ON DEMAND TEXTILES
The Colorful Challenge of Web to Print

- Textiles on the web
- E-commerce experience
- Customer expectations
- Digital textile manufacturing
- Spoonflower as a case study
- Technology solutions
- Digital workflow & color management
- Challenges for development

E-COMMERCE EXPERIENCE & TEXTILE PRODUCTS

- Customers may be B2B or B2C
- Looking for unique, custom or DIY approach
- Setting demands an easy/low touch strategy
- Products readily found
- Ordering process must be understandable
- Web tools that inform & empower

CUSTOMER EXPECTATIONS

- Rapid delivery
- Product appearance
- Color
- Texture
- Image layout & placement
- Image scale
- Product performance
- Hand/feel
- Colorfastness to care & use

WEB TO PRINT

- Flexible - short runs/lots of variety
- Efficient - minimal setup/rapid processing
- Automated – workflow & systems
- Digital - rather than analogue production systems

WATERLESS PRINTING

- Significant for textiles
- Minimal processing
- Environmental footprint
- Ability to turn orders quickly
- Good fit for e-commerce
@ SPOONFLOWER

- Customers upload their own designs or shop from the marketplace
- Ultra short run – average order size <5 yds
- Process 1000’s of orders/day via automated workflow
- Spoonflower + Roostery
- Offices in Durham & Berlin

CRAFT, APPAREL & HOME...

BY THE YARD & HOME TEXTILES

- Swatches & fat quarters
- Whole yards/meters
- Pillows, tea towels, blankets
- Bed and table linens
- Wallpaper & gift wrap

DIGITAL WORKFLOW BEGINS AT UPLOAD

File types:
- 64% JPG
- 31% PNG
- 4% Tiff
- 1% GIF

Embedded profiles:
- 48% sRGB IEC61966-2.1
- 45% Adobe RGB
- 2.2% CMYK (SWAP)
- other

DIGITAL TEXTILE - SOURCE IMAGERY

- Repeating surface designs or engineered prints
- Digitally designed or rendered from hand drawn & painterly sources
- Limited palette or full color & photographic images
- Average image size (pixels) 2782 x 2825

AUTOMATED ORDER PROCESSING

Considers:
- Printer platform
- Pigment vs poly
- Hardware solution
- Color profiles
- Color arrangement
- Optimized for fabric & ink properties
- Image layout
- Repeat vs. engineered
- Print width & length
- Rapid ingestion of many small jobs
OPPORTUNITY: STANDARDIZATION
- Data requirements vary by system
- Gray scale color separations
- Job identification elements
- Data flow must keep pace with printer
- Send smallest unit
- Standard definitions for layout options
- Standard format for print instructions (i.e. JDF, XML?)

PIGMENTS
- Natural fibers
- Simplicity of processing
- Print/cure/cut/ship
- Quality issues caughtResolved in process
- Wovens & knits
- Slower to develop/emerging for high speed
- Challenging to maintain
- Advancing color gamut
- Development of pretreatments for gamut & color fastness

DYE SUBLIMATION
- Polyester & Poly/Spandex blends
- Wovens & knits
- Well developed technology
- Large color gamut
- Color fast to wash & crock
- Less efficacious
  - Print paper/transfer/cut/ship
  - 2 steps to identify color issues
  - Reprints take longer

COLOR EXPECTATIONS
Designers:
- Replication of design intent
- Preview
- Printed color
- Designer tools to support process
Purchasers:
- Fidelity to web preview
- Consistency across fabrics
- Previews & samples to support purchasing

CHALLENGE: COLOR OPTIMIZATION
Color arrangement:
- CMYK
- CMY + R.G.B.LK
Fabric characteristics impact color:
- Natural vs. synthetic
- Texture & appearance
- White point
- Ink load
- Pigments change hand/feel
Preparation and finishing steps:
- Pretreatment impacts color penetration, density & fabric hand
- Disperse dyes develop through finishing

TECHNOLOGY CHALLENGE: PRODUCT VISUALIZATION
- Illustrating a product that is not yet produced
- Accurate representation of color
- Communication of drape and texture (i.e. look/feel)
- Photography vs. 3D renders
- Speed/complexity of generation for 1000’s of images
Most Pics In IKEA Catalogues Aren’t Photos, They’re 3D Renders

3D renders for 1,000’s of products
- Rapid generation (milliseconds)
- High quality
- High level of fidelity between the render and the delivered product
- Print position
- Print scale
- Material texture and drapes
- Color
- Mobile device - view & purchase

Rendering multiple products

Questions?
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