



groep
gidts


mariasteen

**Bart Decloedt,
Manager Sales & Innovation**

**EU Digit Webinar Rotterdam
March 11th, 2022**

MARIASTEEN

- Belgian sheltered workplace, since 1963
- 932 employees → 748 persons with disabilities
- 600 customers - >20 mio €
- Part of group GID(t)S: employment, education, care

Early adaptor of INCLUSIVE MANUFACTURING TECHNOLOGIES

PRODUCTION

metalwork



assembly



woodworking



Industries: building, machinery, automotive, fabrication, medical, electro...

SERVICES

Green care

painting works

catering & events

inclusive
hotel



INHOUSE at customers location

logistics

assembly

food ...



OUR CHALLENGE

WORK
safe,
sustainable



EMPLOYEE
with
cognitive/physical
disability

WHAT IF ...

WORK

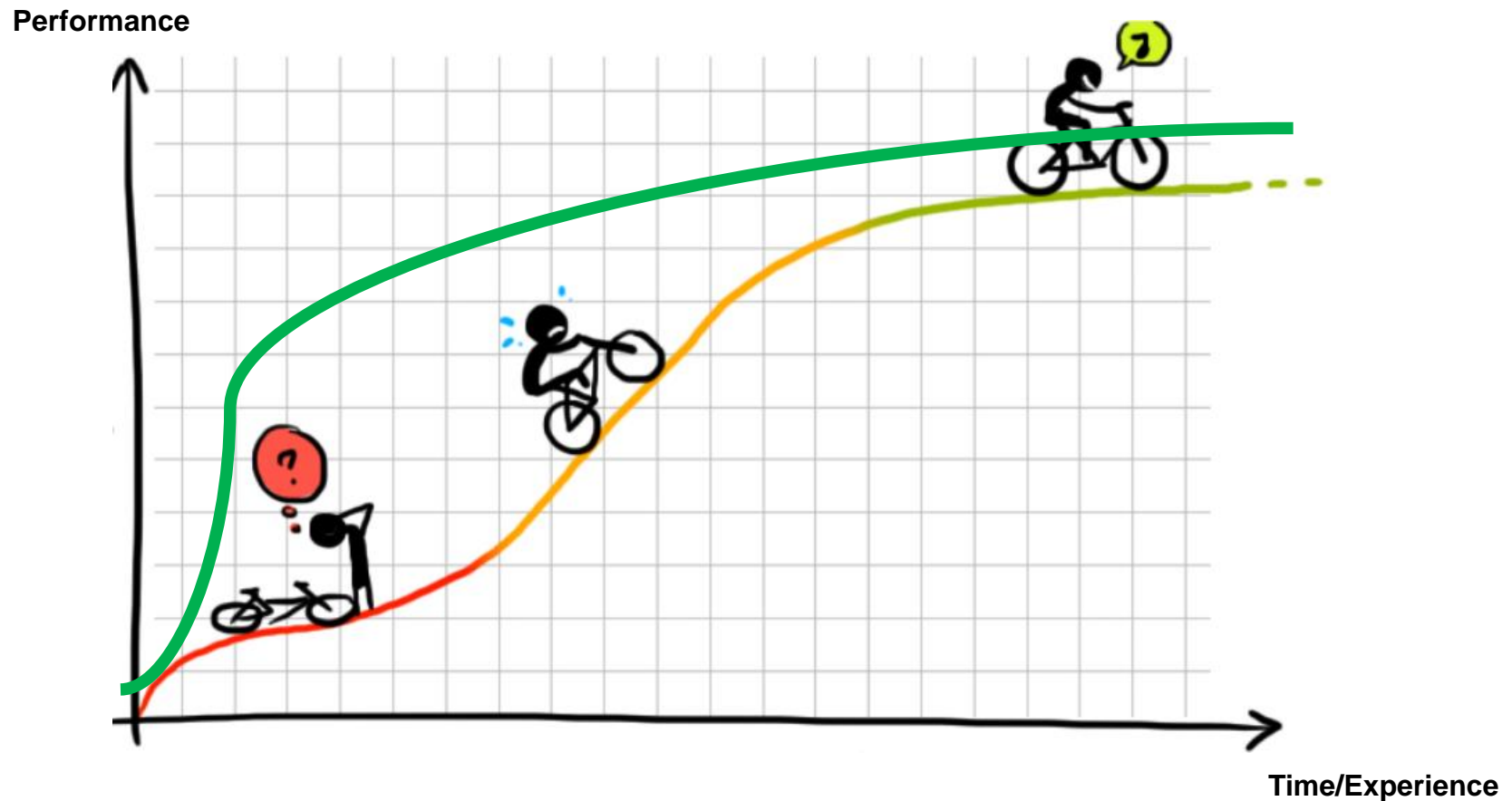
higher complexity,
low volumes,
high quality,
more diversification,
higher flexibility



EMPLOYEE

lower skills

EMPLOYEE: "learning curve"



WORK: "complexity of manual work"

different roads
towards the
solution

many
parts

long cycle
times

hard
positioning

poor
accessibility

hidden
operations

bad
ergonomics

a need for
professional
skills

important
sequence

subjective
inspection

fine motor
skills &
precision

adjustments

unstable
raw materials

need for
detailed work
instructions

soft and
flexible
materials

lack on
feedback

WORK: "complexity of manual work"

10x Cognitive
6 x Physical

different roads
towards the
solution

many
parts

long cycle
times

hard
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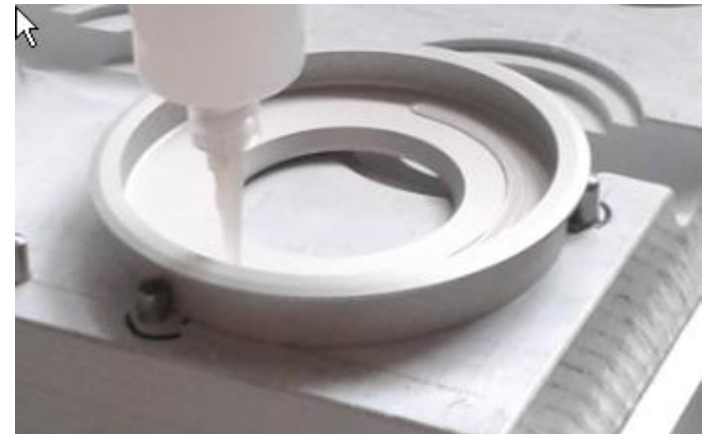
soft and
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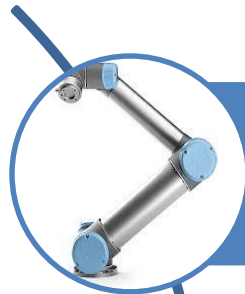
Example: subcontracting for lighting industry

= electro-mechanical assemblies and dispensing solutions

= multiple models – small and medium batches – high quality



Assistive technologies **BESIDES** our workers



Collaborative robots (2012)



AR Workinstruction (2016)



Additive Manufacturing (2020)

MARIASTEEN

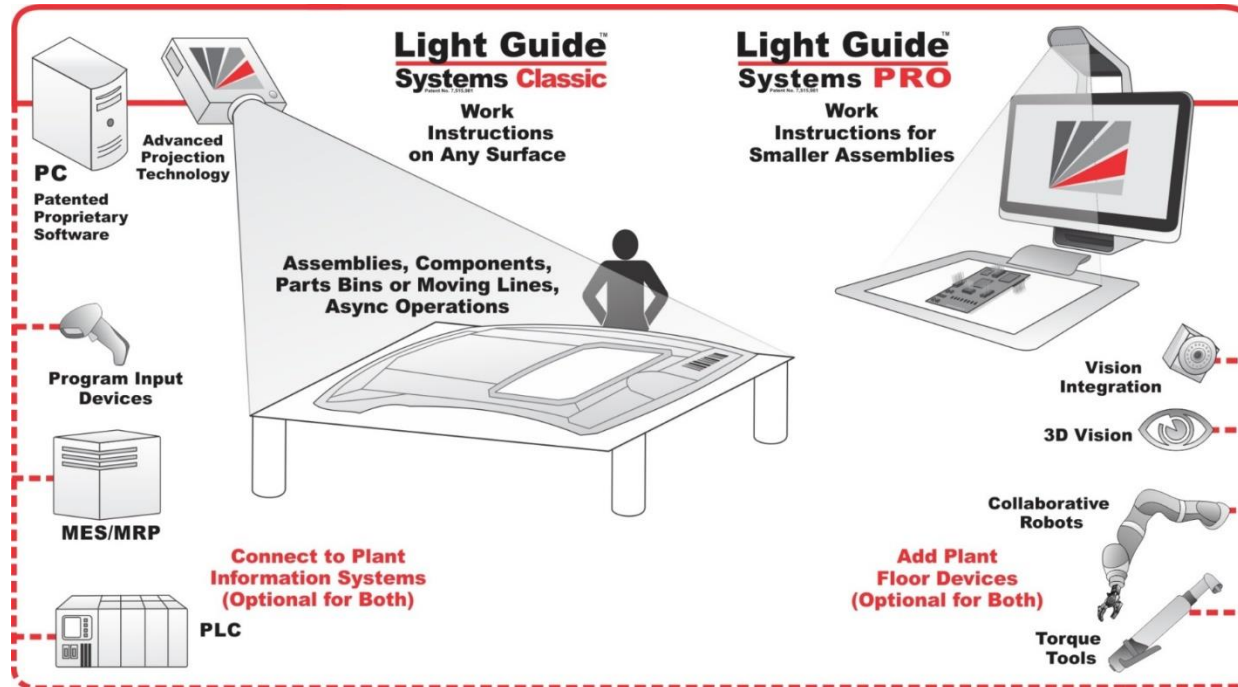
1ste Belgian Sheltered Workplace with Collaborative Robots on the workplace (2012)



PHYSICAL WORKER ASSISTANCE

MARIASTEEN

1st European company with Light Guide Systems® implemented on the workplace (2016)



COGNITIVE WORKER ASSISTANCE

Example 1: pick to beamer

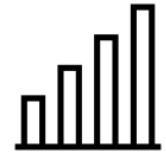


Example 2: visual instructions

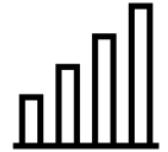


Example 3: bi-manual training

- ✓ ✓ ✓
- 👁️
- ⚠️
- 📄



Example 4: multiple operators



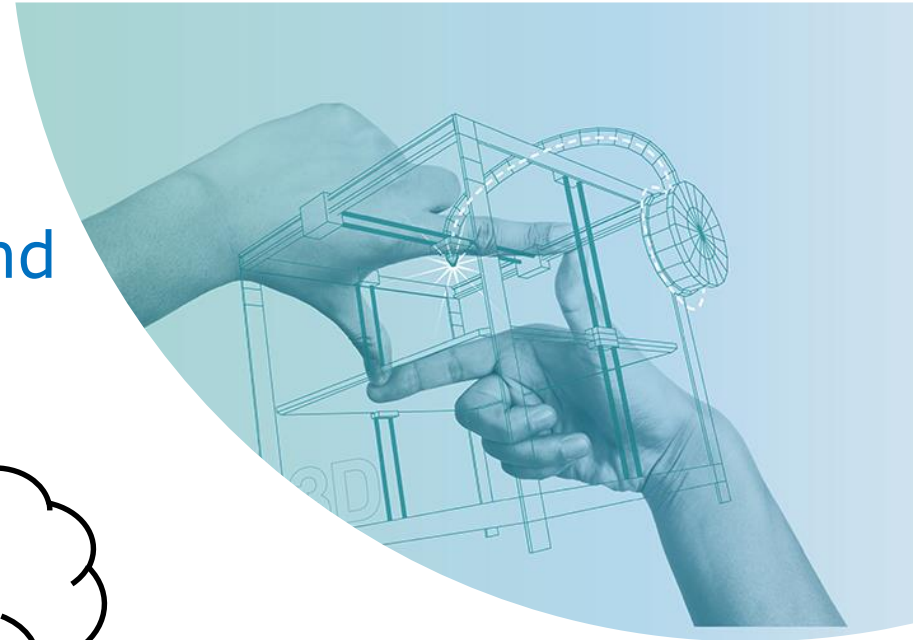
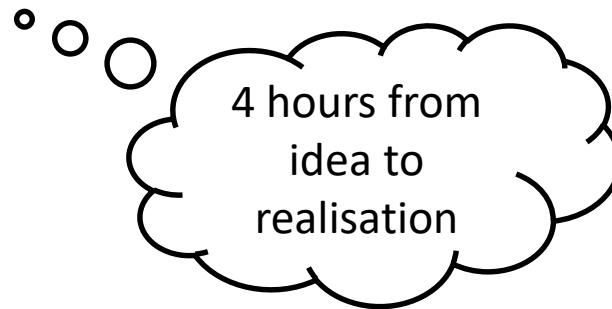
Example 5:

XXL



Additive Manufacturing (2020)

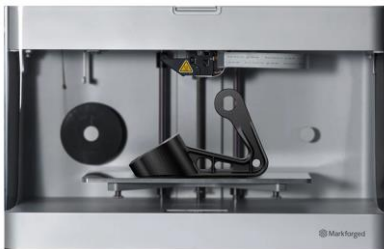
Individual and work related manufacturing aids, tools and fixtures



Rapid Prototyping

Additive Manufacturing (2020)

technology



design



CAD software

CAD-software	gebruiks-vriendelijkheid	mogelijkheden	prijs
Tinkercad	+++	+	€ (gratis)
Sketchup	+++	+	€ (gratis)
FreeCAD	+++	++	€ (gratis)
Fusion 360	++	+++	€€€
Inventor	+	+++	€€€
SolidWorks	+	+++	€€€
Andere ...			
Blender	?	+	€ (gratis)

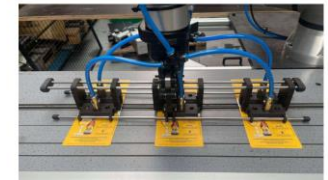
Ook interessant: Shapr3D (Apple)



Inspire & learn

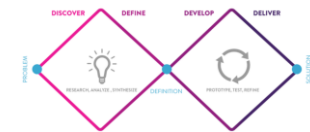
Mariasteen: robot gripper voor meervoudige handling

Foto:



Voordelen:

Ontwerprijheid – iteratief proces van concept naar realisatie



materialise
innovators you can count on

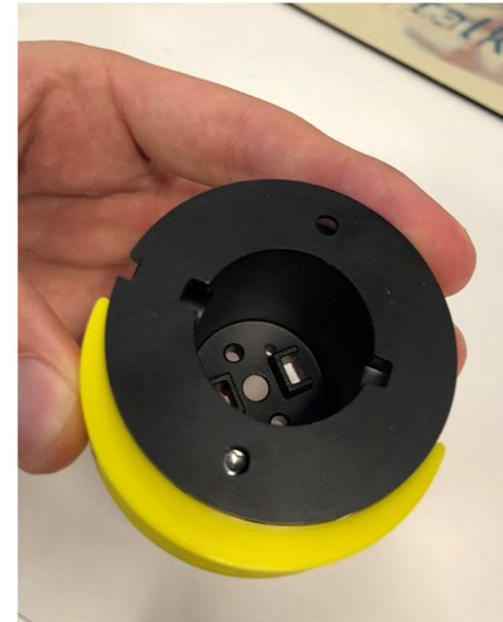
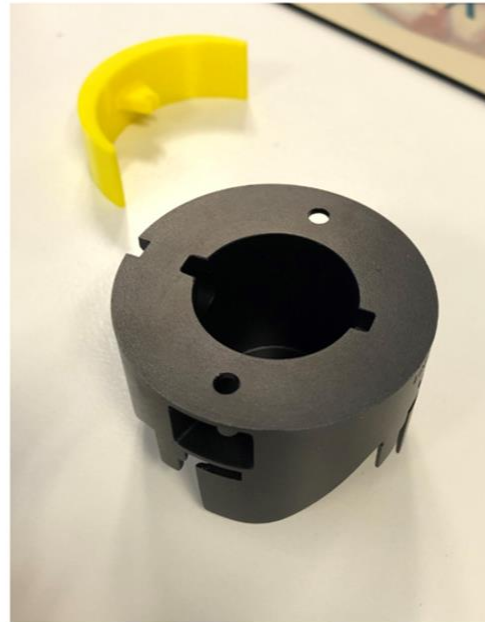
Additive Manufacturing (2020)



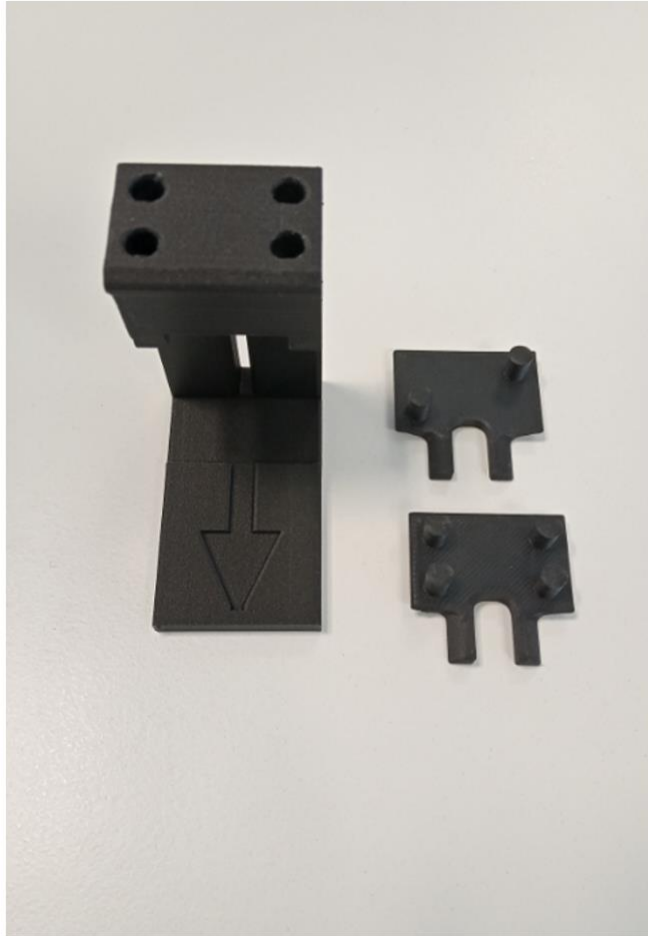
-  Low Volume Production
-  Freedom of Design
-  Customization
-  Shaped to the Individual
-  Enhanced functionalities



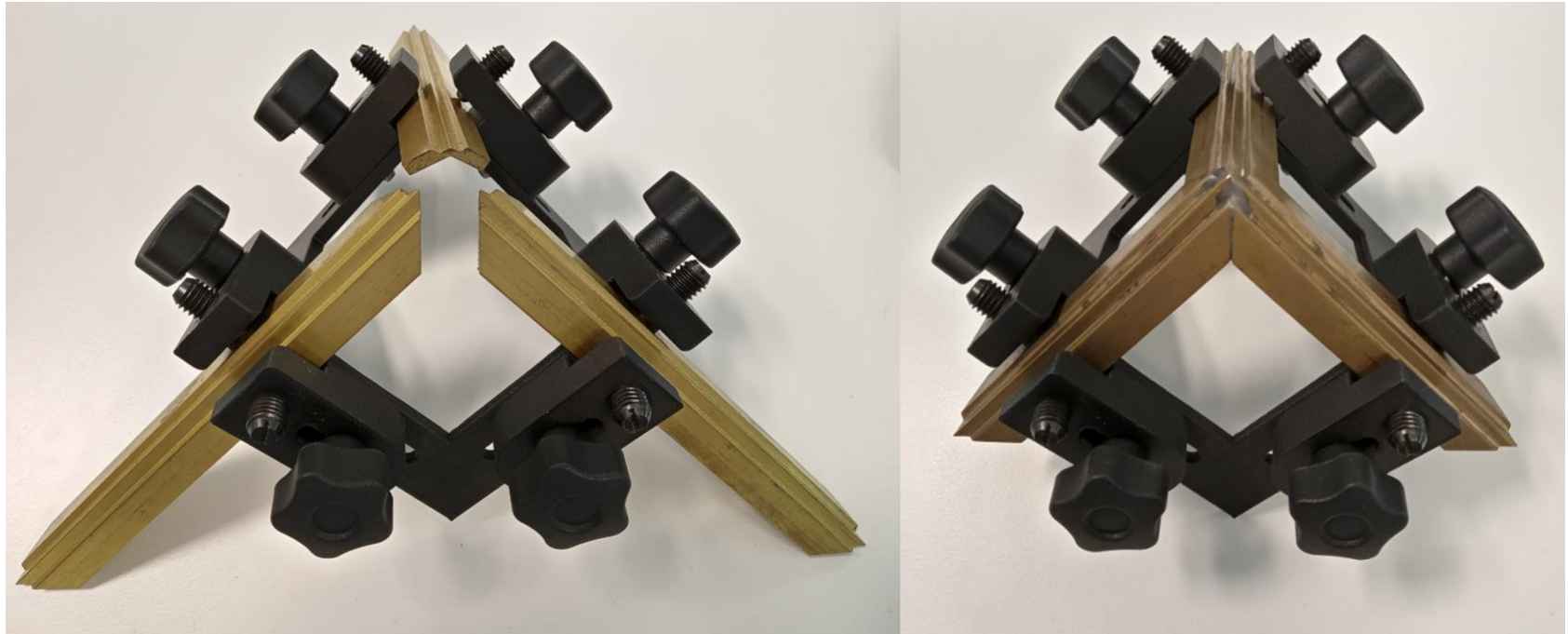
Additive Manufacturing (2020)



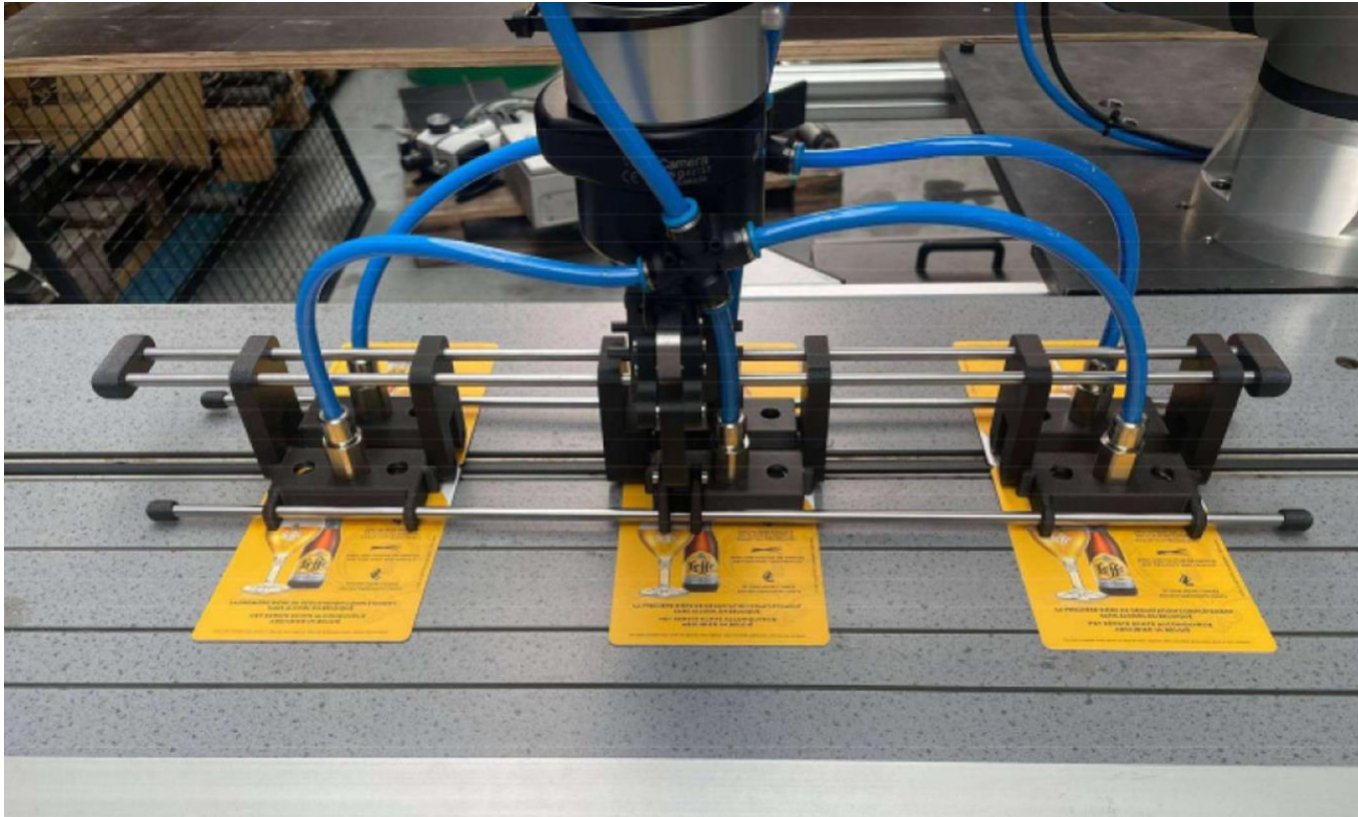
Additive Manufacturing (2020)



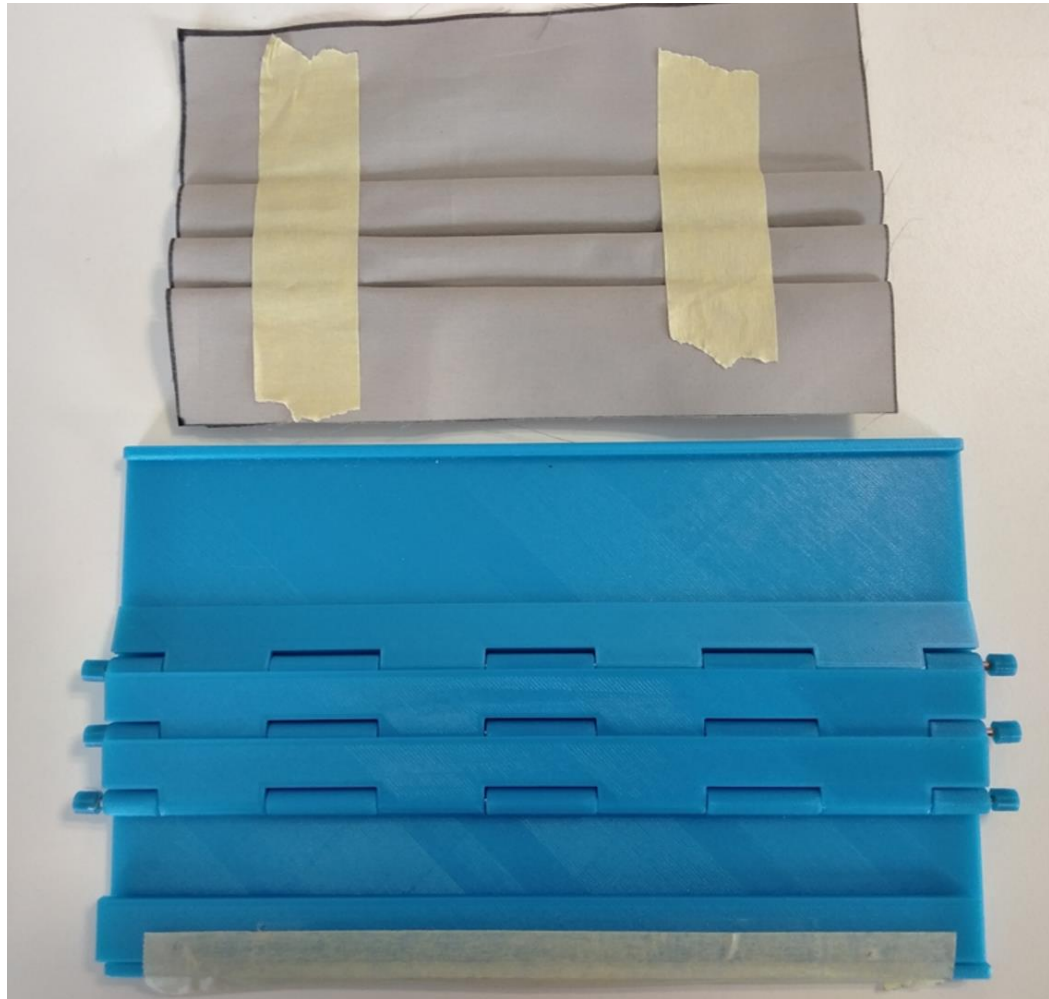
Additive Manufacturing (2020)



Additive Manufacturing (2020)



Additive Manufacturing (2020)



Additive Manufacturing (2020)

Overzichtslijst 3D - geprinte stukken											Print		
Numme	Versi	Omschrijving / Aanpassing	laaginstelling	type	type	filament	support	vulling	brim		meters	g	Looptijd
			dikte	type	type	single/multi	kleur	ja/nee	%	ja/nee			
0001	1	3D printer test (nauwkeurigheid -	0,15	quality	PLA	single	blauw	nee	100%	nee	20,92	62,39	
0002	2	hoek positie stuk BK-0166	0,2	quality	PLA	single	blauw	nee	10%	nee	12,44	37,00	2u57
0003	1	raster positionerings stuk	0,2	speed	PLA	single	blauw	nee	10%	nee	15,85	47,29	
0004	1	Mondmasker plooi hulp	0,15	speed	PLA	single	blauw	nee	10%	nee	8,55	25,51	2u23
0005	1	scharnier voor plooiën mondmasker	0,15	quality	PLA	single	blauw	nee	30%	nee	33,98	101,34	9u15
0005	2	scharnier voor plooiën mondmasker, aanslag	0,15	quality	PLA	single	blauw	nee	30%	nee	33,98	101,34	
0006	1	Afstandslatje voor plooi hulp mondmasker	0,2	speed	PLA	single	blauw	nee	15%	nee	5,00	14,92	0u58
0007	1	Handvat montage hulp	0,2	quality	PLA	single	blauw	nee	15%	nee	10,12	30,18	2u31
0008	1	Handgreep achterkant	0,2	quality	PLA	single	zwart	ja	50%	nee	35,28	105,20	
0008	1	Handgreep recht	0,15	quality	PLA	single	zwart	ja	100%	nee	45,06	134,40	9u37
0009	1	Soldeer help draadjes	0,2	quality	PLA	single	blauw	nee	15%	nee	12,88	38,41	3u15
0010	1	Positiekaliber lastafel spot	0,2	quality	PLA	single	blauw	nee	30%	nee	12,37	36,90	3u56
0011	1	Arduino case	0,15	quality	PLA	single	blauw	nee	15%	nee	6,86	20,47	3u57
0012	1	ONDERPLAAT (externe klant Inge Hoorne ,	0,2	quality	PLA	single	zwart	ja	15%	nee	74,80	223,08	17u7
0012	1	RING	0,2	quality	PLA	single	zwart	ja	100%	ja	27,46	81,91	6u13
0012	1	BOVENSTUK --> 2x in één print	0,2	quality	PLA	single	zwart	ja	25%	nee	118,74	354,16	23u41
0013	1	Led strook soldeer hulp	0,2	quality	PLA	single	zwart	nee	100%	nee	37,06	110,55	12u18
0014	1	CNH 51694395_asm	0,15	quality	PLA	single	zwart	ja	100%	nee	19,50	58,29	4u44
0015	1	CNH 51699398 3d hulpstuk lassen ring	0,15	quality	PLA	single	zwart	ja	100%	nee	11,72	34,97	2u48
0016	1	CNH 51699397 3D hulpstuk lassen ring	0,15	quality	PLA	single	zwart	ja	100%	nee	20,64	61,57	4u23
0017	1	Klinken materialise voor hout	0,2	speed	PLA	single	blauw	ja	100%	ja	96,73	288,49	16u39
0018	1	Led Houder rond	0,15	quality	PLA	single	blauw	nee	100%	nee	9,65	28,79	2u22
0019	1	soldeer kop afscherming	0,15	quality	PLA	single	blauw	nee	100%	nee	6,14	18,30	2u39
0020	1	TEST stuk klem BUIS	0,2	quality	PETG	single	oranje	nee	100%	nee	1,71	5,22	0u20
0021	1	druklem test	0,2	quality	PETG	single	oranje	ja	100%	nee	41,48	126,27	6u26
0022	1	Klemming buis	0,2	quality	PETG	single	oranje	ja	100%	nee	165,16	504,51	1d2u16
0023	1	Moer steekas	0,2	quality	PETG	single	oranje	ja	100%	nee			
0024	1	Verbindings tap soldeer eenheid	0,15	quality	PETG	single	oranje	ja	20%	nee	13,61	41,57	5h23m
0025	1	SFR spacer	0,15	quality	PETG	single	oranje	ja	20%	nee			
0026	1	Geleider pers	0,2	quality	PETG	single	oranje	ja	100%	nee	61,84	188,89	10h45m
0027	1	Ontbraam hulp	0,2	quality	PLA	single	geel	nee	90%	nee	15,33	45,71	6h05

+80 PROJECTS

BENEFITS about ASSISTIVE TECHNOLOGIES



- Secured systems and processes
- Increased efficiency & productivity
- Higher employability for low skilled workers
- New business opportunities

"SUSTAINABLE"



- Increased confidence
- Expanding relationship with social economy
- Scalable

"TRUST"



- Higher autonomy
- Get feedback for their work
- High acceptance

"HAPPINESS"

LESSONS LEARNED...

- Focus on human centered approach, not technology driven
- Inform and involve employees before installation
- Acquire the technical knowledge yourself
- Start with good examples, choose a bottleneck first
- Use this technology only in a real collaborative mode

EMPOWERMENT (national news on TV)



I think it's a good invention...
and it is satisfying when you can deliver 100% quality!

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