Filed on behalf of Patent Owner 3Shape A/S
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EXOCAD GMBH and EXOCAD AMERICA, INC.
Petitioners

v.

3SHAPE A/S
Patent Owner

Case No. IPR2018-00788
Patent 9,336,336

PATENT OWNER'S RESPONSE TO THE PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,336,336

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B. "arrange the at least one 2D image relative to the 3D virtual model in a virtual 3D space such that the at least one 2D image and the 3D virtual model are aligned when viewed from a viewpoint and remain separate representations after being arranged" 6

C. "render a part of the at least one 2D image that includes teeth at least partly or wholly transparent" 7

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2. Wiedmann does not disclose a 3D virtual model "of at least part of an oral cavity of the patient." 14

3. Wiedmann does not disclose that "the 3D virtual model and the at least one 2D image are both visualized *in the 3D space*" under Petitioner's own construction. 15

4. Wiedmann does not disclose the claimed feature "remain separate representations after being arranged." 19

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b. Petitioner's conclusory assertions are unsupported by any credible evidence and should be given no weight. 25

3. Like Wiedmann, Sachdeva fails to disclose or suggest the claimed feature "remain separate representations after being arranged." 28

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a. Contrary to Petitioner's assertion, Sachdeva discloses that the morphable model 102 is 3D, not 2D.....29

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b. The virtual patient model in Sachdeva is a "composite, combined digital representation"—not a 2D image and a 3D virtual model that are aligned and remain separate representations after being arranged. 34

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a. Contrary to Petitioner's assertion, Sachdeva explicitly discloses that the morphable face model in Fig. 6 includes teeth. 42

b. Petitioner does not even allege that a part of the X-ray image *that includes the teeth* in Sachdeva is partly or wholly transparent. 44

c. The "virtually cut/render transparent" limitation requires an active step of causing a part of the 2D image to become partly or wholly transparent. 45

3. Sachdeva does not anticipate the dependent claims. 46

a. Sachdeva does not anticipate dependent claims 6-8. 46

b. Sachdeva does not anticipate dependent claim 9. 47

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1. A POSITA would not have combined Sachdeva with Kopelman as Petitioner alleges. 48

a. There is no reason to replace Sachdeva's 3D morphable model with a 2D image as Petitioner alleges. 48

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b. Contrary to the claims which require a 2D image and 3D virtual model to be aligned and remain separate representations, Kopelman discloses *combining* 2D and 3D image data. 50

2. Petitioner makes no assertion that it would have been obvious to modify Sachdeva to arrive at "either virtually cut[ting] at least a part of teeth out of the at least one 2D image or render[ing] a part of the at least one 2D image that includes teeth at least partly or wholly transparent."..... 55

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