New printing processes and applications that are and can expand the positioning of today’s printer.

Learning from others

Printers offer all types of services that are not directly print related.
Non-Print Revenue

Printers offer all types of services that are not directly print related:

- Design Services
- Marketing Services
- Web/Internet Services
- Data Management Services
- Fulfillment and Warehousing
- Photography and Video Production
- Mailing Services
- CD/DVD/USB Replication Services

Non-Print Revenue

2011 Non-Print Revenue by Service

<table>
<thead>
<tr>
<th>Service</th>
<th>2011 Revenue</th>
<th>2016 Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Services</td>
<td>$5.27</td>
<td>$8.37</td>
</tr>
<tr>
<td>Marketing Services</td>
<td>$0.57</td>
<td>$0.98</td>
</tr>
<tr>
<td>Web/Internet Services</td>
<td>$0.41</td>
<td>$0.61</td>
</tr>
<tr>
<td>Data Management Services</td>
<td>$0.27</td>
<td>$0.41</td>
</tr>
<tr>
<td>Fulfillment and Warehousing</td>
<td>$2.79</td>
<td>$4.37</td>
</tr>
<tr>
<td>Photography and Video Production</td>
<td>$0.57</td>
<td>$0.87</td>
</tr>
<tr>
<td>Mailing Services</td>
<td>$0.27</td>
<td>$0.41</td>
</tr>
<tr>
<td>CD/DVD/USB Replication</td>
<td>$0.27</td>
<td>$0.41</td>
</tr>
<tr>
<td>Total</td>
<td>$22.8 billion</td>
<td>$35.3 million</td>
</tr>
</tbody>
</table>

Non-Print Revenue 2011 and 2016

- 2011 Non-Print Revenue: $21.23 billion
- 2016 Non-Print Revenue: $33.24 billion
- % Change: 56.5%

Market Segment

<table>
<thead>
<tr>
<th>Segment</th>
<th>2011 Revenue</th>
<th>2016 Revenue</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Printers</td>
<td>$11.24</td>
<td>$19.37</td>
<td>72%</td>
</tr>
<tr>
<td>Digital Imaging Service Firms</td>
<td>$1.64</td>
<td>$2.53</td>
<td>54%</td>
</tr>
<tr>
<td>Direct Mail Printers</td>
<td>$2.95</td>
<td>$3.40</td>
<td>15%</td>
</tr>
<tr>
<td>Transactional Printers</td>
<td>$0.57</td>
<td>$0.72</td>
<td>27%</td>
</tr>
<tr>
<td>Specialty Printing</td>
<td>$2.03</td>
<td>$3.45</td>
<td>70%</td>
</tr>
<tr>
<td>Package Printers</td>
<td>$2.80</td>
<td>$3.76</td>
<td>34%</td>
</tr>
<tr>
<td>Total</td>
<td>$21.23</td>
<td>$33.24</td>
<td>57%</td>
</tr>
</tbody>
</table>
Economy

2008 – 2013 No real growth
The recovery has been a marathon not a sprint.
Printing industry is predicted to grow 2-3% over the next year
Bumping up to 2.5%-3.5% next year
Our industry is finally growing again.

Print is not Dead!

We will be printing stuff in the future things that we have never printed in the past
In order to prepare for these innovations -
Add new technology that will open your business to new applications and opportunities
Strengthen the overall company positioning

Mergers, Acquisitions and Restructuring

From 2013-2014 an increase of 40% in mergers and acquisitions
Paper, Commercial, Packaging, Consumables are all merging
Dedicated business specifically for print related merges and acquisitions.
Most often they are acquiring the sales…..some cases the assets

New Technologies – Press Configurations

6 Color + Coater

• Double Coaters – inline enhancements
• Spot UV
• Spot Matte
• Special Effect Coatings
New Technologies – Press Configurations

- Double Coaters with Printing Units - inline enhancements
  - Spot Matte
  - Special Effects
  - Micro Embossing

New Technologies – Press Configurations

- Coating Units down first
  - Whites
  - Foils
  - Siding

New Technologies – Press Configurations

- Long Perfecting
  - Double Capacity
  - One pass
  - LED UV

New Technologies – Press Configurations

- Long Perfecting
  - Double Capacity
  - One pass
  - Coat both sides

New Technologies – Press Configurations

- Multiple printing units – vibrant PMS colors

New Technologies – Press Configurations

- Size – 81" sheet
### New Technologies – Press Configurations

![Image of press configuration]

**New Capabilities - Substrates**

Innovative Substrates
- Plastic Packages
  - PP, PE, PET, PVC, ETC.
- Flute packages
  - Micro, E, S, B, C, EB Flutes, etc.
- Board packages
  - Foli, SBS, CC, CCNB, Recycled board, etc.
- Specialty substrates
  - Pre Treated, Black, Viner, Security

Over the last 4 years, a reported growth of 3.22%, with an expected growth of 5.81% in the next 4 years.

### New Processes – Energy Curing

#### Features on Press
- Traditional UV – Mercury Vapor Lamp
- Optimized UV – Iron Doped MV lamp
- LED UV – The future of energy curable inks and coatings

![Diagram of UV radiation wavelengths]

Highest radiation intensity of the individual UV lamp type:
- **LED**
  - UV, Visible light, Infrared, X-ray
  - Reactive range of LED UV inks
  - Reactivity range of LED UV inks

#### New Processes – Energy Curable Inks

- **Traditional UV**
  - Mercury Vapor Lamp
- **Optimized UV**
  - Iron Doped Mercury Vapor lamp
- **LED UV** – the future of energy curable inks and coatings

![Diagram of LED UV curing]

**LED UV – The Future of drying**

- **4/4**
  - LED Stick
  - EOP UV
  - EOP IR
  - EOP HA

- **4/4+L**
New Processes

- Inline Cold Foil – foil application before printing

- Inert UV – food grade coatings

Implementation of new processes

Printing Markets
Markets Trends

- Packaging
  - Craft Beers
  - Marijuana
  - Ammunition
- Medical/Pharma
- Boutique
- Food
- Flexible
- Labels

Markets Trends

- Bio-gradable packaging
  - Using new substrates and coatings
- Die Sublimation
  - Old process new tricks

Markets Trends – Functional Printing

By breaking out of the boundaries we have placed upon “printing”, we once again open “printing” to limitless possibilities.

Ink on Substrate

LIFE BEGINS AT THE END OF YOUR COMFORT ZONE