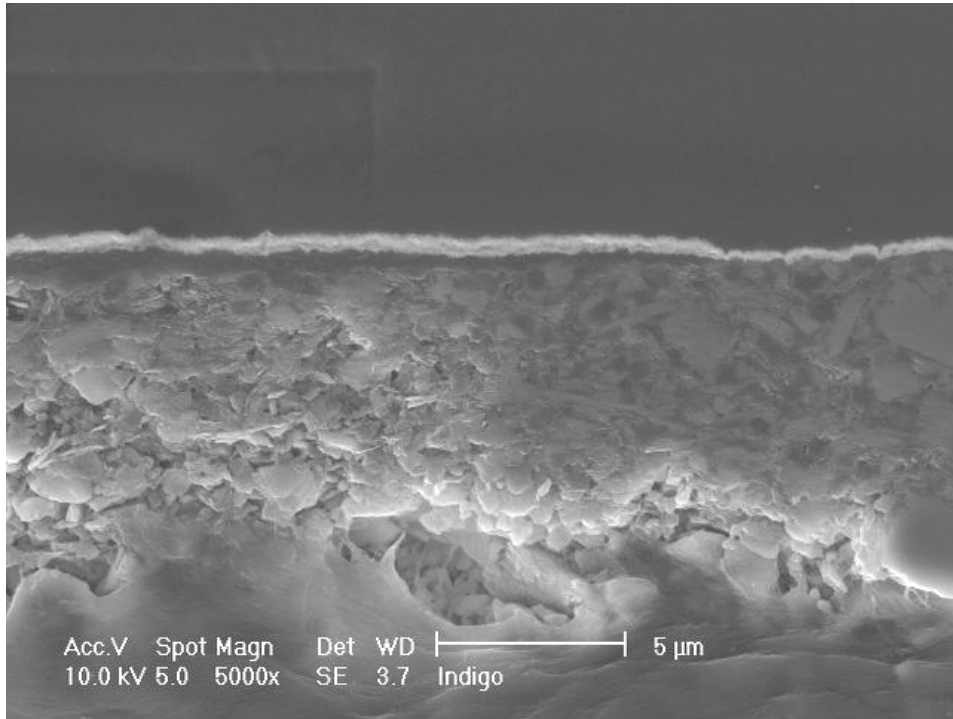
Like other digital printing technologies, HP ElectroInk enables digital printing by electrically controlling the location of the print particles.

HP ElectroInk is supplied as a concentrated paste that is loaded into the press in tubular cartridges in a ‘clean hands’ operation. Inside the press it is fed into ink supply tanks and diluted with oil, to form a fluid mixture of carrier liquid and colorant particles ready for printing.

The small particle size in the liquid carrier enables high resolution, uniform gloss, sharp image edges, and very thin image layers which closely follow the surface topography of the paper resulting in a highly uniform finish complementing that of the paper.

- Ink is dilute, particles are far apart, as the image is created the particles get closer together, less gel like, more like a solid
- Micro thick polymeric film
  - Think “Fruit Roll-up”

# Particle Size of LEP vs. Toner



# Media: What works and testing

# Three types of certified papers

- Plain papers
  - Papers that naturally work with HP Indigo presses.
- Optimized papers
  - Papers that have chemicals added during the production of the paper enabling the paper to perform well on our presses.
- Treated papers
  - Papers that are off line surface treated for ink adhesion (sapphire, digiprime, or other chemical solutions)

# Evaluation of Media

- North America's testing facility is Rochester Institute of Technology (RIT)
- Equipment for testing: 7000, 5000 and 4050
- Ws 6000 testing performed within HP Indigo
- Purpose of certification: to provide our customers with media recommendations for a large variety of applications. The media must prove to be reliable, of sufficient quality and perform well on press and with our consumables.

# Testing Method

- The substrate certification procedure is built from 3 main categories:
  - **Runnability** – check the ability of the machine to run the tested substrate.
  - **Optimization** – check the fixing parameters (peeling, flaking) of the substrate at several points, additional data is received for the optimize working point (SPP).
  - **Blanket compatibility** – check the 2<sup>nd</sup> transfer in terms of transferability, cleaning ability of the tested substrate, memories, small dots.

# Substrate Grading System

## Star Rating

- \*\*\*** 3 stars: best performing papers; fewer print cleaners needed; no blanket memories at least up to 12K impressions.
- \*\*** 2 stars: recommended papers; some print cleaners may be needed; slight memories may be seen at 12K impressions.
- \*** 1 star: good papers; print cleaners generally required; some memories may be seen at 12K impressions. Approved tape test, after one hour.

		<b>***</b>	<b>**</b>	<b>*</b>
	Measure	Best-performing paper	Recommended paper	Good papers
Transport	Runability	No jams or other issues	1 jam or minor issues	1 jam or minor issues
Fixing	Peeling: 100-400% K, 10 minutes	>90%	>80%	>80% only at nominal
	Peeling: monochrome black at 10 minutes	>80%	>70%	>70% only at nominal
	Flaking: guillotins, 5 minutes	<1 mm at 300% K	<1 mm at 200% K	<1 mm at 200% K only at Nominal

Region:  \*

Machine Type:  \*

Media:  Grade:

\* - mandatory field

- ★★★ Best-performing papers, suitable for more demanding applications and higher ink coverages. Best ink adhesion and blanket compatibility.
- ★★☆ Recommended papers, suitable for standard applications and ink coverages. Good ink adhesion and blanket compatibility.
- ★☆☆ Good papers, suitable for less demanding applications and ink coverages. Sufficient ink adhesion and blanket compatibility for most applications.
- ★ Green Star Substrates refer to certified products based on previous certification methods (prior to March 2006). The current standards of performance now ranks each media via a star system, which indicates the substrate's performance level for run-ability/transport, ink adhesion & blanket compatibility individually.

380 records returned

Name	Weight (US)	Weight (EU)	Certification Date	Grain	Runnability	Blanket Compatibility	Fixing	Supplier
»Accent Opaque Digital Smooth	!NEW 50#/1.0038"	72 gsm	11-Apr-2007	Long	★★★	★★★	★★★☆☆	International Paper
»Accent Opaque Digital Smooth	!NEW 60# text smooth/.0046"	92 gsm	07-Apr-2007	Long	★★★	★★★	★★★☆☆	International Paper
»Accent Opaque Digital Smooth	!NEW 70# text/.005"	104 gsm	11-Apr-2007	Long	★★★	★★★	★★★☆☆	International Paper
»Accent Opaque Digital Smooth	!NEW 100# text smooth/.0074"	-----	11-Apr-2007	Long	★★★	★★★	★★★☆☆	International Paper

# LEP and paper usage

# Digital = Growth: HP Indigo LEP

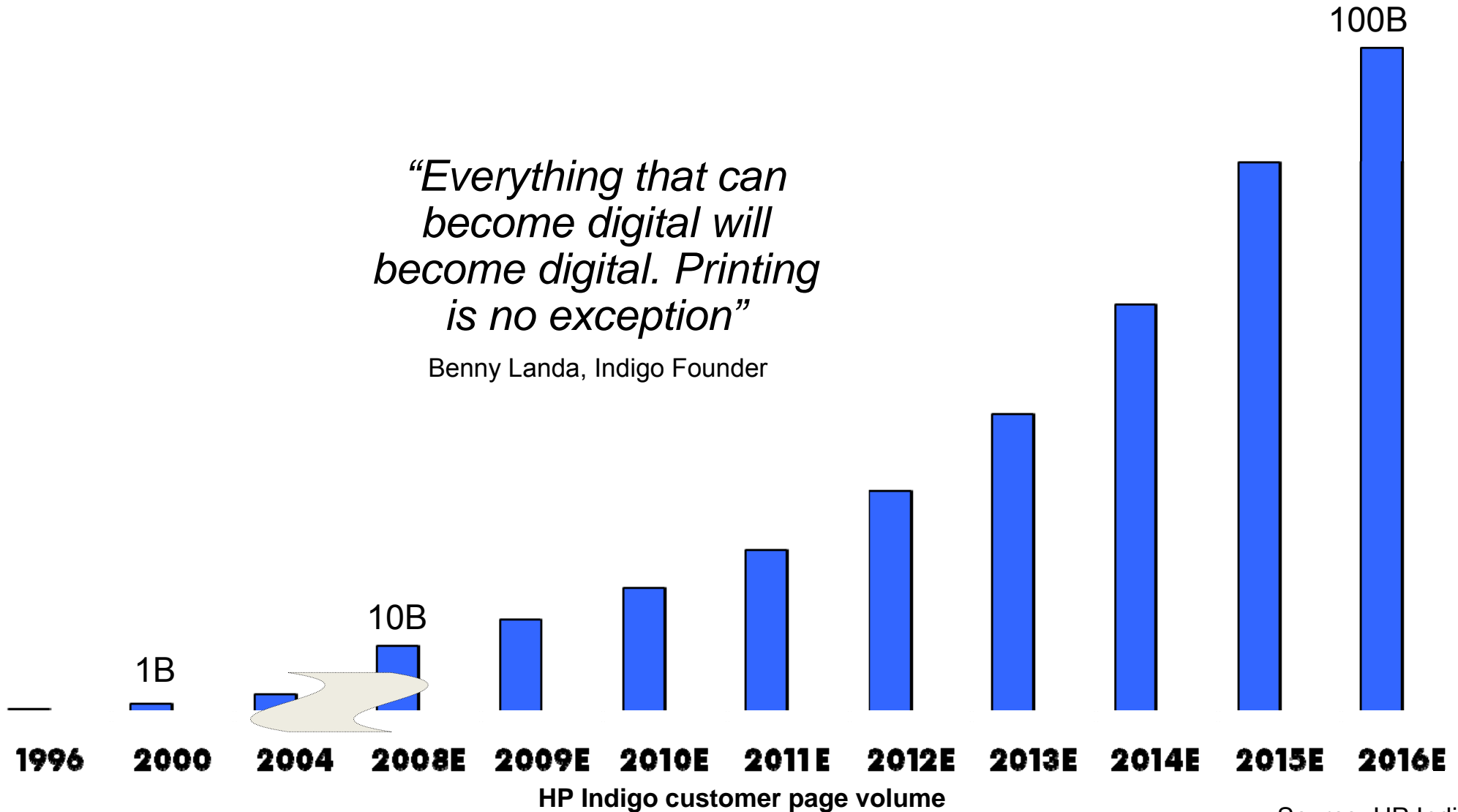
Drupa 1995 → '08

Drupa '08 → '12

Drupa '12 → '16

*“Everything that can become digital will become digital. Printing is no exception”*

Benny Landa, Indigo Founder



Source: HP Indigo

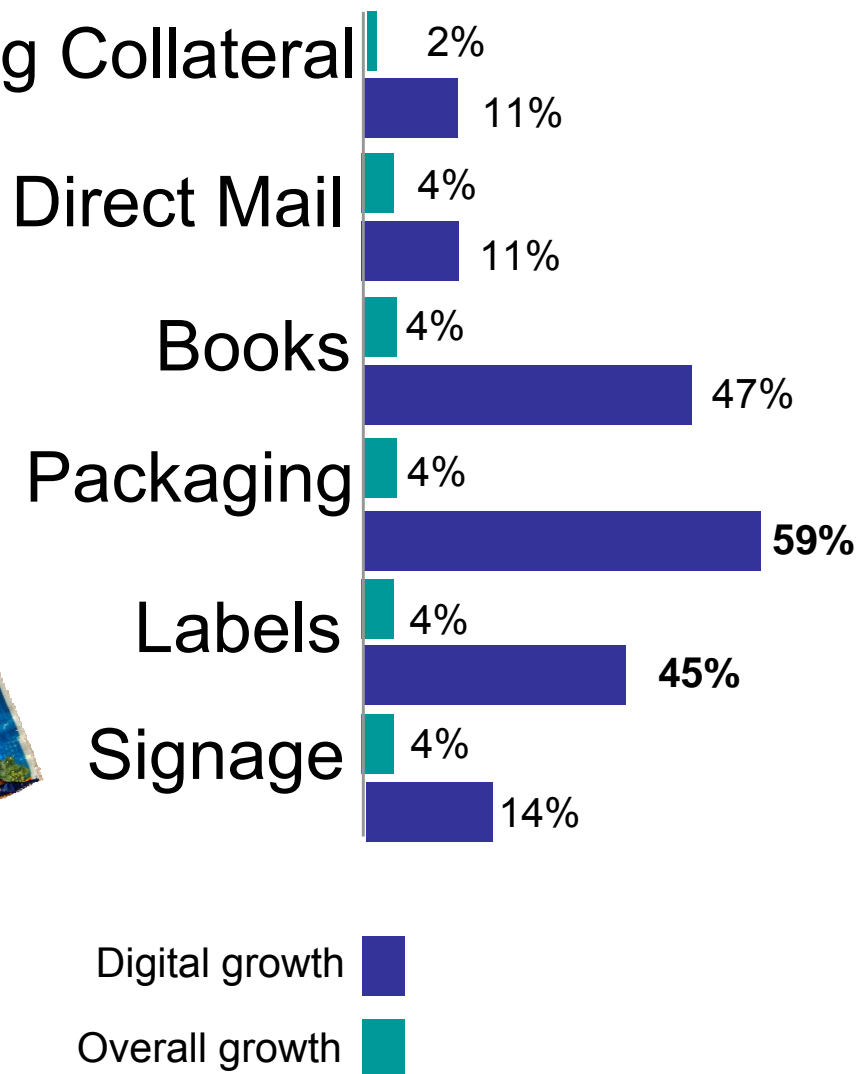
# The future is Digital

- What's driving the growth?
  - Break-even point
  - Creating new digital pages
  - Deconstruction/Reconstruction of the value chain
  - Environmental considerations

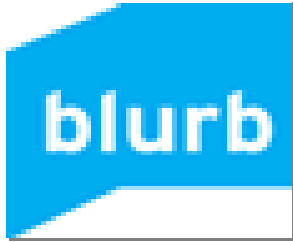
Source: HP internal estimates



## Marketing Collateral



# Innovative customers



Thank You