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Clothing — Digital fittings —

Part 1:
Vocabulary and terminology used for the virtual human body

Titre manque

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Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO nnn-n was prepared by Technical Committee ISO/TC 133, Sizing systems and designations for clothes, WG 2, Digital fitting.

This second/third/... edition cancels and replaces the first/second/... edition (ISO nnn-n:19xx), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

ISO nnn consists of the following parts, under the general title Sizing systems and designations for clothes – Digital fittings –

— *Part 1: Vocabulary and terminology used for the virtual human body*

— *Part [n+1]: Part title*

— *Part [n+2]: Part title*

Introduction

The digital human body exists in various formats in the virtual world and is applied in many different industrial fields. The virtual human body used in the fashion field must reflect the attributes of different areas of the human body based on physical measurements and shape characteristics.

Various types of virtual human body-based IT-fashion convergence technology are being attempted today, according to rapid development of the vast online fashion market, including the internet, mobile market, smart TVs, and virtual fittings at shops and stores. Meanwhile, the increased demand of mass customized and made-to-measure garments these days encourages efforts to innovate the traditional process of planning, production and sales. The use of digital technology in this new ubiquitous environment of the international apparel industry is leading to use of three-dimensional information on consumers and digital human bodies that reflect somatotype characteristics, and consumers can now go online anytime, anywhere, to try on clothes, evaluate the style and fit, and place orders. Despite such advances, there is a lack of an international standard related to the virtual human body.

Therefore, this international standard is proposed as the first in a series of standards that deal with the virtual human body, a necessary component of the 3D virtual garment system used in the apparel industry. The main goals of this series of international standards are to define a virtual human body to be used to improve online communication and reliability of fashion products sold online through visual confirmation of size, fit and design. The standards will create a single index and reference for all virtual garment programs that are currenlty using various, confusing terminology.

This standard specifically presents vocabulary, terminology and definitions related to digital fitting, such as virtual human body shapes, composition and attributes, and thus supports online consumers, fashion designers, manufacturers and sellers who have an interest in the style and fit of clothes. Developers will be able to use unified vocabulary and terminology when they devise virtual garment systems. Online consumers, fashion designers, manufacturers and sellers using virtual garment systems will be able to make use of the vocabulary and terminology regarding virtual body dimensions. It is therefore expected to improve convenience for the consumer and clothing manufacture efficiency, and contribute to largely decreasing the return rate of clothes consumed through the online market.

Clothing — Digital fittings — Part 1: Vocabulary and terminology used for the virtual human body

1 Scope

This international standard covers vocaburary and terminology used for the virtual human body model in the virtual garment system used as a main tool in various fields of clothing application. The virtual human body can be applied to all stages of online clothing communication and business, including design, manufacture, order, sales, distribution and customer management.

2 Normative references

This international standard should be read in conjunction with the following International Standards:

ISO 8559-1: Garment construction and anthropometric survey – Body dimensions

ISO 20685: 3D scanning methodologies for internationally compatible anthropometric databases

ISO 15535: General requirements for establishing an anthropometric database

ISO 19774: Information technology – Computer graphics and image processing – Humanoid Animation (H-Anim)

3 Terms and definitions

3.1 Virtual model

Three-dimensional model in digital format.

3.1.1 Parametric human body

Virtual model with changeable parameters such as size and shape, etc. (see Figure 2).

NOTE 1 Parametric human body is created by modifying the parameters of the exemplar model imported from the 3D model library. The exemplar models differ with countries as they are based on a database. Therefore, a parametric human body can be made on the basis of height variations, BMI (body mass index) and so on. (see Annex A: Figure 1).

NOTE 2 Parameters of the parametric human body are presented in the parametric human body software. Parameters of the ‘parametric human body can be added depending on the purpose of users.

Figure 2 — Examples of parameters of a male adult body

3.1.2 Virtual human body

Virtual model for digital fitting in the apparel industry, including information such as size, shape, cross section, body texture, and skeletal structure.

NOTE 1 Also called 'fashion avatar'. In computing, an avatar is the graphical representation of the user or the user's alter ego or character.

NOTE 2 The virtual human body is classified into three types -'virtual cone, virtual twin and virtual character (see Annex B: Table 1).

3.1.2.1 Virtual clone

Virtual human body created by forming three-dimensional surface data from a 3D body scanned point cloud (defined by ISO 20685-3.21), using surface modeling processes including noise elimination, hole-filling, and mesh generation. It is essential that a user get scanned first to create a virtual human body. The end result is a virtual human body identical to the body shape of the user. (see Figure 3).

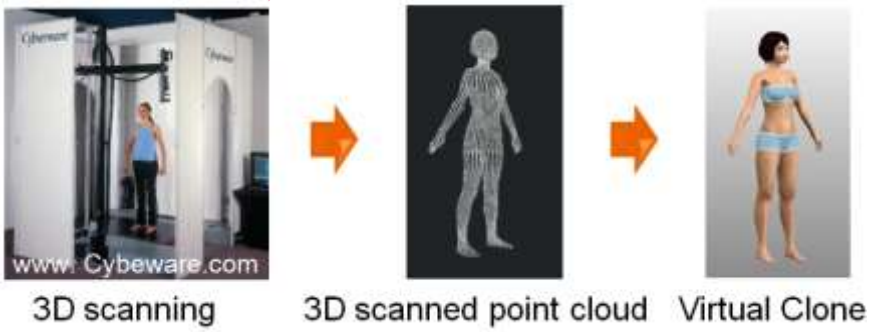

Figure 3 —Process of creating a virtual clone

3.1.2.2 Virtual twin

Morphed virtual human body that applies body dimensions acquired either through manual or automatic measurements (see Figure 4).

NOTE 1 The virtual twin is a kind of parametric human body as it can be changed with parameters.

NOTE 2 The virtual twin is not identical to the user, but is a close lookalike that can later be altered by entering different parameters.

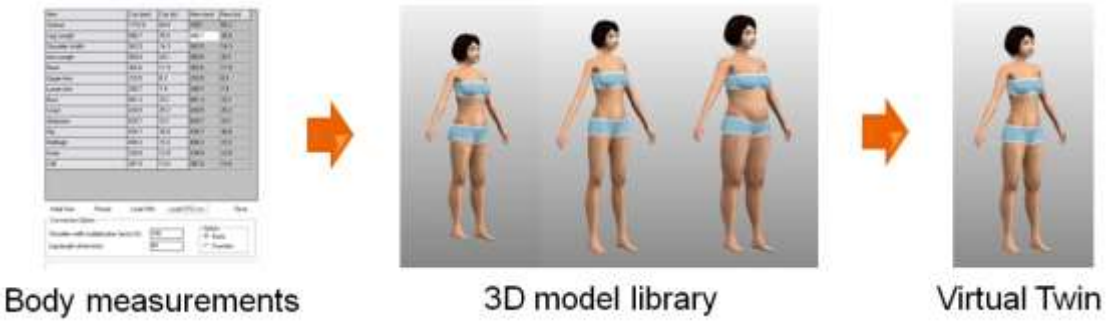

Figure 4 — Process of creating a virtual twin

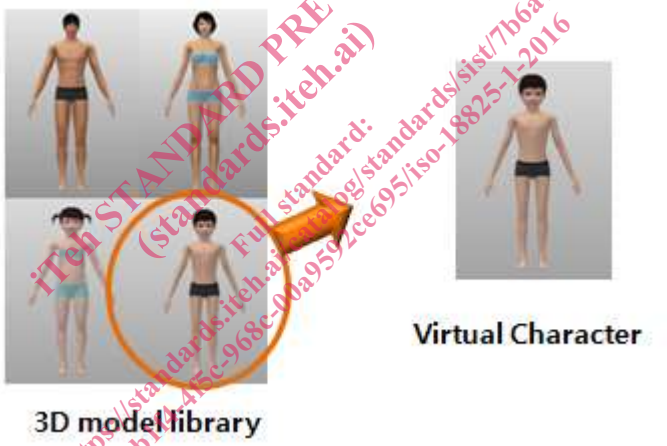

Figure 5 — Process of creating a virtual character

4 Composition and attributes

4.1 Basic composition and attributes

4.1.1 Virtual body segment

Part of the body that depicts the shape of the virtual human body.

NOTE 1 Software is based on at least 10 basic virtual body segments -- the virtual head, virtual torso, 2 virtual arms, 2 virtual hands, 2 virtual legs, and 2 virtual feet.

NOTE 2 A virtual body segment consists of virtual body regions. ‘A virtual body region refers to a specific area subdividing the virtual body segment.