

# tuka3D

## 1. Introduction

TUKA3D allows users to design, develop, merchandise, and share 3D apparel samples virtually.

TUKA3D is a 3D platform that enables a user to sew and drape 3D virtual samples via patterns from TUKACAD, textures from popular design systems, and avatars via body scanners or a custom made virtual models. Those 3D samples can be used in place of traditional fit samples, greatly reducing the number of physical samples that are cut & sewn. TUKA3D can be leveraged as a core communication platform between buyer and vendor to reduce critical mistakes in the product development process, but also used as a design platform to experiment with varying colorways, prints, or style line changes without having to construct a real sample. Key features, such as tension mapping, x-ray, movies with animation, have proven to be critical communication tools that allow users around the world to collaborate instantly over the web.



## **2. Business Process Improvement**

### **Quality control**

TUKA3D system enables tighter quality control

TUKA3D's platform forces the supply chain to reveal weak links centered on inefficiencies that could affect the construction, fit, and specifications of a garment. By empowering vendors to maintain one standard fit model's body shape, vendors are able to identify key problem areas in advance of cutting and sewing samples.

### **Speed to market**

TUKA3D can be a critical piece in streamlining lead times, helping retailers meet market demand in a fraction of the time.

It is estimated that 60% of the time from design to retail is spent in product development. The bottle neck in product development is centered on sample making and sample approval. TUKA3D enables better communication and visualization of samples before constructing physical samples, greatly reducing the number of iterations before a sample is approved. TUKA3D has routinely been shown, with TUKATECH customer, to reduce samples by more than 75%.

### **Reduced development costs**

TUKA3D aids manufacturers and buyers in reducing the cost of development of samples.

Reduction in the number of physical samples made saves on sample fabric costs, labor costs to make the samples and logistics cost to courier overnight physical samples. Virtual samples can be sent as email attachments putting sample into design team, technical team, sales team, marketing team or customers' hands within minutes of creation. Rapid sample development enables instant feedback for the next process within hours, rather than days or weeks.

### **Design and development flexibility**

TUKA3D enables the supply chain to work reduce bottlenecks in design and development, increasing flexibility and focus on core competencies.

Retailers have been designing, on average, more styles per season, but placing orders that are have a reduced quantity per style. Consequently, fast fashion has resulted in higher development costs, QC challenges, and often times less flexibility. By implementing TUKA3D, retailers have increased flexibility to direct resources to new design and merchandising ideas, allowing them to focus on their core competencies. Meanwhile manufacturers find increased flexibility and

focus in their core competency, by fulfilling more orders and increasing production.

### **Proven Technology**

TUKA3D has been adopted by industry leaders in both retail and production, resulting in substantial ROI's throughout the supply chain.

Leading manufacturers, such as Timex Garments in Sri Lanka that produce for brands such as Maggy London, Tesco, Phillip Van Heusen, Abercrombie & Fitch and Jones New York Intimates have adopted TUKA3D's platform into their process.

### **Improved Communication**

TUKA3D turns patterns into digital samples that can be sent around the world through e-mail to enhance communication, get feedback and deliver quality samples in less time. TUKA3D's digital samples do not require any fabric or sewing machine, and can be sent instantly, at the speed of email, to anyone around the world.

With the tension mapping and X-Ray functions, pattern makers can see how sample fits, looks and drapes on body, proofing their first pattern for correctness. Alterations or changes can be made to the pattern, second virtual sample rendered and reviewed to confirm changes were correct or if additional changes are required.

### **Verify Design Intent**

The first pattern is rendered into virtual sample and sent or shown to Designer as movie file to verify concept was translated properly without having to cut, sew and fit a sample.

The designer can review virtual garment and confirm interpretation is correct, advise what changes they want or request easily developed "what if " variations to the virtual sample. This is especially effective if development is not in house, in both speed of approval and cost of logistics.

### **Test pattern blocks and shapes**

Many pattern makers use TUKA3D to test their pattern blocks and basic shapes while they are drafting the pattern, to make sure that the balance and slopes of the garment are correct.

### **Virtual Sales and Showrooms**

Companies like Velvet Heart, Green Apple, and others are using virtual samples, made in TUKA3D, to display samples on flat screens on the showroom floor or

at trade shows. 3D virtual story boards, with movement, can be completed showing all color ways, fabrications, style variations and coordinated outfits for sales presentations, customer selection process or internal line review and finalization. Regional sales teams can review an entire line without traveling to the home office.

## 3. Functionality

### 3.1 3D Placement and Stitching

#### *Quick Piece Arrangement*

Use a placement tool to auto-arrange pieces around a body.

Rather than having to define placement of the pieces around the body using the flat pattern, TUKA3D simplifies the process by giving you a placement tool in 3D. The user selects one or more pieces, and then clicks on a silhouette of the body to tell those pieces where to go. If fine-tuning needs to be done, the user can turn on a move or a rotate tool and adjust the placement directly in 3D. The changes that the user makes in 3D do not affect the 2D pattern, and vice versa – so you can move and rotate pieces in the pattern without affecting the placement of the 3D garment. This allows the user to re-use placement and other information while making pattern corrections and adjustments, which saves time every time a new revision is needed. All changes made in placement are updated in real-time, helping the user identify user errors instantly.

Demo Video: <http://www.youtube.com/watch?v=n2aximwUBko>

#### *Intuitive stitching*

Use the stitching tool in either a flat (2D) view or in 3D. Real-time changes help user reduce error.

A user can stitch in either a “flat” view, by clicking on matching segments, or directly on the 3D garment. Users can select segments in a 3D view and create the seams while the system updates in real-time. The process makes it easier to know what sews with what, and reduces the chance of an incorrect or reversed seam being created.

Demo Video: <http://www.youtube.com/watch?v=R5wYVJQjC6g>

### 3.2 Draping

#### *Tools for off-line sewing*

Improve simulation by hiding pieces and draping in parts.

When working on multiple pieces that layer together (trims, bindings, ties, piping, etc.), TUKA3D gives the user the ability to simulate or drape pieces separately, or in parts. This helps reduce the chance of a poor simulation or erroneous drape. The user simply needs to hide the pieces

that are not to be simulated, then simulate the rest. Then, the user can unhide the remaining piece(s), and simulate only the remaining piece(s).

Demo Video: <http://www.youtube.com/watch?v=olbyg3AyzDA>

### 3.3 High Cloth Resolution

Resolution is important to achieving a good drape when dealing with gathers, ruffles, pin tucks, etc. TUKA3D works well at high resolutions to achieve these more difficult drapes.

Demo Video: <http://www.youtube.com/watch?v=SCNJ4Mx8R7Q>

### 3.3 Real-time piece folding

*Fold along an internal line*

TUKA3D allows the user to bend along any internal line in the pattern piece in real-time without a trial-and-error method to estimate angle and direction.

Folding is an important part of sewing. Examples of where this feature is useful include collars with collar stands, cuffs, lapels and pleats/pin tucks. Being able to fold pieces while you work in 3D makes creating garments with these construction elements easier.

Demo Video: [http://www.youtube.com/watch?v=ld\\_ZwrsrH4s](http://www.youtube.com/watch?v=ld_ZwrsrH4s)

### 3.4 Built-in animation engine

One of the most powerful features of TUKA3D is the ability to create garments and have them move with the fit model, as she moves. This gives users the ability to check the fit while the fit model is walking, running, or doing any other activity.

Demo Video: <http://www.youtube.com/watch?v=-66PBwSMoA0>

### 3.5 Tension Mapping and X-Ray

The tension mapping feature that shows the tight and loose areas of the garment on the body adjusts as the fit model moves as well, giving accurate information about areas of the garment that might be pinching, or loose in unflattering ways.

An X-ray view allows you to see through the garment and analyze the balance of the garment, and see how the linings are constructed.

### **3.6 Record your work and re-play it**

#### *Drape Steps Recorder*

TUKA3D is the only system where draping steps can be recorded and repeated automatically

In the process of creating the first virtual sample, the user may perform a series of complicated tasks. Our system records these steps and will play them back when the user needs them, so after a pattern is changed, the system will automatically replay the same steps

### **3.7 Area-Selection and Partial-Pattern Features**

#### *Work on only part of a garment*

TUKA3D has powerful tools to change the fabric values of pieces, edges or user-selected parts of pieces.

The user can select a region of the garment to affect and make less stretchy, or stiffer, or heavier, or several other options. This is useful when working with garments that have fusing or embroidery, for example, where only a part of a pattern piece needs to be stiffer or heavier in order to drape accurately.

### **3.8 Camera and lighting tools**

#### *User-set camera and lights*

Create custom and repeatable render angles, special effects, and lighting rigs.

TUKA3D allows the user to create avi, wmv and quicktime videos, as well as several different types of digital images. An automatic “360 degree video” makes it easy to show off the digital garment from every angle. The camera feature makes it easy to create images and movies from the same angle, for example to show many colorways. Camera angles can be saved and loaded, and lights can also be adjusted to match the lighting conditions of the real garment, making comparison easier. Additionally, the user can add background images and videos for branding, or to turn the scene into a virtual runway show.

### **3.9 Advanced Texturing**

#### *Various fabric settings for a realistic look*

TUKA3D's Fabric Maps feature contains more than 1,000 "bump maps" that can be applied to any fabric to enhance its look. Shininess and transparency can also be set. The settings can be saved to the fabric preset file so that whenever the fabric is used, the effect is automatically applied.

### 3.10 Layering

TUKA3D is fully capable of draping garments with linings, pocket bags, collars, lapels and other garment construction features, and the layering system is intuitive and effective.

### 3.11 Pleats and Darts made easier

#### *Auto-Stitch and Fold Darts and Pleats*

TUKA3D has features to automate many construction elements like darts and pleats

Pleats especially can be hard to do in 3D; the pattern piece needs to be folded several times and stitched. TUKA3D fully automates this process, so that the user only needs to create a pleat in the CAD pattern, and TUKA3D will do the rest of the work by itself. Stitching darts is done automatically as well.

Demo Video: <http://www.youtube.com/watch?v=noZEgVsph7w>

### 3.12 Save while you work

TUKA3D saves all the work you do in the background, so you don't have to worry about your data being lost if the power goes out, for example. Additionally, all the information about the 3D garment, including the drape, is saved and can be loaded at any time.