

- Today's challenges in retail
- Strategies in 3D that can reduce cycle time & lower cost
 - Adoption
 - Use Cases
 - Benefits
 - Capabilities
- Strategies in Internet of Things that can improve planning, design, and sell through
 - Use Cases
 - Benefits
 - Capabilities

Your goal:

Generate the **highest revenue** possible while achieving the **highest margin** by offering the **right** product portfolio to the **target** market at the **right time**.

Our goal:

Provide a PLM solution to define, design, develop, and deliver an **on trend** product portfolio that is **on time** to market and **on cost**.

Value drivers addressed by PLM:

Market expansion
Increased sell through

IoT

Speed to market acceleration
Improved product margins
Reduced product costs

3D

Improved product quality

Application of 3D tools & data to RFA processes has increased over the past 3 years

Applications of 3D in Retail



3D Design



Virtual Sampling / Fitting



Visual Merchandising



3D eCatalogs

“Broad adoption is all but inevitable”

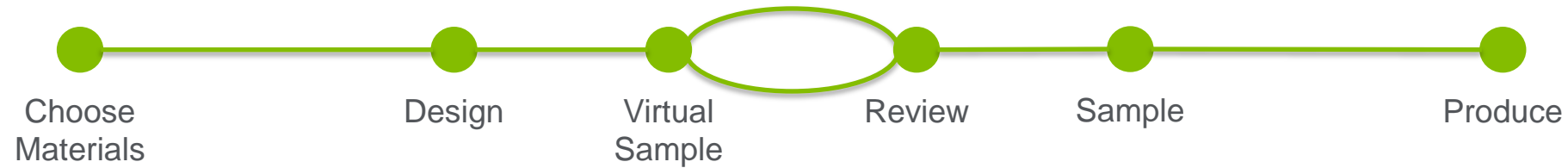
– Kurt Salmon; The Coming Revolution in Retail, Courtesy of 3D Technology; 2014

Benefits from leveraging 3D

Typical Development Process



Development Process With 3D



Lower product cost

- Fewer physical samples



Faster time to market

- Shorter design and prototyping cycles
- Earlier discovery of issues with designs & patterns



Better product / assortment offerings

- More meaningful line review sessions
- Earlier decisions on product adds & drops



1 M

Samples saved over 3 years
- adidas



3 - 4

weeks saved in sampling per SKU
- Apparel Mag

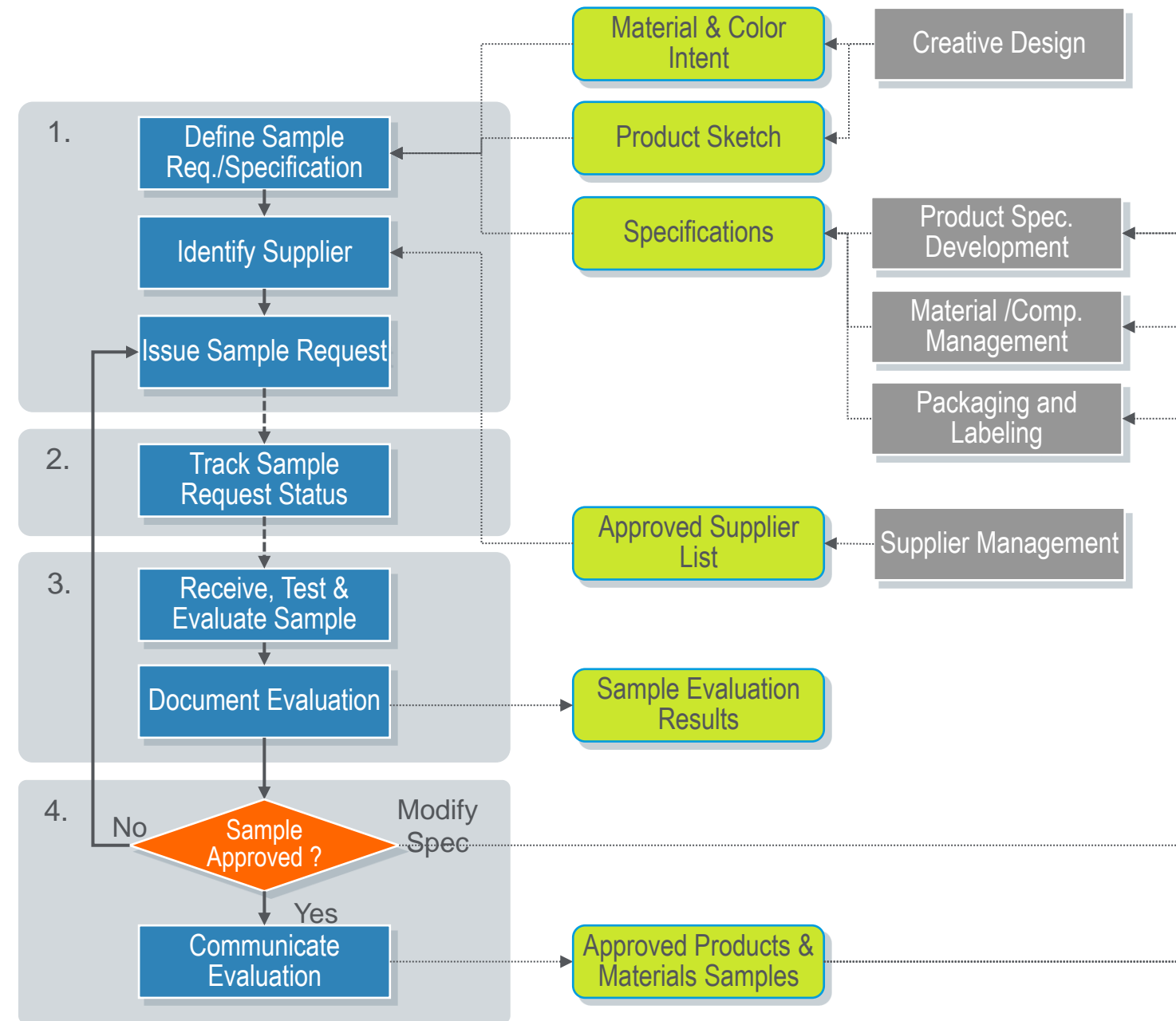
PD direct associated costs reduced by **30%**

30 - 40% reduction in PD cycle time

- Optitex customers

Physical Sample Management Process

1. **Create and issue sample request**
 - 1.1 Define or review sample requirements/specification
 - 1.2 Identify supplier(s)
 - 1.3 Issue sample request
2. **Track sample request**
 - 2.1 Track sample request status
3. **Receive, test and evaluate sample**
 - 3.1 Receive, test and evaluate sample against requirements/specification (as applicable)
 - 3.2 Document sample evaluation
4. **Approve sample**
 - 4.1 Evaluate changes (if any)
 - 4.2 Communicate evaluation



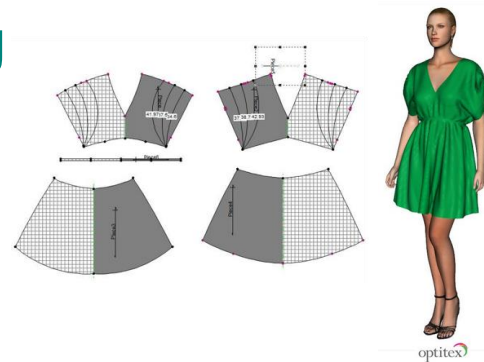
Virtual Sample Management Process

Provide typical Tech Pack details to supplier & request sample

- Size range, measurements
- BOMs (Materials, Colors, Prints/Patterns)
- 2D Patterns
- Etc.

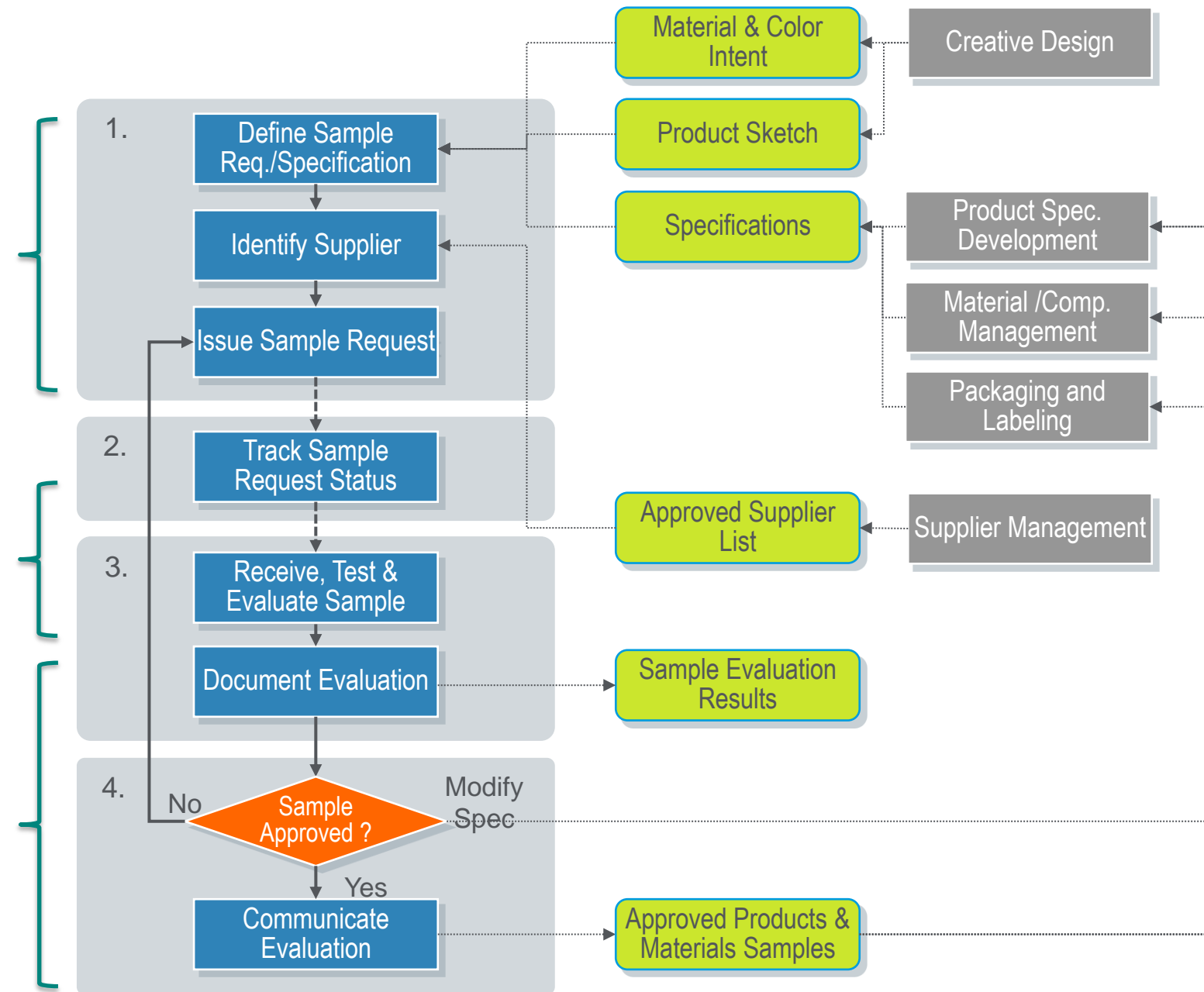
Create 3D sample from 2D patterns using

- Tech Pack details
- Material, color, print & pattern information
- Target body type (avatar)



Review 3D samples, collaborate, adjust & approve designs

- View samples natively and with free viewer
- Markup and provide feedback
- Generate photo-realistic renderings



Get started today... Generate 3D Samples and manage them as documents on Products

The screenshot shows the Windchill FlexPLM web interface. A 'Runway Viewer' window is open, displaying a 3D model of a woman wearing a blue dress. Below the viewer, a table lists 'Associated Documents' for the product. A red box highlights the document 'SummerDress_0_0.mod', and a red arrow points from this document to the 3D viewer.

Actions:	Thumbnail	Content File Name	File Size (Bytes)	Document Name	Working State	Type	User
		Cost Sheet RFQ OC Doc.pdf	428.03Kb	New Doc B	Checked In	Contracts\Purchasing	Administrator
		SummerDress_0_0.mod	5708.72Kb	Optitex_representation	Checked In	CAD Viewable	Administrator

Launch the free Optitex 3D Viewer from FlexPLM

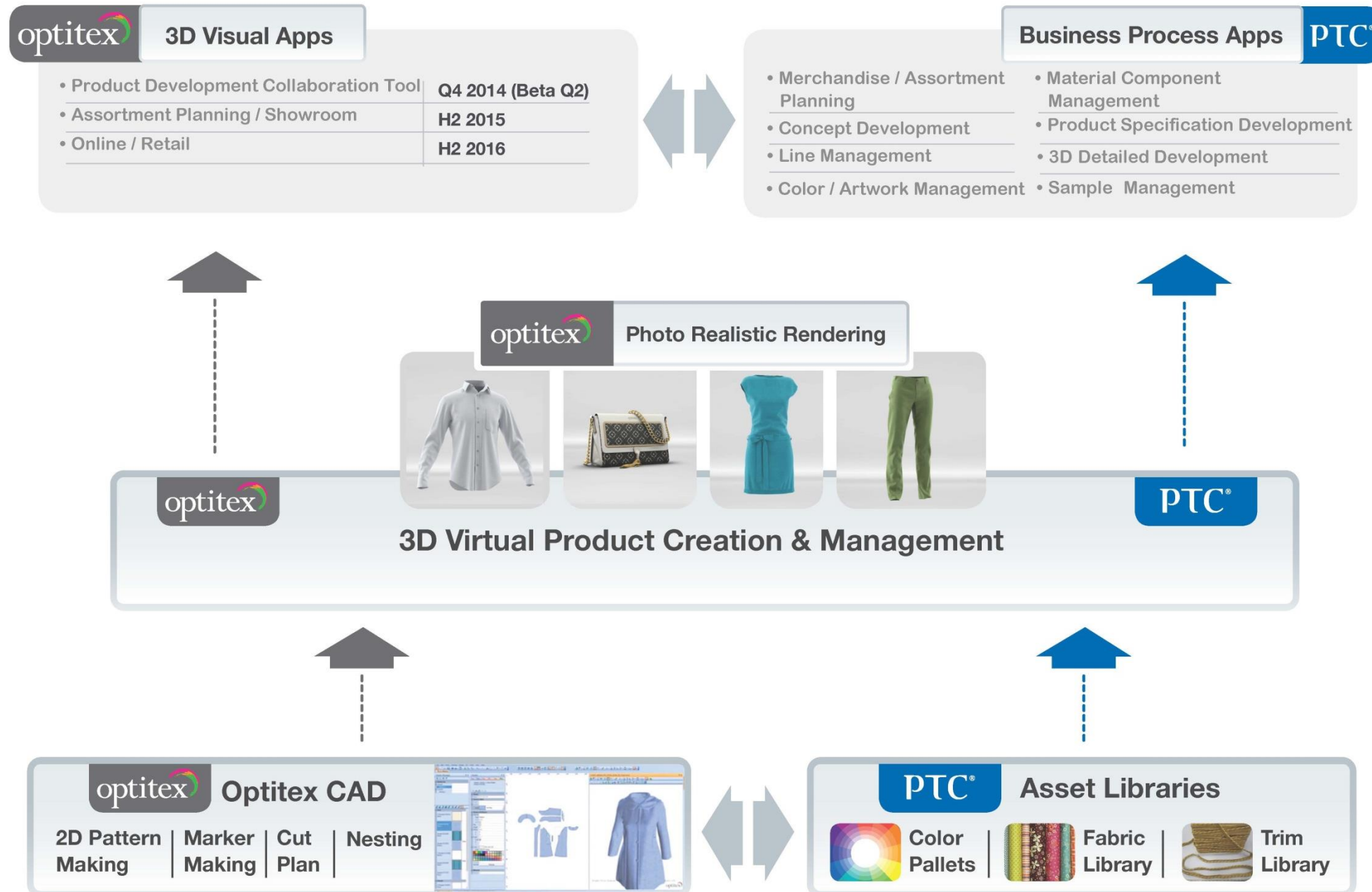
Additionally manage and review patterns that drive 3D Sample creation

The screenshot shows the Windchill FlexPLM interface for a product named 'Dress'. The main content area displays product details and a list of associated documents. An OptiTex Viewer window is open, showing a 3D pattern layout of the dress. A red box highlights a document entry in the 'Associated Documents' table, and a red arrow points from it to the viewer window.

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		Cost Sheet RFQ OC Doc.pdf	428.03Kb	New Doc B	Checked In	Contracts\Purchasing	Administrator
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Potential Integration between Optitex 3D Offering and PTC Windchill FlexPLM



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Retailer's Objective: Achieve Maximum Revenue with the Maximum Profit by:

- Identifying the market demographic – customer profile
- Identifying the **needs** and **wants** of the customer profile – product portfolio
- Establishing the right product price – customer value
- Identifying the market delivery method to the customer - channels
- Resulting in maximum revenue at the maximum profit, **IF** Retailers deliver:

The right products at the right price
to the right customers via the right channels



Omni-Channel Shoppers

- CUSTOMER ENGAGEMENT
- CUSTOMER LOYALTY
- CUSTOMER EXPECTATION



Store Operation

- CUSTOMER EXPERIENCE
- ASSETS MANAGEMENT
- EMPOWERING EMPLOYEES



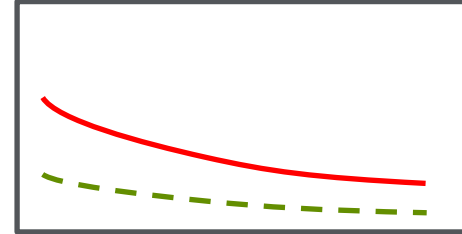
Product SKU Performance

- VENDOR PERFORMANCE INSIGHT
- INVENTORY MANAGEMENT
- SUPPLY CHAIN AGILITY

Retailer's Nightmare: Missing the mark in product, market, revenue, and profit.

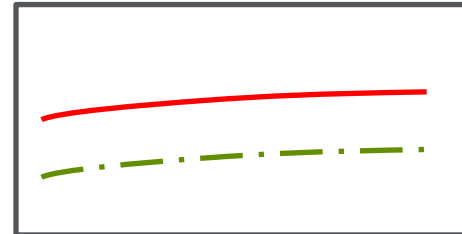
The wrong products at the right price
OR the wrong customers via the right channels

Rev \$
Profit %



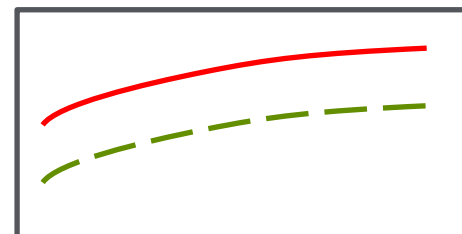
The right products at the wrong price
to the right customers via the right channels

Rev \$
Profit %



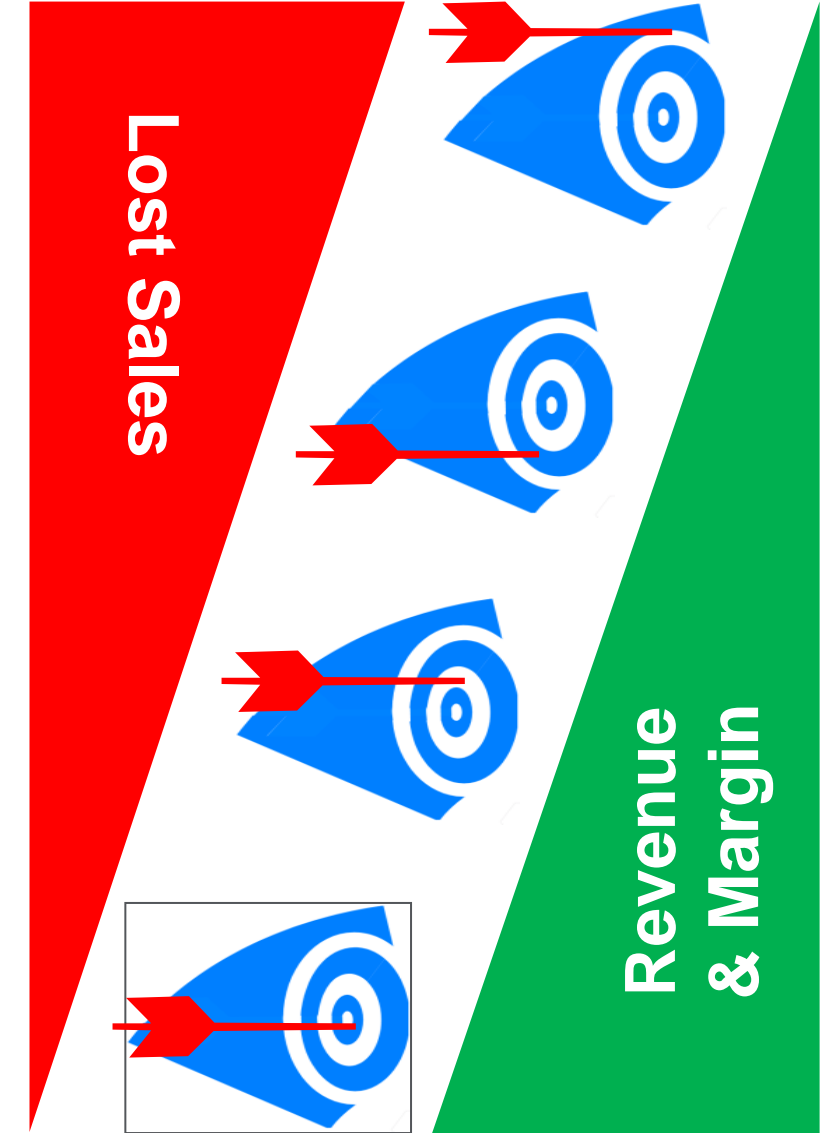
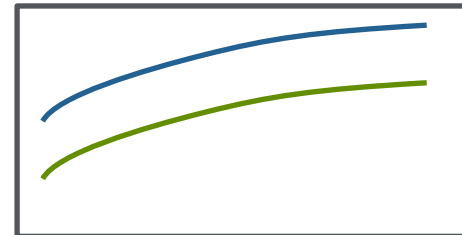
The right products at the right price
to the right customers via the wrong channels

Rev \$
Profit %



The right products at the right price
to the right customers via the right channels

Rev \$
Profit %



Retailers **NEED** visibility of: Customer profiles; product to customer value; competitive pricing; and a channel independent delivery model.

In Real Time

IoT is the connectivity of **devices, systems, and data** in real-time to

exchange data and bring that information into **business processes**

A thing can be

Products (Wearables)

Devices (RFID sensors)

Data from enterprise systems, warehouse systems, and social media (POS, Amazon, PLM)

In retail, IoT can

Connect brands, retailers, and consumers together to improve consumer experience / brand experience and retail performance.

**Market transparency
enables smart,
real-time decisions
through
insights into:**



Customer



Competition



Product portfolio

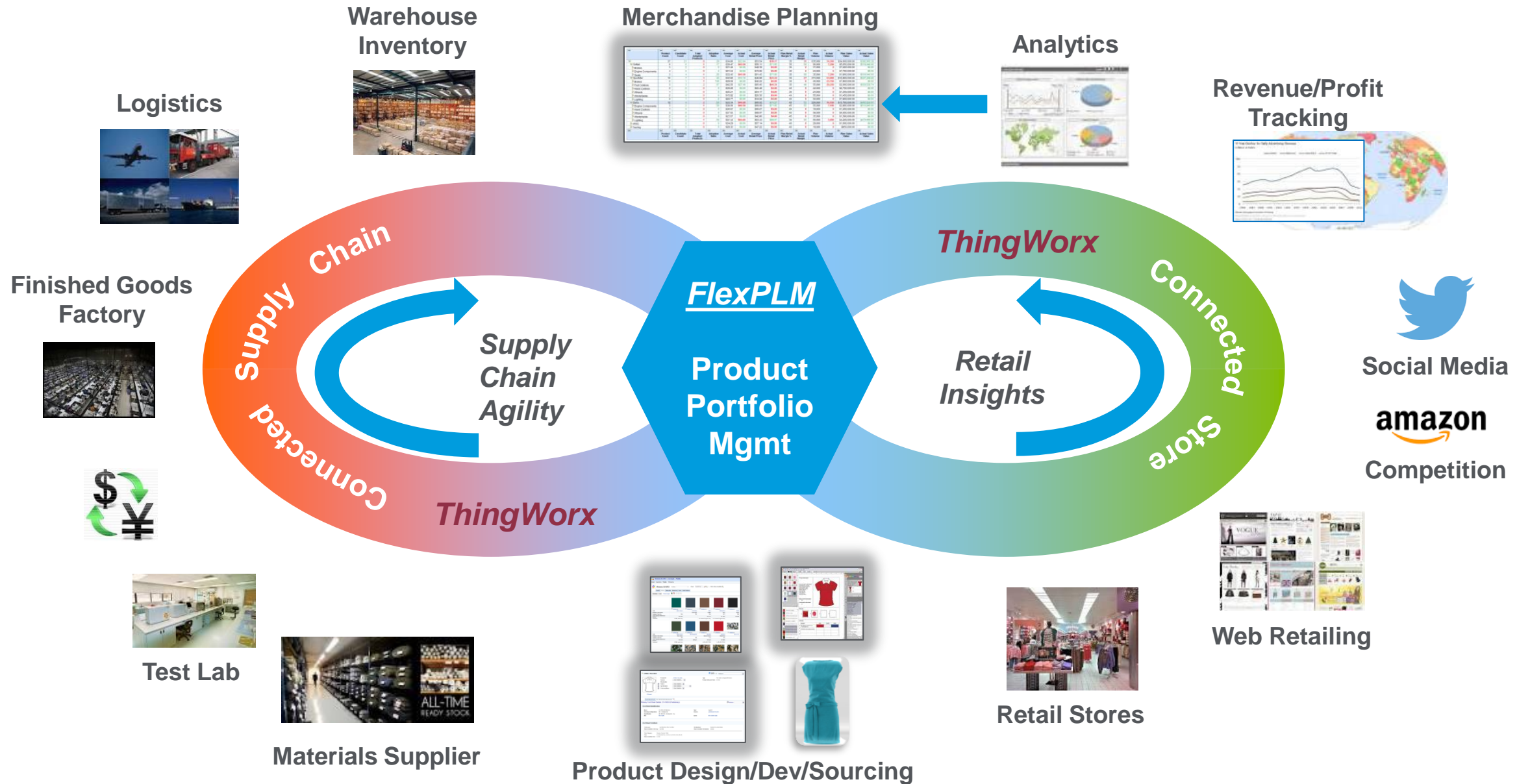


Vendor performance

Vision: Enabling an Infinite Loop of Value

Retail in Real Time (RiRT) platform:

Plan/Design/Develop/Adapt – Retail Insights → Supply Chain Agility



Connected Store

- Turning your store into an App
- “Closed loop” retail in real time
- Reading the mind of the customer



Connected Supply Chain

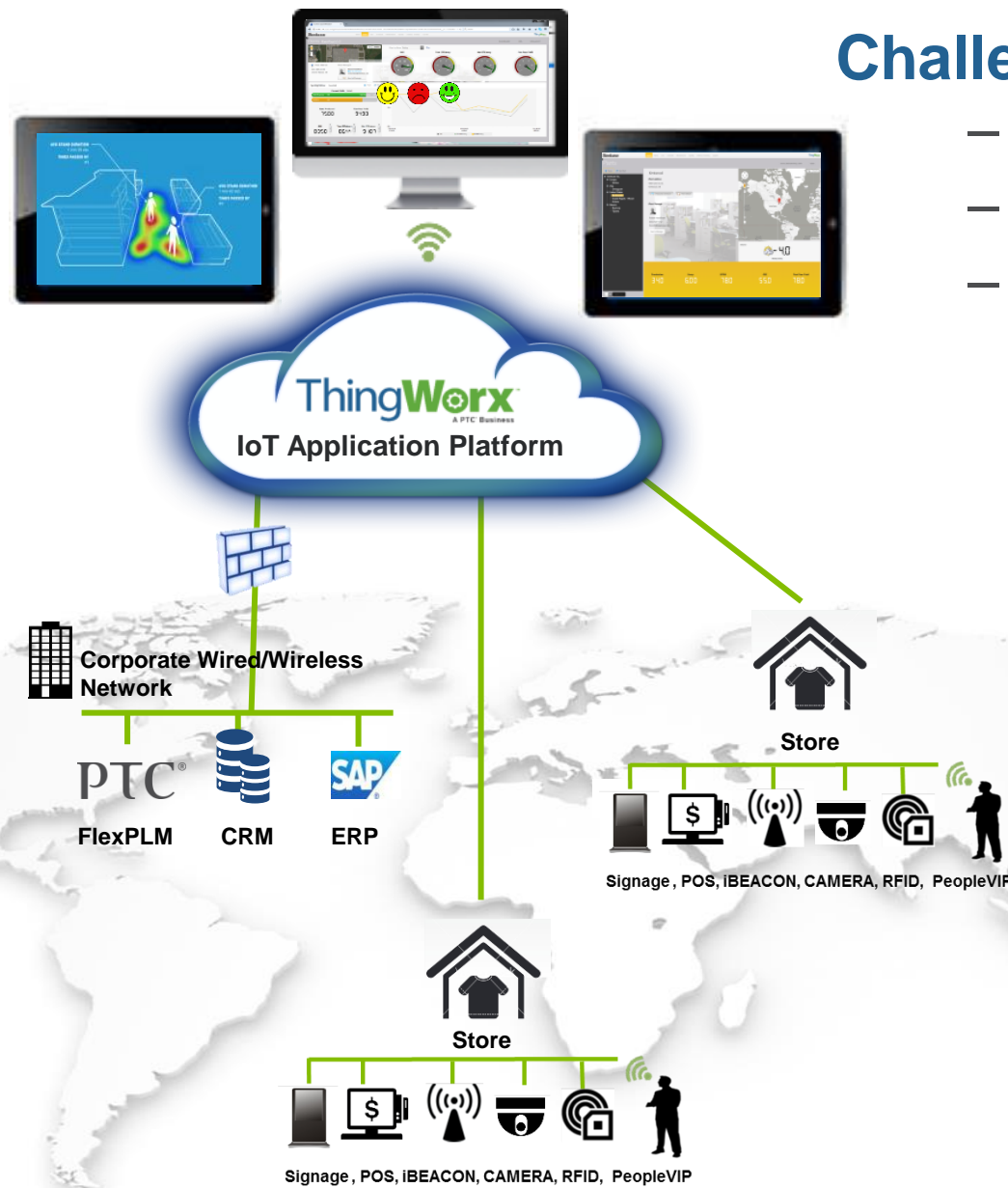
- Real time Supply chain visibility
- Supply chain intelligence
- Supply chain collaboration



Connected Products

- Consumer goods
- Medical / Wellness
- Remote monitoring
- Commercial . Industrial





Challenges:

- Limited view into consumer behavior
- Limited view into store traffic
- Limited view into store sales performance

Opportunity:

- Consumer behavior tracking & analytics
- Real-time visibility into sales and inventory
- Real-time visibility into sales factors
 - Competitive pricing, weather, location

Benefits:

- On trend product assortments and product designs resulting from consumer behavior analysis
- Higher revenues & margins
- Lower on hand inventory and risk



Challenges:

- Limited knowledge of the consumer:
 - profile, history, taste, size, ..
- Lack of expertise or product knowledge from store associates
- Lack of benefits from Loyalty program

Opportunity:

- Create a “Digital Twin” of consumers to improve consumer buying experience
- Empower store associates with consumer and product information
- Enable pro-active selling / marketing with fit and product recommendation

Benefits:

- Increases revenue
- Reduces return
- Increased Customer loyalty



The Internet of Things

IN RETAIL

The opportunity for IoT in retail is huge, and **getting started with a quick, high-value project is easier than you think.**

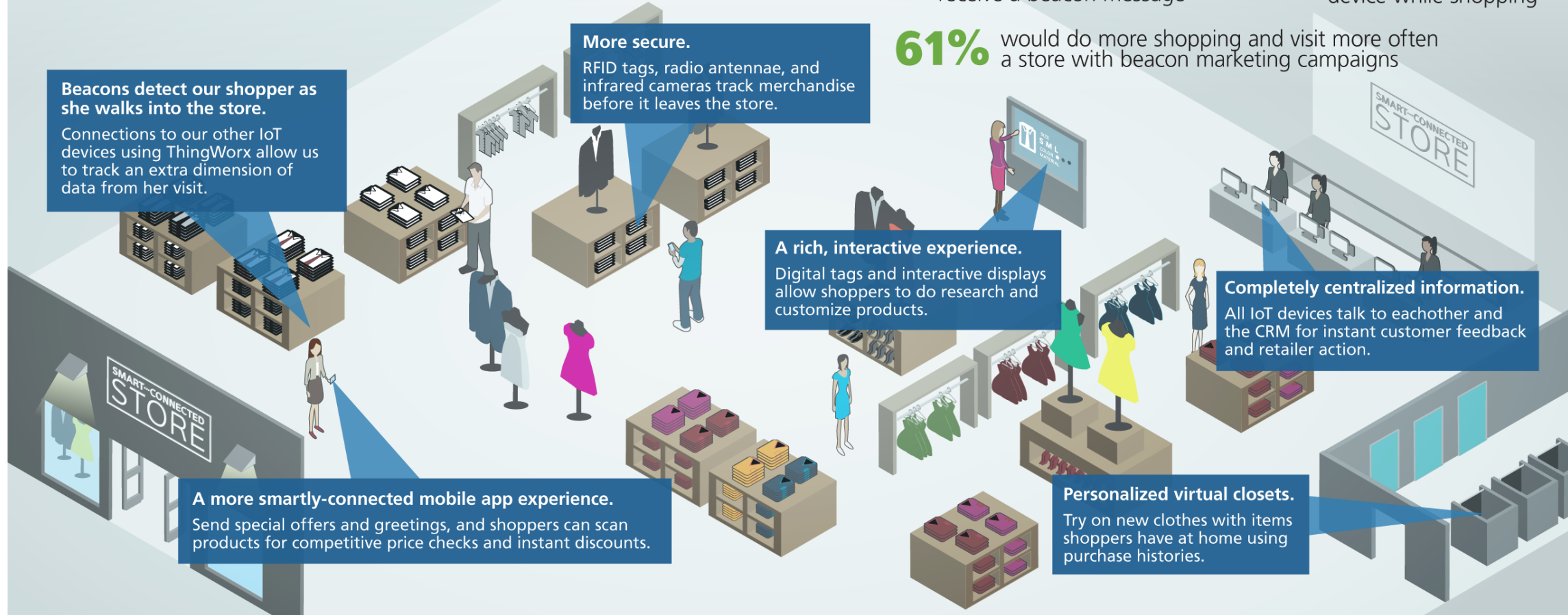
IoT is more than just the “Things” of connected devices, products or sensors. IoT can connect systems, providing unified visibility, real-time decisions, and deeper insights into customers, competition, product portfolio and performance.

BY THE NUMBERS

80% OF RETAIL CUSTOMERS research their purchases online **BUT** **75%** prefer to buy in store **35%+** increase in conversion

60-70% aggregated engagement rate seen in users who receive a beacon message **56%** of smartphone users plan to use their device while shopping

61% would do more shopping and visit more often a store with beacon marketing campaigns



KALYPSO + ThingWorx
A PTC Business

**Quick wins are easy to find.
DON'T DO NOTHING**

The technology is here now to create an incredible shopping experience for your consumer and build huge value for retailers.



Purpose-built applications for the retail industry that deliver off-the-shelf value to Smart Connected Stores, developed by

PTC

Customers,
Partners

A retail-specific extension of ThingWorx that further accelerates application development for Smart Connected Stores

General IoT platform that enables rapid application development

Windchill FlexPLM
Product Information & Documents

Icons representing various product information and document management features.

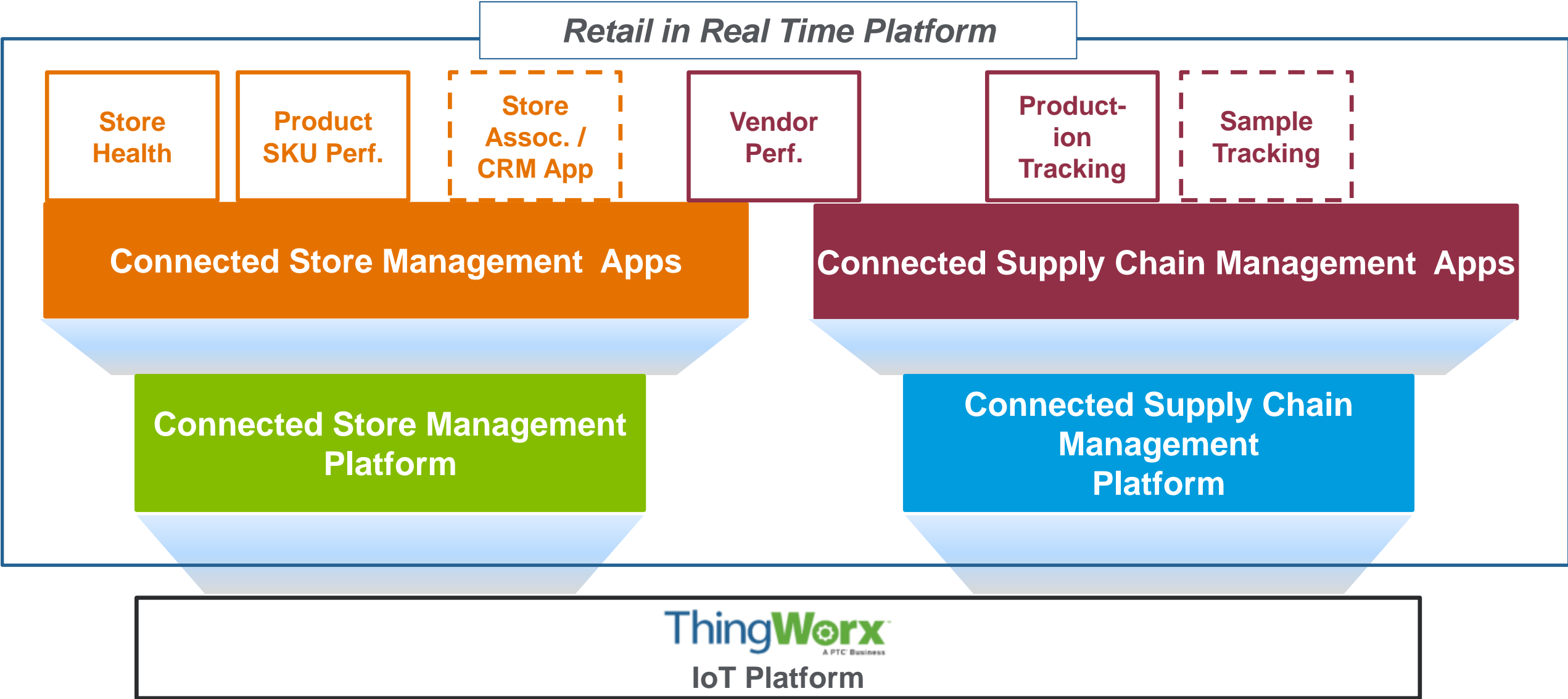
amazon.com.

nielsen

facebook

Google





Add icons / graphics to communication supply chain & distribution channel systems

- Who within your organization is reviewing how IoT can be leveraged to:
 - Gain retail insights to plan and develop better products?
 - Increase sell through, improve the consumer experience?
- Do you have any systems (in-store or otherwise) today from where you wish you could get consumer behavior analysis?
- What supply chain systems (internal or external) can be used to help you improve how you develop products?

- Your feedback is valuable
- Don't miss out on the chance to provide your feedback
- Gain a chance to win an instant prize!
- Complete your session evaluation now

PTC[®] Live Global

Wednesday June 10, 8:15 – 9:00AM CDT

- **Retail challenges and problem statement**
- **What we do today to help with:**
 - Reducing cycle time
 - Lowering cost & risk
- **2 technologies that can help you get more out of PLM**
 - 3D: Virtual Sampling and Design & Reducing cycle time
 - IoT & Improving assortment planning, design, and sales throughput
- **3D in Retail**
 - Market research on the adoption of 3D
 - Uses cases
 - Benefits
 - What you need
 - Patterns, Avatar, Material Properties, Colors & prints/patterns



Wednesday June 10, 8:15 – 9:00AM

- **Retail & Internet of Things**

- What we do today to solve retail challenges with PLM (BC)
- How IoT can further help address those problem statements by (BC)
 - Helping understand market acceptance (and WHY – not the right product, not the right price, not at the right time/place)
 - ...leads to better assortments, better products, better selling opportunities, better supply chain alignment
 - ...ie the infinity loop
- Use cases / Potential Apps (QBH)
 - Better assortments & better products via consumer behavior analysis. Impact to PLM
 - Better selling – improved consumer experience, price finder, omni shopper
- How we plan to deliver it (QBH)
 - CSM
 - CSCM
 - Apps built on top...for PLM users, SKU Performance App
 - SKU data is critical for all of this and PLM (and those touching it) are central to IoT

Industry activities

- Interest in applying 3D virtualization to various processes in the Retail, Apparel, and Footwear has increased over the past 2 years
- Virtualization applications include:
 - Virtual Sampling / Fitting
 - 3D Design
 - Virtual Merchandising (store layout)
 - Virtual Marketing
- Early adopters confirm benefits of using virtualization
 - Adidas quote, Apparel Mag quote
- Adoption pace is low in an industry that prioritizes “touch and feel” of designs
- Initial investment to leverage virtualization technologies is high (multiple software platforms, hardware, services, training)

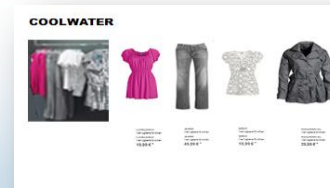
Replace icons



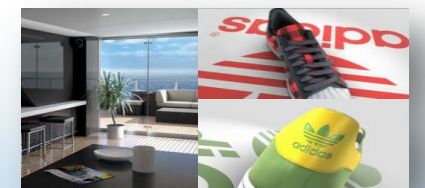
3D Design



Virtual Fitting



Visual Merchandising



3D eShop / Catalogs

Show list of
customers from all
vendors

What benefits exist with virtualization?

- **Lower product cost**
 - Fewer physical samples
- **Faster time to market**
 - Shorter design and prototyping cycles
 - Identify problems with design & patterns faster
- **Better product / assortment offerings**
 - More meaningful line review sessions
 - Earlier decisions on product adds & drops

These benefits are additive to the value provided by PLM.

PLM provides a broad set of benefits and 3D enhances some of the benefits.

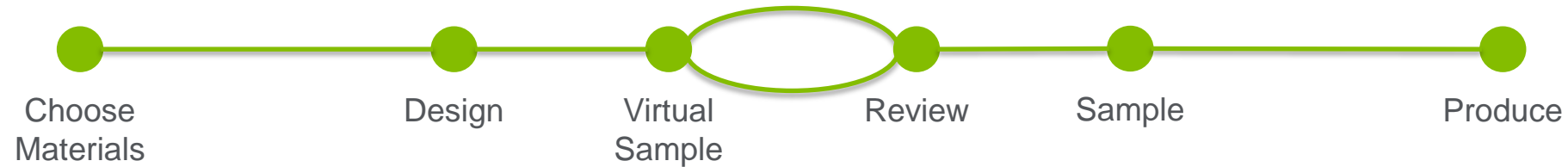
PLM provides the foundation for line management, design, and sampling. 3D accelerates benefits in these areas.

Benefits from leveraging 3D

Typical Development Process



Development Process With 3D



3 - 4

weeks saved in sampling per SKU
- Apparel Mag



1 M

Samples saved over 3 years
- adidas

- **5-6 times** more design options sampled with no impact on timeline
- PD direct associated costs reduced by **30%**
- **30-40%** reduction in PD cycle time
- Optitex customers

“Using virtual prototyping to eliminate sewing and shipping time for some consecutive fit samples 3 can remove up to three or four weeks per SKU” – “Virtual Prototyping” by Margaret Bishop Apparel Mag April 2014

“Virtual prototyping offers an excellent tool for compressing concept-to-delivery time and reducing product development costs, especially for original design of new styles.”

Some lessons to learn:

- “Ensuring the designer and virtual sample maker both have the requisite training and experience to relate what they see digitally to the fit and behavior of the physical garment, and ensuring that they make (and track) comments and changes to iterative patterns for a given garment rather than creating a new pattern after each round of designer comments;”

“3D tools can be leveraged at three stages of a product’s journey: design (3D design/virtual prototyping, 3D body scanning), production (3D printing, 3D manufacturing), and sales and marketing (3D imaging and visualization).” Kurt Salmon

“we have been able to save more than 1 million physical samples. With virtualisation, we save resources and money by reducing material waste, transportation and distribution costs.”...from 2010 to 2013 – adidas, <http://blog.adidas-group.com/2013/07/virtualisation-%E2%80%93-creating-and-selling-products-in-a-sustainable-way-2/>