Advancements in Apparel and Fashion Product Development

Yoram Burg, GM | EFI Optitex USA
November 2016
who is your speaker?

- I am the General Manager of **efi | OPTITEX** (USA)
- For the past 28 years Optitex have been a CAD-CAM solution provider for the sewn goods industries, Third of this time we have been actively leading the quest for better 3D apparel product development and visualization
  
  - At EFI we are working with, and consulting for top leading brands and retailers on better processes, design and development, turning analog to digital, in print automation, **color** & print management, and other productivity solutions
  
  - You will find us at speaking events, CEO Roundtable, trade events and other value events
  
  - And... **enough about us**
technology
welcome!

- The Can Opener Was Invented 45 Years After The Can
- The Screwdriver Wasn't Invented Until Three Centuries After the Screw
- The Steering Wheel Was Invented Eight Years After The First Car
- A twillionaire is a twitterer with a million or more followers.
why are we here today?

- Profits for US businesses have been falling for 5 straight quarters

- This is the longest skid since the recession – Bureau of Economic Analysis

- Only once since WWII era (back in the 80’s), had there been 5 consecutive quarters of decline in profits without coinciding with a recession
why are we here today?

• The fashion industry has been changing dramatically over the past years
• Our customers have been changing their shopping patterns
• Can the industry stay the same?

Deb Shops  Cache
Wet Seal    Quicksilver
Delia’s     Sports Authority
Coldwater Creek  American Apparel
Aeropostale  PacSun
why are we here today?

• Work flows are shorter requiring faster turn times with the ability to iterate and ideate *sooner* in the cycle
• The general progression *is* from paper to electronic
• Innovation with textile and art application
• The need for multi talented people with knowledge in several areas from design to production to sourcing
• Utilization of technology has become a must in apparel design and product development
this is after all a

$1.3T fashion industry
some stats (2015)

Amazon is now second only to Walmart in terms of overall apparel market share, according to Morgan Stanley analysts.

![US Apparel Market Share Chart]

Top 10 Market Share 46%
some stats (2015)

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td># of US households</td>
<td>124,590,000.00</td>
<td>(2015)</td>
</tr>
<tr>
<td>average gross income / household</td>
<td>69,629.00</td>
<td>(2015)</td>
</tr>
<tr>
<td>net household income</td>
<td>60,000.00</td>
<td>(2015)</td>
</tr>
<tr>
<td>net consumer spending</td>
<td>56,000.00</td>
<td>(2015)</td>
</tr>
<tr>
<td>net saving per family</td>
<td>4,000.00</td>
<td>7.1%</td>
</tr>
<tr>
<td>clothing spending per household</td>
<td>1,838.00</td>
<td>3.3%</td>
</tr>
<tr>
<td>clothing apparel market</td>
<td>229.0 Billion</td>
<td></td>
</tr>
</tbody>
</table>

source: bureau of L. Statistics
How partisan is our clothing?

<table>
<thead>
<tr>
<th>Election Cycle</th>
<th>Total Contributions</th>
<th>Contributions from Individuals</th>
<th>Contributions from PACs</th>
<th>Soft/Outside Money</th>
<th>Donations to Democrats</th>
<th>Donations to Republicans</th>
<th>% to Dems</th>
<th>% to Repubs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>$555,364</td>
<td>$548,264</td>
<td>$7,100</td>
<td>$0</td>
<td>$348,763</td>
<td>$206,601</td>
<td>63%</td>
<td>37%</td>
</tr>
<tr>
<td>1992</td>
<td>$1,836,354</td>
<td>$1,391,197</td>
<td>$7,100</td>
<td>$438,057</td>
<td>$966,466</td>
<td>$865,807</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>1994</td>
<td>$1,154,911</td>
<td>$758,566</td>
<td>$7,350</td>
<td>$388,995</td>
<td>$697,742</td>
<td>$457,169</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>1996</td>
<td>$2,572,739</td>
<td>$1,189,492</td>
<td>$82,325</td>
<td>$1,300,922</td>
<td>$1,308,502</td>
<td>$1,263,683</td>
<td>51%</td>
<td>49%</td>
</tr>
<tr>
<td>1998</td>
<td>$2,404,361</td>
<td>$1,040,852</td>
<td>$111,025</td>
<td>$1,252,484</td>
<td>$1,013,217</td>
<td>$1,370,184</td>
<td>42%</td>
<td>57%</td>
</tr>
<tr>
<td>2000</td>
<td>$2,666,054</td>
<td>$1,557,912</td>
<td>$67,726</td>
<td>$1,200,046</td>
<td>$1,055,656</td>
<td>$1,602,268</td>
<td>42%</td>
<td>60%</td>
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<tr>
<td>2002</td>
<td>$1,975,008</td>
<td>$819,629</td>
<td>$1,173,903</td>
<td>$1,135,683</td>
<td>$44,343</td>
<td>$1,360,665</td>
<td>22%</td>
<td>78%</td>
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<tr>
<td>2004</td>
<td>$2,455,086</td>
<td>$2,440,598</td>
<td>$2,750</td>
<td>$0</td>
<td>$1,146,610</td>
<td>$1,306,605</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>2006</td>
<td>$1,363,535</td>
<td>$1,325,535</td>
<td>$18,000</td>
<td>$20,000</td>
<td>$698,786</td>
<td>$638,549</td>
<td>51%</td>
<td>47%</td>
</tr>
<tr>
<td>2008</td>
<td>$3,029,177</td>
<td>$3,007,042</td>
<td>$22,135</td>
<td>$0</td>
<td>$863,475</td>
<td>$1,153,185</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>2010</td>
<td>$2,073,594</td>
<td>$1,978,794</td>
<td>$68,700</td>
<td>$26,100</td>
<td>$1,214,797</td>
<td>$837,397</td>
<td>59%</td>
<td>41%</td>
</tr>
<tr>
<td>2012</td>
<td>$5,087,517</td>
<td>$3,996,217</td>
<td>$39,250</td>
<td>$1,052,050</td>
<td>$1,863,658</td>
<td>$2,165,609</td>
<td>46%</td>
<td>54%</td>
</tr>
<tr>
<td>2014</td>
<td>$3,235,066</td>
<td>$2,447,195</td>
<td>$136,375</td>
<td>$651,496</td>
<td>$1,267,378</td>
<td>$1,324,258</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>2016</td>
<td>$3,857,254</td>
<td>$3,242,956</td>
<td>$150,625</td>
<td>$463,673</td>
<td>$1,879,486</td>
<td>$1,502,305</td>
<td>56%</td>
<td>44%</td>
</tr>
<tr>
<td>Total</td>
<td>$34,266,020</td>
<td>$25,734,231</td>
<td>$761,961</td>
<td>$7,769,828</td>
<td>$15,768,879</td>
<td>$16,224,285</td>
<td>49%</td>
<td>51%</td>
</tr>
</tbody>
</table>
technology already plays a major role

- Automotive
- Cellular
- Aerospace
- Vessels
- 3D printing
- Indulging...
automation is playing a game changing role

- Product development – controlling production in MX through a neat control center in Plymouth, Michigan
- Billing systems – (good and bad) the USPS is in trouble
- Holoportation – the next big thing
- The Digital Economy – are we really not progressing as many think?
If I win, I'm going to instruct my attorney general to put racists in charge. We are going to do great crimes with my programs. @jimjefferies

10/9/16, 9:31 PM

150 RETWEETS  228 LIKES

In reply to jimjefferies

DeepDrumpf
@DeepDrumpf

Donald TrumpBot
@therobot

I am a bot. I am learning to talk by reading everything @realDonaldTrump says.

New York, NY

debatebots.com

New to Twitter?
Sign up now to get your own personalized timeline!

Sign up

Nobody would be tougher on ISIS than Donald Trump. Nobody.

I love America. And when you love something, you protect it passionately—fiercely, even.
how technology will help the sewn goods industries?

• Will a robot iron my shirt? Will I be able to download a Body Form and 3D-print it at the office? Will we be able to reshore production through automation?
• Functional Fabrics - will our garments ‘live’ as in communicate and send information back – is this what wearable tech is all about?
• Let’s look at more sophisticated uses of processes we are somewhat familiar with such as PLM.
• Marine Covers – what the process of creating boat covers looks like?
• Can we influence the traditional apparel market into new ways?
Everyone been speaking about technology
Capabilities our industry has never had before
Who should you work with?

What’s best for your company?

HOW DO YOU CHOOSE?
what drives organization?

1. Need for faster development
   Ideally working to deliver faster, not just internally but also against the competition

2. Need to develop right
   Developing accurately, while meeting guests expectations – market trends

3. Work efficiently
   Focusing on operations efficiency, both from the brand and all other business partners
Search
Organizational and process mapping

Still some unknown so the following are assumptions

Strategy Design

Execute
Deployment plan + Forecasts
1. Deployment Planning
   - Deployment planning includes
     - Process Design
     - Business Case
     - Project plan

2. Implementation
   - Configuration
     - Technical setup
   - Training
     - Basic
     - Mentoring
     - Advanced

3. Adoption
   - Adoption Management
     - Bi-Weekly & Monthly plans
   - KPI
     - Success metrics analysis

Business benefits
- Current process map
- Roadmap to Digitalization
- Block Database
- Fabric Library
- Avatar Library
- Initial value from technology
- Established Value from deployment
- Expansion across company uses and departments
- Create Power users
- Vendor integration
enterprise integrations

**PLM Framework**
Integration framework, allowing to integrate to PLM/ERP systems right within design system

**Job Servers**
Server Side Scheduler with Workers, automating various tasks from Rendering to Costing Mini-Marker and beyond
How technology is helping companies today?
In the few years since Target started using 3-D virtual prototyping provider Optitex, Product Development has sped up by two weeks and sampling has been reduced by roughly 65 percent - Alexis Kantor, Director of Apparel and Accessories
Could their Fit Tech lead identify the same fit issues in 3D that they identified in a physical sample? They identified 90% of the issues and felt confident that as they become more familiar with the software that result would improve further.

Demonstrate a 90% Similarity in fit between the final approved physical block and 3D block? They were shooting for 90% and we achieved 80%. They were satisfied that this result would improve with their level of familiarity with the system as well.

Reduce time per iteration of a block by 50% Actual result was by up to 96% (!!!)

Reduce time for end-to-end approval process by at least 40% Actual result was up to 68%
Under Armour

How Under Armour Uses 3-D Fit to Ace Product Development

Pattern rooms are taking a turn for the modern, whether the patternmakers of yesteryear like it or not. And the modernization of that link in the supply chain has both upgraded product development and shortened the cycle.

Speaking at a Texprocess Americas panel Wednesday, Shannon Moulden, a technical designer for women’s at Under Armour, said 3-D has helped the company in three major ways: by reducing the number of redesigns, cutting the risk of missed deadlines and dropped styles, and greatly improving first samples.

Under Armour has been using Optitex 3-D technology for roughly 18 months, and already, according to
Under Armour
3D PILOT BENEFITS & STATISTICS

• NO WAITING FOR LIVE MODEL FIT SESSIONS
• REDUCTION IN SAMPLING BY 47%
• REDUCING FIT APPROVAL LEAD TIME BY 28%
• CRITICAL PATH DEPENDANT ON FABRIC ALONE
thank you!

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www.optitex.com
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Major economies are supporting the manufacturing transformation opportunity

Leading manufacturers are embracing IoT for a step change in operational performance

Industrie 4.0
Smart Manufacturing
Made in China 2025

Leading aircraft manufacturer with €40 billion in revenue and 55,000 employees

IoT for the assembly line: connecting people, tools and systems for increased speed, higher productivity and in-process quality validation

© 2016, PTC
Airbus Smart, connected assembly line

Leading aircraft manufacturer with €40 billion in revenue and 55,000 employees
Marine covers