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CORRECTION

Correction to: Information exchange standards for design, tolerancing and Additive Manufacturing: a research review

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Abstract
The erratum aims at clarifying and updating some errors and wrong assumptions of authors of the above-mentioned paper.

Correction to: Int J Interact Des Manuf

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According to the careful reading of Mr. Robert Lipman from NIST on above-mentioned paper [1] and his detailed recommendations, some sections of this paper should be read as follows:

I. Introductory section, 2nd paragraph, 2nd and 3rd sentences: "According to the history of Additive Manufacturing technology reported in the NIST Technical Note 1823 [2], in the 1960s Herbert Voelcker considered the possibilities of using computer-aided machine control to run machines that built parts from CAD geometry, in the 1970s, he developed the mathematical tools to describe 3D parts that resulted in the early algorithms for solid modeling, and in the 1980s, Carl Deckard formulated the idea of layer based manufacturing. Charles Hull is typically given credit for pioneering rapid prototype technology and patented his concept in 1986."
II. Introductory section, 3rd paragraph, last sentence: "As underlined by [3] the Tolerancing standards, such as ASME Y14.5 [4] or resulting work of ISO TC213 [5], can help to define tolerances in smart manufacturing systems."
III. Section 2.1, 2nd paragraph, last sentences: "As mentioned by [6], PMI provided by CAD can describe dimensional tolerances on length and diameter, and geometric tolerances on flatness, perpendicularity, position, surface profile, and circular run-out. PMI syntax and semantics are defined by working group of ASME Y14.5 and ISO TC 213. The skin model shapes and PMI specifications may be combined to solve geometric deviations and tolerance management."
IV. Section 3.2, 1st paragraph: "PMI is based on annotations and attributes linked to the definition of CAD model allowing specifications of product geometry for a manufacturing viewpoint. As underlined [6], PMI includes annotations to specify GD&T, as well as non-geometric data, such as surface texture specifications, finish requirements, process notes, material specifications, and welding symbols. GD&T is a symbolic language used to communicate tolerances on manufactured parts. The international standards for presentation of GD&T in views of 3D space are also used in CAD systems according to ASME Y14.41-2012 [7] and ISO 16792:2006 [8]."
V. Section 4, 4th paragraph: "STEP (ISO 10303) is a large set of standards specifying methodology, resources and languages for describing product data throughout its whole lifecycle [9–11]. As mentioned by [6], STEP is widely used in CAD systems and a critical enabler of digital manufacturing, an information based paradigm that allows for rapid design-to-production and reduces downstream costs. It is also often implemented and used for widely managing product information and their long-term archiving. ISO 10303 covers a large range of product types and industry sectors. Product data mod-

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els are structured and described according to several application protocols (APs) corresponding to specific fields of applications [9]. Two STEP application protocols that have been widely implemented in CAD systems are AP203 [12] known as 3D design of mechanical parts and assemblies and AP214 [13] known as automotive mechanical design. STEP AP242, known as Managed Model Based 3D Engineering, is a new STEP AP approved by ISO in 2014 [14]. It integrates the scopes of both AP203 and AP214 and contains many new capabilities that enable the machine-readable representation of manufacturing and assembly information, e.g., assembly tolerances and surface finish. It also integrates manufacturing process information including new developments of STEP to support AM technology (www.ap242.org/additive-manufacturing). According to [3], STEP AP242 covers many computable representations for several types of 3D model data, including GD&T (Fig. 3)."

VI. Concluding section, 5th sentence: "As mentioned above, the PMI standards can support the description of tolerances for product definition in AM systems."

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