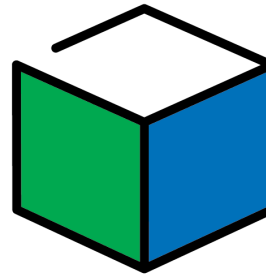


# Digital Print of Folding Cartons

*Intriguing or Compelling?*

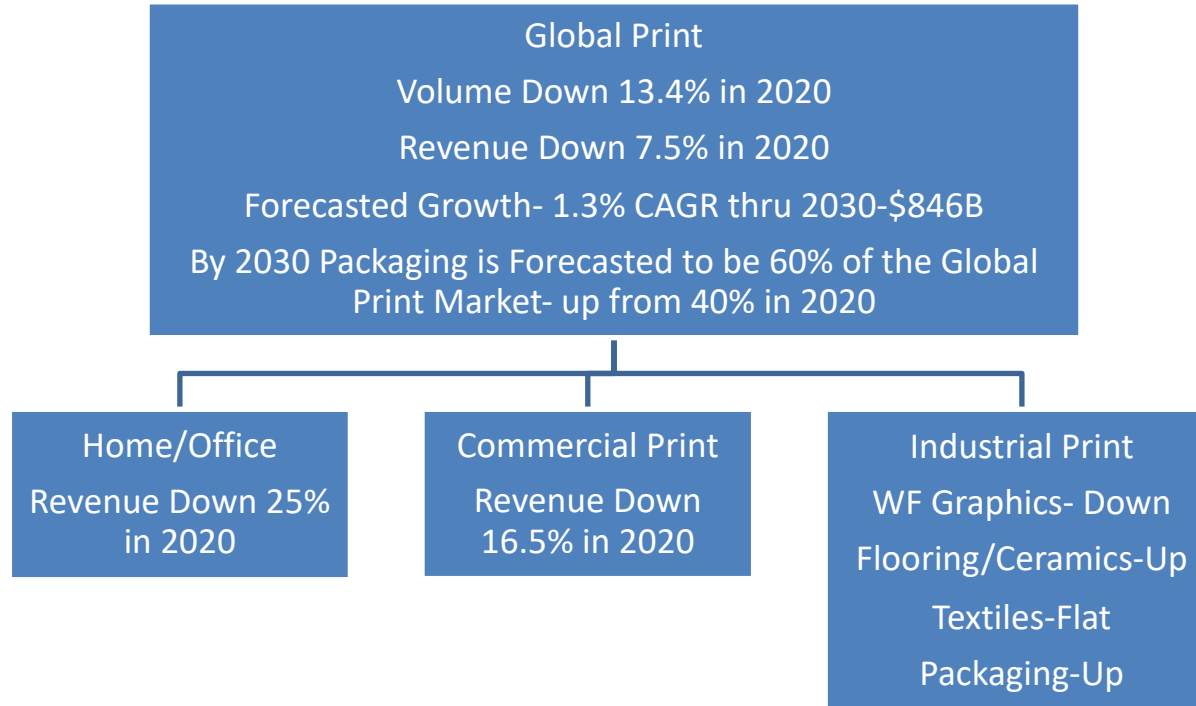


PAPERBOARD®  
PACKAGING  
COUNCIL

# Talking Points for Today

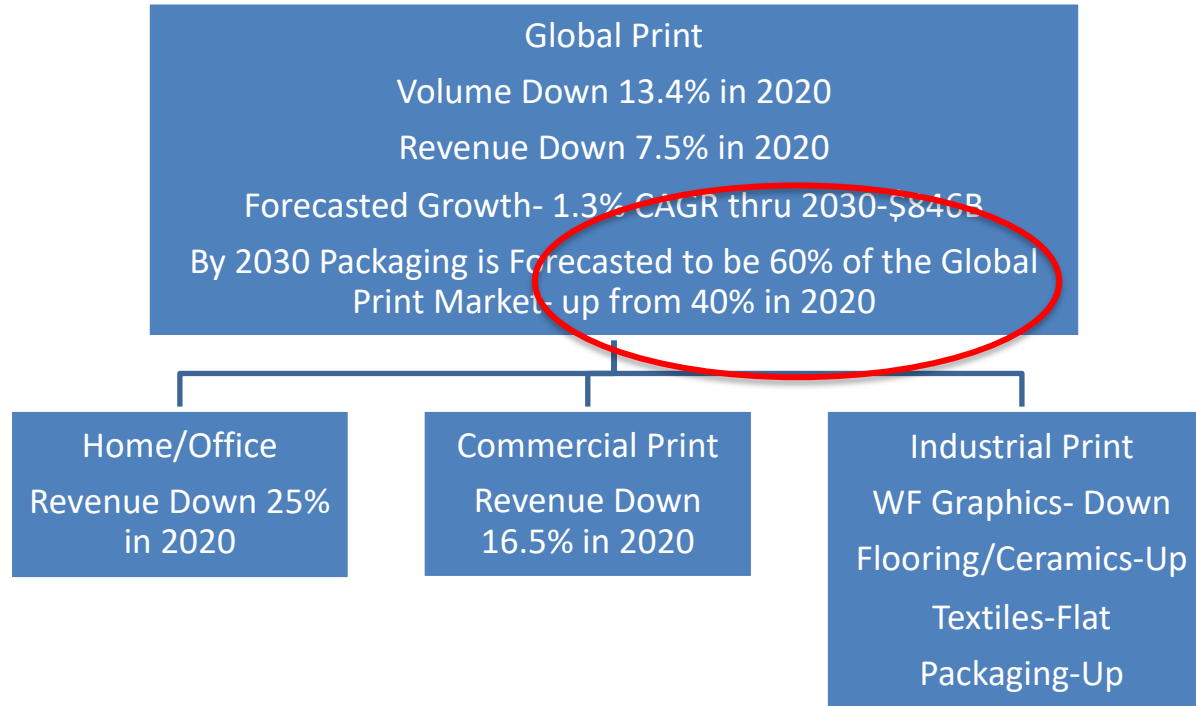
- Our view of “The Big Picture”
- What has changed since we looked at this in 2016?
- What impact is digital having in other packaging sectors and will it follow in folding cartons?
  - Why or why not?
- Technology update
  - What to keep an eye out for
- Staying abreast of developments

# The Big Picture – All Eyes on Packaging



Suppliers are Dependent on Packaging Participation!

# The Big Picture – All Eyes on Packaging



Suppliers are Dependent on Packaging Participation!

# The Big Picture – All Eyes on Packaging

- Implications for the Print Service Provider – Packaging Converters, Commercial Printers, Wide Format Graphics/Sign Printers
- Implications for suppliers of printing machinery, paper, board and substrates, inks, plates and chemicals, etc.
- Fanning the Flames.....
  - Brand/Retailer Needs – The “Amazon” Effect, Artificial Intelligence, Producing Location, Complex Business Operations
  - Technology – Robotics, Digital Printing, Analog Printing, Converting Options
  - Competition – Incumbent Competitors, Parallel Markets, New Entrants, In House Printing

# The Big Picture – All Eyes on Packaging

- *Traditional barriers to participation are blurring....*
  - Printers/Converters are being asked to expand the products and services they provide.
  - Printers/Converters are working their way through finding the right balance between delivering low cost, speed, flexibility and convenience. The options evaluated and pursued will vary by printer, depending on market, customer and business model.

# PPC Update

- 2016 Short Run Market Study – Key Findings
- Member Response
- Anticipating Future Headwinds
  - Business at Risk – "In Play"
  - Who will be competing?
  - How will they compete?
- Converting Operations of the Future
  - Sales, Administrative, Pre-Press, Printing, Converting, Distribution
- The Role of Digital Printing

# PPC Update

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# What Happened?

- PPC study in 2016 anticipates a favorable response to digital investment
- The disconnect – less than 19 presses doing production digital cartons today
- Why?
  - Digital value proposition?
  - Financial?
  - Technology?

# PPC Members Survey – Recap

- 100% Agree or Strongly Agree that Short Run production is a necessity of doing business
- Split regarding reasons for participating in Short Runs
  - *“To the Extent Possible, we Limit Participation in Short Run Business to Requirements that Lead to Larger Orders, or Where Required by Customers”*
    - 50% Strongly Agreed
    - 33% Strongly Disagreed
    - 16% Were Neutral
- **What is a short run? Business at risk – “In Play”**
  - 7300 cartons, 4800 sheets – Now? 5000 and 4000?
  - 15% of volume, 25% of jobs – Now? 25% and 35%?

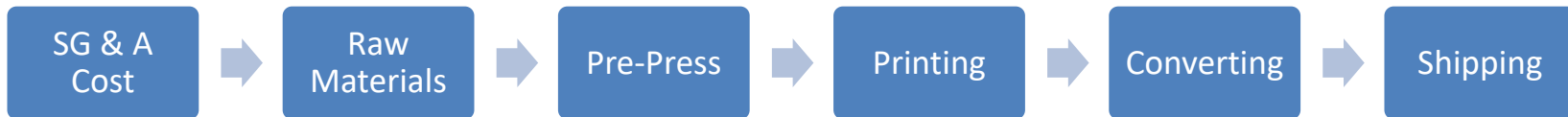
# Lessons Learned Since 2016.....

## Digital Value Proposition

Speed, Flexibility, Convenience – Internal & External

Product Cost

Total Cost



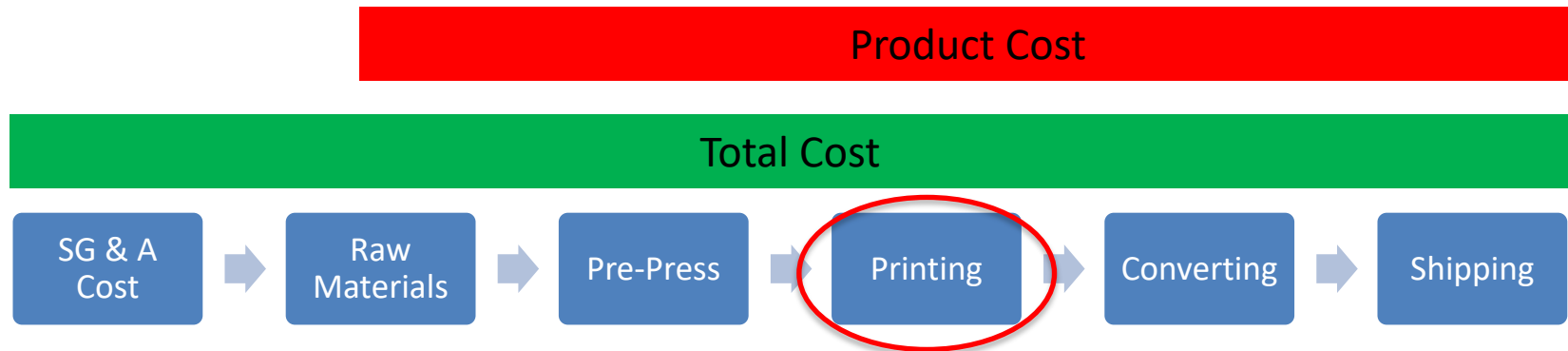
What has the Biggest impact on Profitability?

- Lowering cost in a specific operation? Or.....
- Reducing total cost across the whole operation?

# An Example From Corrugated Packaging

## Digital Value Proposition

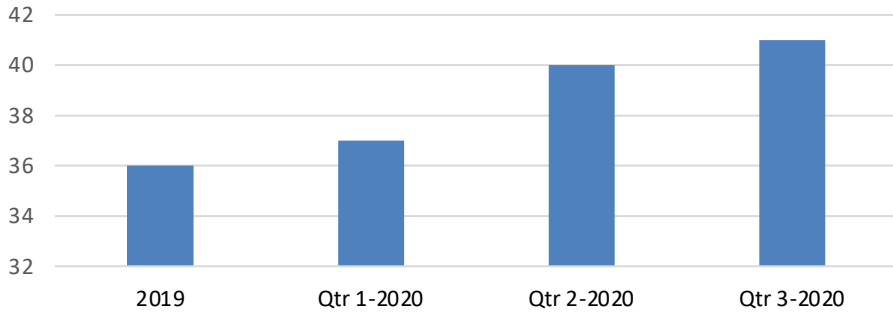
Speed, Flexibility, Convenience – Internal & External



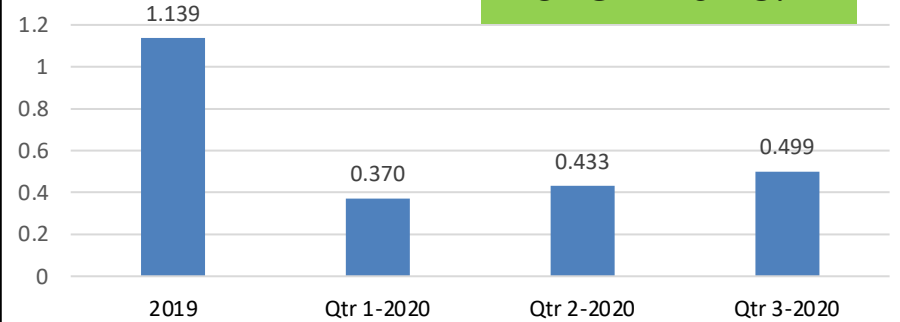
- Cost Reduction in Print was the Initial Point-of-Entry
- Participation Expanded as Converters Began to Focus on Productivity – Highest Volume Out the Door at the Lowest Cost

# The Results.....

NA Installed Base  
Corrugated Single Pass



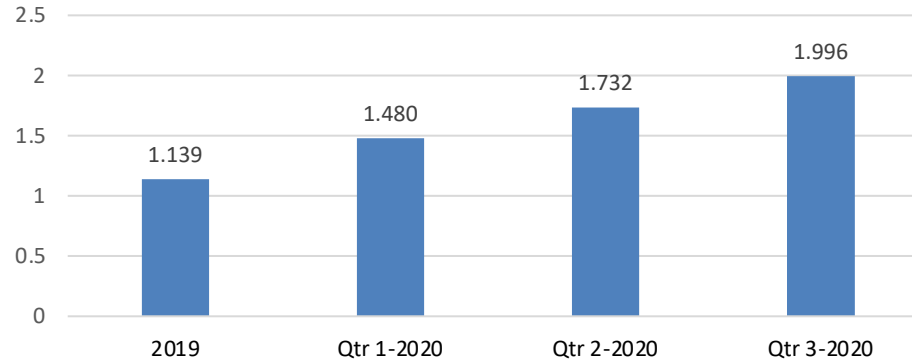
Output- Sq. Ft. Bn.  
Actual



Industry Output Now  
Driven by Higher  
Volume/Run

Approximately 40% of  
Digital Runs are Now  
½ truck to full truck  
quantities!

Annualized Output- Sq. Ft. Bn.



2019 vs. 3<sup>rd</sup> Qtr.  
Annualized  
CAGR- 75.24%

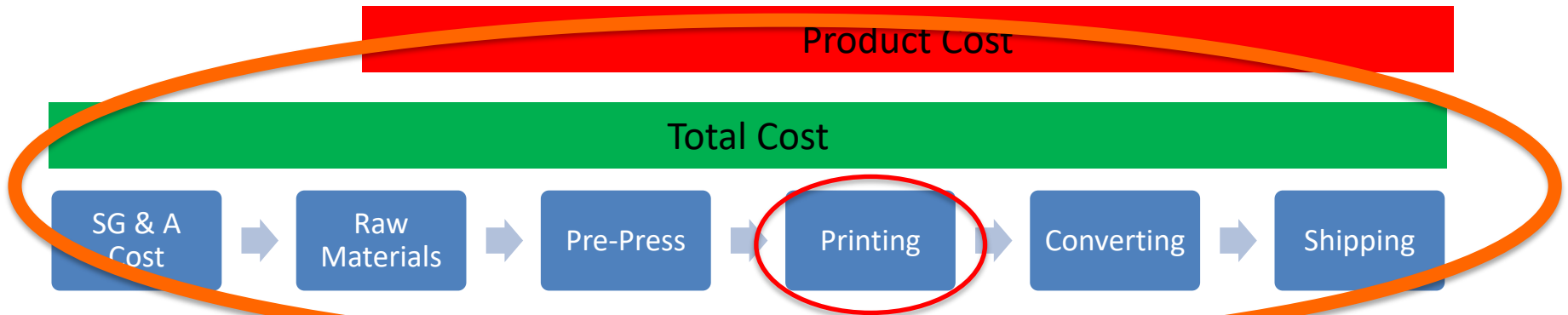
# Digital Impact



# An Example From Corrugated Packaging

## Digital Value Proposition

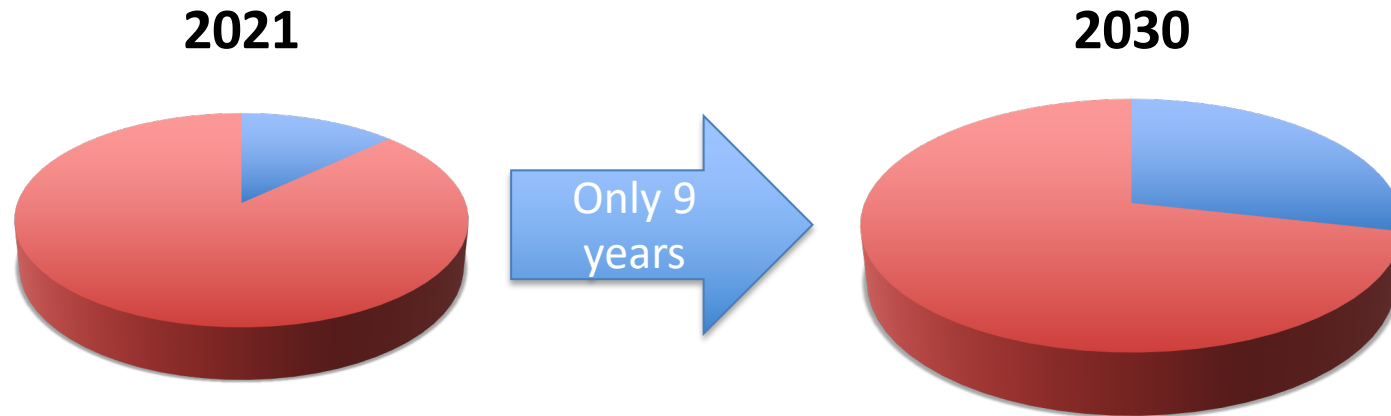
Speed, Flexibility, Convenience – Internal & External



- Cost Reduction in Print was the Initial Point of Entry
- Participation Expanded as Converters Began to Focus on Productivity – Highest Volume Out the Door at the Lowest Cost

# Digital for Cartons – What is the Impact?

**The Incumbent Dilemma** - Stay the Course or Plot a New Direction? Increased Investment through New Suppliers will Accelerate Change. The Impact of Disruptive Technologies is the Most Difficult to Predict!



What If? Today – Investment Decision ROI Based – Cost of Print.  
What if the Future Role is Larger, Can You Catch Up?

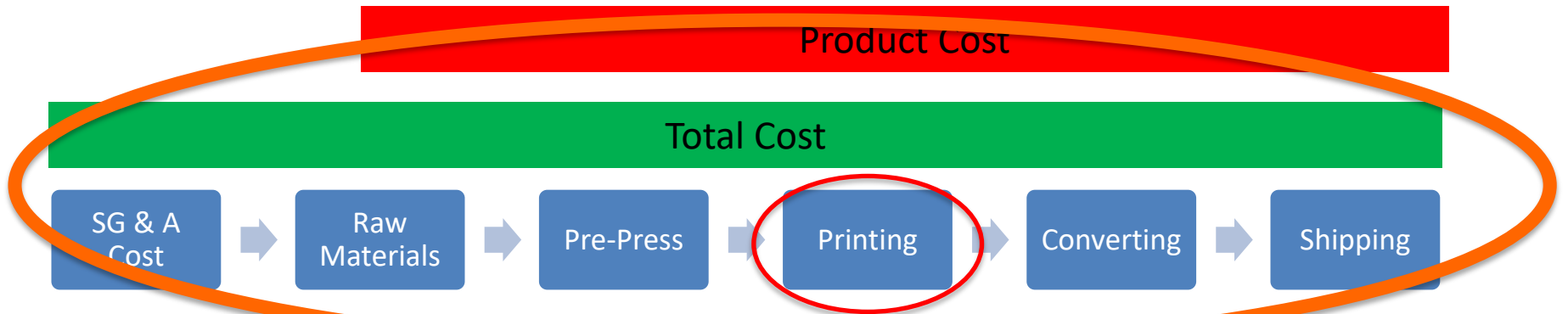
# What helps connect you to your “Factory of the Future”

- How will you manage your business when you have 3,4 or 5 times the number of jobs than you do today?
- Automation – The Buzz Word for the Decade
  - Sales – Web enabled, e-commerce
  - Customer Administration – Order entry, management, billing
  - Plant Administration – Inventory, scheduling
  - Print
  - Converting
  - Distribution
- What assets best address this need?

# An Example From Corrugated Packaging

## Digital Value Proposition

Speed, Flexibility, Convenience – Internal & External



- Cost Reduction in Print was the Initial Point of Entry
- Participation Expanded as Converters Began to Focus on Productivity – Highest Volume Out the Door at the Lowest Cost

# What Happened?

- PPC study in 2016 anticipates a favorable response to digital investment
- The disconnect – less than 19 presses doing production digital cartons today
- Why?
  - Digital value proposition?
    - ~~Lower cost for short run~~
  - Financial?
    - Shift from Print to Enterprise
  - Technology?

# Technology Update

- **Production Digital Presses**
  - < 19 currently installed and operating in dedicated folding carton plants in North America
  - Landa and HP Indigo will add to this number in 2021
- Three major players poised to extend or go into Beta
- HP Indigo introduces 35K – Second Generation

# Technology Update

- Koenig & Bauer – 40” (B1) format – VariJET 106
  - Based on the Rapida Chassis
  - CMYKOGV with FujiFilm Samba heads
  - In conjunction with Durst
  - Release in Europe in 2021 and NA in 2022
- Komori – 40” (B1) Nanographic
  - Beta in North America in 2021
- Inca/Screen – 40” (B1) format – SpeedSet 1060
  - Based on imaging work done for BHS corrugated press
  - Pre and Post coating done with Inkjet
  - Rated at 11,000 sph
  - Beta in 2021

# Technology Update

- HP Indigo introduces 35K – Second Generation
  - Many enhancements to the 30000
    - Feeder and transport systems
    - Stacker system
    - Options are now standard
  - 7 color engine (CMYKOVG or CMYKOVW)
  - Software enhancements for color management and defect detection and elimination
  - All new installs will be 35K

# Technology Update

- Other digital solutions producing cartons
  - Xeikon – 3500
  - Fujifilm – J Press 750S
  - Konica Minolta – KM1
  - HP Indigo – 10000 and 12000
  - Komori – IS29
  - Xerox – IGen
  - Other cut sheet digital systems
    - Konica Minolta
    - Ricoh
    - Canon
    - Xerox
    - Heidelberg
  - Mostly by Commercial & Specialty Printers and In-Plant

# Technology Update

- Other digital solutions and notes of interest
  - Highcon
    - IPO – Raised \$45M and has a valuation of \$165M
    - New installations coming in NA in 2021 mostly in Corrugated
    - Product enhancements as well as automation and integration SW
  - Bobst
    - Buys the remainder of Mouvent – Digital Printing
    - Joins forces with SEI Laser – 40” format
  - MGI – AlphaJET – 40” Press and Embellishment
    - Factory 4.0
    - Hybrid
      - Digital Spot and UV Varnish and Digital Hot Foil
    - Circular design
  - Other converting equipment suppliers...

# Introducing Digital Carton Benchmarking Study

## Multi Client Report

- Semi – Annual Report
- Areas of Focus
  - Installed Base, Output
  - Press Performance- Issues, Enhancements, Challenges, Workflow Impact
  - Market/Business Impact
  - Where Used, Why Used, Impact
  - Is Digital Printing Providing Competitive Advantage?
- Methodology
  - Qualitative and Quantitative Interviews with Converters, Suppliers and Brands
- Additional Information/Pricing
  - Contact Kevin (716-992-2017) or Jeff (317-710-6744) for more information and to sign up.





# Q&A Time

Thank you for your attention

Please feel free to contact us:

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