Annexes

Annex S1 Test data DICOM properties

	Voxel spacing (X, Y)	Slice thickness	Nr. Slices	Orientation
CT w/ A 1	0.357	1.0	337	Axial
CT w/ A 2	0.586	0.75	440	Axial
CT w/ A 3	0.344	0.75	317	Axial
CT w/ A 4	0.475	3.0	213	Axial
CT w/ A 5	0.334	0.75	325	Axial
CT w/o A 1	0.479	1.0	341	Axial
CT w/o A 2	0.490	0.75	331	Axial
CT w/o A 3	0.449	1.0	293	Axial
CT w/o A 4	0.502	1.0	483	Axial
CT w/o A 5	0.441	1.0	489	Axial
CBCT w/ A 1	0.25	0.25	421	Axial
CBCT w/ A 2	0.25	0.25	424	Axial
CBCT w/ A 3	0.25	0.25	424	Axial
CBCT w/ A 4	0.25	0.25	424	Axial
CBCT w/ A 5	0.327	1.0	169	Sagittal
CBCT w/o A 1	0.25	0.25	424	Axial
CBCT w/o A 2	0.25	0.25	421	Axial
CBCT w/o A 3	0.25	0.25	424	Axial
CBCT w/o A 4	0.25	0.25	421	Axial
CBCT w/o A 5	0.3	0.3	443	Axial
Mean	*0.3542*	*0.715*	*378.2*	*-*

Annex S2 Dice similarity coefficient (DSC) of the <u>mandible with teeth</u> comparison

	Manual (beginner)	In-house	Relu	Materialise	Diagnocat	Brainlab
CT w/ A 1	0.948	0.882	0.939	0.919	0.930	0.924
CT w/ A 2	0.967	0.906	0.949	0.932	0.943	0.910
CT w/ A 3	0.979	0.898	0.954	0.941	0.947	0.917
CT w/ A 4	0.932	0.862	0.919	0.863	0.888	0.883
CT w/ A 5	0.980	0.877	0.932	0.918	0.927	0.915
Mean CT w/ A	**0.961**	**0.885**	**0.939**	**0.914**	**0.927**	**0.910**
CT w/o A 1	0.944	0.889	0.939	0.909	0.926	0.900
CT w/o A 2	0.964	0.886	0.934	0.895	0.914	0.897
CT w/o A 3	0.984	0.912	0.954	0.915	0.938	0.922
CT w/o A 4	0.974	0.890	0.914	0.898	0.916	0.909
CT w/o A 5	0.973	0.878	0.932	0.896	0.913	0.886
Mean CT w/o A	**0.968**	**0.891**	**0.935**	**0.903**	**0.921**	**0.903**
CBCT w/ A 1	0.953	0.896	0.936	0.955	0.944	0.911
CBCT w/ A 2	0.944	0.885	0.932	0.930	0.942	0.828
CBCT w/ A 3	0.952	0.739	0.943	0.954	0.928	0.768
CBCT w/ A 4	0.958	0.893	0.944	0.959	0.948	0.878
CBCT w/ A 5	0.950	0.900	0.932	0.939	0.944	0.722
Mean CBCT w/ A	**0.951**	**0.863**	**0.938**	**0.947**	**0.941**	**0.821**
CBCT w/o A 1	0.973	0.905	0.943	0.961	0.950	0.779
CBCT w/o A 2	0.956	0.889	0.935	0.953	0.949	0.889

CBCT w/o A 3	0.954	0.897	0.940	0.955	0.949	0.861
CBCT w/o A 4	0.959	0.905	0.940	0.967	0.950	0.891
CBCT w/o A 5	0.947	0.901	0.938	0.942	0.938	0.912
Mean CBCT w/o A	**0.958**	**0.899**	**0.939**	**0.956**	**0.947**	**0.866**
Mean	*0.960*	*0.884*	*0.938*	*0.930*	*0.934*	*0.875*

Annex S3 Dice similarity coefficient (DSC) of the <u>mandibular bone</u> comparison

	Manual (beginner)	In-house	Relu	Materialise	Diagnocat	Brainlab
CT w/ A 1	0.949	0.891	0.951	0.923	0.937	0.960
CT w/ A 2	0.971	0.928	0.966	0.945	0.955	0.945
CT w/ A 3	0.980	0.904	0.969	0.946	0.958	0.963
CT w/ A 4	0.960	0.883	0.958	0.891	0.925	0.918
CT w/ A 5	0.981	0.884	0.947	0.923	0.940	0.955
Mean CT w/ A	**0.968**	**0.898**	**0.958**	**0.925**	**0.943**	**0.948**
CT w/o A 1	0.945	0.898	0.956	0.916	0.939	0.941
CT w/o A 2	0.965	0.894	0.952	0.901	0.930	0.937
CT w/o A 3	0.986	0.919	0.968	0.921	0.948	0.957
CT w/o A 4	0.977	0.900	0.932	0.904	0.933	0.951
CT w/o A 5	0.972	0.887	0.950	0.902	0.929	0.931
Mean CT w/o A	**0.969**	**0.900**	**0.952**	**0.909**	**0.936**	**0.943**
CBCT w/ A 1	0.969	0.910	0.945	0.970	0.953	0.936
CBCT w/ A 2	0.960	0.900	0.945	0.948	0.951	0.868
CBCT w/ A 3	0.955	0.738	0.945	0.958	0.933	0.774
CBCT w/ A 4	0.969	0.910	0.950	0.968	0.956	0.926
CBCT w/ A 5	0.9623	0.907	0.938	0.951	0.949	0.757
Mean CBCT w/ A	**0.963**	**0.873**	**0.944**	**0.959**	**0.948**	**0.852**
CBCT w/o A 1	0.976	0.916	0.944	0.961	0.951	0.825
CBCT w/o A 2	0.961	0.898	0.938	0.959	0.950	0.917
CBCT w/o A 3	0.961	0.899	0.942	0.954	0.950	0.911
CBCT w/o A 4	0.960	0.909	0.943	0.969	0.954	0.930
CBCT w/o A 5	0.952	0.904	0.950	0.948	0.946	0.933
Mean CBCT w/o A	**0.962**	**0.905**	**0.943**	**0.958**	**0.950**	**0.903**
Mean	*0.966*	*0.894*	*0.949*	*0.938*	*0.944*	*0.912*

Annex S4 Dice similarity coefficient (DSC) of the <u>mandibular teeth</u> comparison

	Manual (beginner)	In-house	Relu	Materialise	Diagnocat	Brainlab
CT w/ A 1A	0.931	0.810	0.848	0.871	0.860	0.584
CT w/ A 2	0.944	0.710	0.825	0.833	0.849	0.566
CT w/ A 3	0.974	0.838	0.851	0.889	0.852	0.423
CT w/ A 4	0.795	0.750	0.720	0.717	0.692	0.685
CT w/ A 5	0.972	0.827	0.827	0.879	0.830	0.552
Mean CT w/ A	**0.923**	**0.787**	**0.814**	**0.838**	**0.817**	**0.562**
CT w/o A 1	0.933	0.818	0.783	0.841	0.796	0.411
CT w/o A 2	0.948	0.823	0.790	0.841	0.790	0.536
CT w/o A 3	0.959	0.826	0.809	0.850	0.817	0.441
CT w/o A 4	0.968	0.827	0.802	0.865	0.807	0.569
CT w/o A 5	0.955	0.795	0.775	0.836	0.773	0.382
Mean CT w/o A	**0.953**	**0.818**	**0.792**	**0.847**	**0.797**	**0.468**
CBCT w/ A 1	0.789	0.725	0.826	0.800	0.841	0.509
CBCT w/ A 2	0.756	0.712	0.761	0.749	0.810	0.495
CBCT w/ A 3	0.850	0.729	0.885	0.853	0.789	0.583
CBCT w/ A 4	0.912	0.797	0.911	0.911	0.913	0.645
CBCT w/ A 5	0.885	0.847	0.907	0.875	0.912	0.352

Mean CBCT w/ A	**0.838**	**0.762**	**0.858**	**0.837**	**0.853**	**0.517**
CBCT w/o A 1	0.953	0.815	0.933	0.959	0.942	0.199
CBCT w/o A 2	0.936	0.804	0.913	0.927	0.932	0.561
CBCT w/o A 3	0.947	0.870	0.924	0.950	0.940	0.041
CBCT w/o A 4	0.957	0.869	0.921	0.961	0.927	0.547
CBCT w/o A 5	0.882	0.848	0.756	0.876	0.775	0.575
Mean CBCT w/o A	**0.935**	**0.841**	**0.889**	**0.935**	**0.903**	**0.384**
Mean	**0.912**	**0.802**	**0.838**	**0.864**	**0.842**	**0.483**

Annex S5 Mean values for the comparison of the mandible with teeth segmentations, mandibular bone and mandibular teeth to the ground truth by using the dice similarity coefficient (DSC), average surface distance (ASD), Hausdorff distance (HD), relative volume difference (RVD), volumetric overlap error (VOE), false positive rate (FPR) and false negative rate (FNR)

	Mean DSC±SD	Mean ASD±SD	Mean HD±SD	Mean RVD±SD	Mean VOE±SD	Mean FPR±SD	Mean FNR±SD
Manual (beginner)	0.960±0.0138	0.518±0.232	12.682±6.768	-0.00174±0.0418	0.077±0.025	0.000509±0.000423	0.0412±0.0261
	0.966±0.011	0.430±0.195	9.316±4.792	-0.00664±0.0389	0.066±0.0202	0.000362±0.000295	0.0375±0.0256
	0.912±0.64	0.672±0.586	16.389±24.734	0.0529±0.123	0.155±0.102	0.0001439±0.000165	0.066±0.046
In-house	0.884±0.035	1.609±0.641	37.393±67.022	-0.144±0.074	0.206±0.051	0.000489±0.000496	0.178±0.058
	0.894±0.038	1.476±0.668	37.121±67.109	-0.137±0.072	0.190±0.055	0.000376±0.000374	0.1660±0.0607
	0.802±0.049	1.554±0.541	16.056±7.056	-0.185±0.124	0.328±0.0667	0.000124±0.000132	0.272±0.065
Relu	0.938±0.0096	0.804±0.214	13.921±6.641	-0.00314±0.089	0.117±0.0170	0.000846±0.000863	0.0638±0.0438
	0.949±0.010	0.654±0.257	10.081±4.932	0.017±0.080	0.096±0.018	0.000757±0.000776	0.0427±0.0346
	0.838±0.063	1.131±0.401	12.584±6.974	-0.147±0.175	0.273±0.094	0.0000915±0.000113	0.221±0.112
Materialise	0.930±0.027	0.904±0.381	17.248±16.134	-0.061±0.103	0.130±0.047	0.000524±0.000595	0.0973±0.0714
	0.938±0.025	0.773±0.322	13.814±16.167	-0.057±0.096	0.116±0.043	0.000407±0.000458	0.0876±0.0674
	0.864±0.061	1.115±0.770	13.864±10.197	-0.073±0.212	0.234±0.094	0.000118±0.000178	0.168±0.101
Diagnocat	0.934±0.016	0.825±0.152	13.526±6.256	-0.037±0.090	0.123 ±0.0277	0.000652±0.000672	0.082±0.054
	0.944±0.0099	0.692±0.158	11.494±5.975	-0.0186±0.0832	0.105±0.018	0.000583±0.000591	0.064±0.046
	0.842±0.066	1.143±0.381	12.383±7.346	-0.174±0.149	0.267±0.099	0.0000736±0.0000901	0.228±0.113
Brainlab	0.875±0.055	2.194±1.465	34.265±21.534	-0.0095±0.1394	0.218±0.082	0.001577±0.001574	0.132±0.047
	0.912±0.058	1.454±1.309	27.811±23.439	0.0540±0.1285	0.157±0.091	0.001385±0.001419	0.067±0.036
	0.483±0.149	7.339±8.956	34.850±21.756	-0.4482±0.445	0.670±0.117	0.0002022±0.0003738	0.609±0.180