Supplementary file

Table S1. Organisation size per area of speciality

	Academia	Design	Manufacturing	Medical
less than 20	18.8	40.0	16.7	22.2
20 to 100	0.0	20.0	33.3	22.2
100 to 1000	6.3	0.0	0.0	11.1
more than 1000	75.0	40.0	50.0	44.4

Table S2. Institutional source of funding

	Academia	Design	Manufacturing	Medical
Publicly	85.7	0.0	33.3	77.8
Privately	14.3	100.0	66.7	22.2

Table S3. Time since implementation of AM technologies

	Academia	Design	Manufacturing	Medical
Less than 2 years	0.0	0.0	0.0	0.0
2 to 5 years	12.5	20.0	16.7	50.0
5 to 10 years	31.3	40.0	83.3	33.3
More than 10 years	56.3	40.0	0.0	16.7

Table S4. Stage of AM technologies in different organisations

	Academia	Design	Manufacturing	Medical
Broadly implemented	53.3	50.0	66.7	33.3
Early implementation	26.7	0.0	16.7	33.3
Near consolidation	6.7	0.0	16.7	33.3
Other	13.3	50.0	0.0	0.0

Table S5. Time dependent use of AM systems

	Academia	Design	Manufacturing	Medical
Daily	62.5	50.0	100.0	16.7
Weekly	31.3	0.0	0.0	66.7
Monthly	6.3	25.0	0.0	16.7
Other	0.0	25.0	0.0	0.0

Table S6. Percentage of professionals for which the whole manufacturing process (from scanning to delivery) is done in their organisation

	Academia	Design	Manufacturing	Medical
Yes	81.3	80.0	83.3	50.0
No	18.8	20.0	16.7	50.0

Table S7. Percentage of organisations using 3D printing technologies

	Academia	Design	Manufacturing	Medical
Yes, we use them directly	93.8	100.0	100.0	55.6
Yes, but we outsource the printing	6.3	0.0	0.0	11.1
No	0.0	0.0	0.0	33.3

Table S8. Experience in using AM systems for each professional area

	Academia	Design	Manufacturing	Medical
Regular user	81.3	100.0	83.3	44.4
Sporadic user	12.5	0.0	16.7	11.1
None	6.3	0.0	0.0	44.4

Table S9. Role of AM technologies in each organisation

	Academia	Design	Manufacturing	Medical
Concept verification	24.5	25.0	16.7	19.0
End use parts	20.8	20.0	27.8	38.1
Production tools	7.5	15.0	16.7	19.0
Prototyping	24.5	25.0	27.8	14.3
Spare parts	7.5	10.0	11.1	9.5
Other	15.1	5.0	0.0	0.0

Table S10. Materials used for each institution

	Academia	Design	Manufacturing	Medical
Ceramics	11.8	0.0	8.3	11.1
Composites	23.5	0.0	16.7	11.1
Metallic alloys	26.5	37.5	50.0	33.3
Polymers	38.2	62.5	25.0	44.4

Table S11. Prevalence of AM systems for each area of expertise

	Academia	Design	Manufacturing	Medical
Bed Fusion	30.0	33.3	46.2	42.9
Binder Jetting	12.5	0.0	15.4	0.0
Direct Energy Deposition	2.5	11.1	15.4	14.3
Material Extrussion	25.0	33.3	15.4	14.3
Material Jetting	7.5	11.1	7.7	0.0
Sheet Lamination	5.0	0.0	0.0	14.3
VAT photopolymerisation	17.5	11.1	0.0	14.3

Table S12. Main reasons behind system selection with 0 being not at all and 5 being very significantly

	Academia	Design	Manufacturing	Medical
Build time	2.5 ± 1.9	2.5 ± 2.1	3.7 ± 0.8	3.0 ± 1.4
Cost	2.9 ± 1.9	2.8 ± 0.8	3.5 ± 1.0	3.9 ± 0.6
Education	3.8 ± 1.6	0.8 ± 1.8	2.2 ± 2.3	2.7 ± 1.6
Efficiency	3.2 ± 2.0	3.4 ± 1.1	3.5 ± 1.0	3.0 ± 1.4
Energy source/deposition method	3.2 ± 1.9	1.2 ± 2.2	3.2 ± 1.5	2.1 ± 1.7
Familiarity	3.2 ± 2.1	3.6 ± 0.5	3.7 ± 1.2	3.0 ± 1.8
Flexibility	3.8 ± 1.9	4.0 ± 0.7	4.5 ± 0.5	3.1 ± 1.6
Material	4.3 ± 1.6	3.2 ± 1.9	4.7 ± 0.5	3.8 ± 1.7
Part quality	3.7 ± 1.8	4.2 ± 0.8	4.3 ± 0.8	3.9 ± 1.8
Repeatability	4.0 ± 1.9	4.8 ± 0.4	4.0 ± 1.5	3.0 ± 1.9
Safety	3.4 ± 1.9	2.8 ± 0.8	3.3 ± 1.2	3.8 ± 2.1
Simplicity	3.2 ± 2.1	3.4 ± 1.1	3.4 ± 1.7	3.5 ± 1.9
Sustainability	2.9 ± 2.0	2.4 ± 1.1	2.8 ± 1.7	3.1 ± 1.5

Table S13. Main reasons that constrain the use of 3D printing in different area of expertise with 0 being not at all and 5 being very significantly

	Academia	Design	Manufacturing	Medical
Cost	3.2 ± 1.9	3.0 ± 1.0	4.2 ± 1.2	2.9 ± 1.6
Education	2.2 ± 1.6	0.8 ± 0.8	3.5 ± 1.8	2.1 ± 1.5
Materials	2.7 ± 1.5	2.0 ± 1.0	3.0 ± 1.0	3.1 ± 1.8
Mechanical properties	3.2 ± 1.5	2.2 ± 1.3	2.3 ± 1.9	3.0 ± 1.7
Surface finish	2.7 ± 1.5	2.0 ± 2.0	3.3 ± 1.5	3.1 ± 1.7
Software	2.0 ± 1.7	1.0 ± 1.2	2.3 ± 1.0	2.8 ± 1.8

Table S14. Most important features considered for the success of a finished part with 0 being not at all and 5 being very significantly

	Academia	Design	Manufacturing	Medical
Biological compatibility	4.1 ± 1.9	3.4 ± 1.7	3.7 ± 2.0	5.0 ± 0.0
Geometrical accuracy	4.1 ± 1.7	4.8 ± 0.4	4.5 ± 0.5	4.8 ± 1.7
Mechanical behaviour	4.0 ± 1.6	3.6 ± 1.1	4.7 ± 0.8	4.7 ± 0.7
Personalization	4.0 ± 1.8	2.6 ± 1.8	4.0 ± 1.5	4.4 ± 0.9
Repeatability	4.4 ± 1.7	3.2 ± 2.0	4.3 ± 1.0	3.8 ± 1.6
Surface finish	3.6 ± 1.7	3.8 ± 0.8	4.2 ± 0.8	3.9 ± 1.2

Table S15. Advantages of 3D printing over conventional manufacturing processes

	Academia	Design	Manufacturing	Medical
Batch size	3.6	7.7	13.0	13.3
Design control	21.8	15.4	21.7	16.7
Entry cost	5.5	7.7	0.0	16.7
Final parts assembled	7.3	7.7	8.7	3.3
Lead times	12.7	15.4	13.0	13.3
Personalisation	25.5	23.1	17.4	30.0
Prototyping	21.8	23.1	21.7	6.7
Waste production	1.8	0.0	4.3	0.0

Table S16. Disadvantages of 3D printing over conventional manufacturing processes

	Academia	Design	Manufacturing	Medical
Batch size	10.0	6.7	8.0	10.8
Build times	11.4	0.0	8.0	18.9
Expertise	11.4	26.7	24.0	18.9
Initial investment	8.6	13.3	8.0	13.5
Materials available	11.4	6.7	4.0	5.4
Mechanical properties	8.6	0.0	4.0	8.1
Microstructure	17.1	20.0	20.0	5.4
Post-processing	7.1	6.7	4.0	13.5
Production costs	14.3	13.3	20.0	2.7
Surface finish	0.0	6.7	0.0	2.7

Table S17. Areas where further increase of AM techniques are currently desired

	Academia	Design	Manufacturing	Medical
Development of new techniques	29.2	25.0	22.2	52.9
Design of New products	25.0	50.0	33.3	17.6
Modification of current products	20.8	0.0	33.3	23.5
Prototyping	20.8	25.0	11.1	5.9

Other	4.2	0.0	0.0	0.0

Table S18. Areas where further increase of AM techniques would be desired if current limitations are overcome

	Academia	Design	Manufacturing	Medical
Development of new techniques	24.5	21.4	22.2	34.8
Design of New products	26.4	28.6	33.3	30.4
Modification of current products	22.6	28.6	33.3	26.1
Prototyping	24.5	21.4	11.1	8.7
Other	1.9	0.0	0.0	0.0

Table S19. Quantification of the impact that poor control of previously mentioned inputs will have on the finished product

	Academia	Design	Manufacturing	Medical
Biological compatibility	2.1 ± 1.9	2.2 ± 1.6	3.0 ± 1.7	3.4 ± 2.4
Geometrical accuracy	4.1 ± 2.1	4.6 ± 0.9	4.2 ± 1.0	4.6 ± 2.5
Mechanical behaviour	3.6 ± 1.9	3.8 ± 0.8	5.0 ± 0.0	4.6 ± 2.5
Personalization	2.8 ± 2.1	1.8 ± 2.2	3.0 ± 1.9	3.0 ± 2.2
Repeatability	3.4 ± 2.0	3.2 ± 2.2	4.3 ± 1.6	4.2 ± 2.3
Surface finish	3.5 ± 2.1	3.2 ± 1.3	4.7 ± 0.5	3.8 ± 2.1

Table S20. Methods used to perform optimisation of AM parameters

	Academia	Design	Manufacturing	Medical
Manufacturer's recommendations	9.4	38.5	11.5	26.7
Parametric studies in simplified samples	18.9	7.7	23.1	20.0
Parametric studies in final geometry	17.0	15.4	15.4	6.7
Process feedback	11.3	7.7	23.1	13.3
Software tools	15.1	7.7	15.4	13.3
Technician's experience	22.6	23.1	11.5	20.0
Other	5.7	0.0	0.0	0.0

Table S21. Systems used to monitor AM processes

	Academia	Design	Manufacturing	Medical
In build monitoring system	31.8	0.0	40.0	28.6
Monitoring of systems readings	31.8	20.0	40.0	42.9
None	13.6	20.0	0.0	14.3
Other	22.7	60.0	20.0	14.3

Table S22. Main postprocessing steps used after 3D printing

	Academia	Design	Manufacturing	Medical

Abrasive blasting	13.9	10.0	15.2	10.3
Cleaning	30.6	25.0	18.2	20.7
Grinding	5.6	20.0	12.1	6.9
Heat treatment	16.7	15.0	18.2	17.2
Polishing	16.7	15.0	18.2	24.1
Passivation	5.6	5.0	15.2	13.8
Other	11.1	10.0	3.0	6.9

Table S23. Improved functionality of conventional AM parts desired by different experts

	Academia	Design	Manufacturing	Medical
Antimicrobial loading/coating	26.8	13.3	21.1	29.4
Growth factors/Osseoinductive loading/coating	14.6	13.3	15.8	17.6
Increased porosity	12.2	20.0	15.8	17.6
Latticed structures	19.5	26.7	26.3	17.6
Micro/nano laser patterning	14.6	6.7	5.3	11.8
Structural optimisation through deep learning	9.8	13.3	10.5	5.9
Other	2.4	6.7	5.3	0.0