

#	Description of functions	Characteristics				
		Importance	Quantity	Value	Tolerance	Level of flexibility
1	maximum illuminance value necessary for visual comfort during detailed work	4	Illuminance [lux]	2000	+/- 500	F1
2	Autonomous system	4	/	/	/	F0
3	Fast motion tracking	4	Time [s]	5	+/- 1	F1
4	Accurate motion tracking	4	Distance [cm]	10	+/- 2	F1
5	Safe for user and objects	4	Distance above the desk [cm]	90	+/-10	F0
6	On/Off switch for lighting	4	/	/	/	F1
7	On/Off switch for motion tracking	4	/	/	/	F1
8	Energy efficiency	2	European Union Energy Label	A++	+/- 1 rank	F1
9	Easy to set up	1	Time [min]	30	+/- 10	F2
10	Stable system	4	/	/	/	F0
11	Feedback (/Sensor to know) when the lamp is at a boundary of it's range of movement	4	/	/	/	F1
12	Quiet	3	Sound level [dB]	35	+/- 10	F1

Table 2: Functions implemented in the prototype.

Description of functions	Importance	Quantity	Value	Tolerance	Level of flexibility
Manually adjustable in non-motion tracking state (= low resistance to manual handling)	2	Force [N]	10	+/- 5	F2
Dims automatically depending on ambient lighting	1	/	/	/	F2
Manually dimmable from max ill. chosen in 1 to a min value of:	3	Illuminance [lux]	1000	+/- 500	F1
Turns off automatically when no activity is registered for amount of time:	2	Time [min]	5	+/- 2	F1
Adjustable blue light filter	1	Illuminance [lux]	200	+/- 100	F2
Easily attachable in different ways and different situations	2	/	/	/	F2

Table 1: Functions that could enhance the prototype even more.

#	Date of change	Design group responsible	Category	Requirements	Metric	Level	Tolerance	Priority
1	25/10/2022	Zanaglio	Geometry	Height available above the desk	cm	100	± 10	3
2	16/10/2022	Zanaglio	Geometry	Horizontal space required for translational operation	cm	200	± 15	3
3	26/11/2022	Zanaglio	Geometry	Compatible with standard desk sizes	cm x cm	200 x 100	± 25 x 15	3
4	26/11/2022	De Groote	Geometry	Area of illumination	m ²	0,8	± 0,1	3
5	16/10/2022	De Groote	Geometry	Volume of operation	m ³	< 0,05	± 0,005	2
6	22/11/2022	De Groote	Kinematics	Degrees of freedom	#	1	0	3
7	17/10/2022	De Smedt	Kinematics	Max velocity for translational motion	cm/s	40	± 5	3
8	25/10/2022	De Smedt	Kinematics	Max acceleration for translational motion	cm/s ²	10	± 2	2
9	16/10/2022	Zanaglio	Forces	Total Weight	N	to minimize		0
10	17/10/2022	Nascimento	Forces	Max uniform load of rail	N/m	500	± 25	2
11	17/10/2022	Zanaglio	Material	Young modulus for rail	GPa	to maximize		3
12	17/10/2022	Nascimento	Material	Max deformation under normal working conditions	mm	5	± 2	3
13	16/10/2022	Zanaglio	Material	Low density	g/cm ³	to minimize		0
14	16/10/2022	De Smedt	Material	Recyclability	/	/	/	3
15	16/10/2022	De Smedt	Material	Cost	€	<200	± 50	2
16	25/10/2022	De Smedt	Energy	Power consumption	Watt	<70	± 5	2
17	26/10/2022	De Groote	Energy	Maximum illuminance	lux	5000	± 250	3
18	26/11/2022	De Groote	Signals	Working distance	cm	150	± 25	2
19	16/10/2022	Nascimento	Signals	Movement speed detected	cm/s	10	± 2	3
20	25/10/2022	De Groote	Safety	Minimal distance to customer	cm	30	± 5	3
21	25/10/2022	Nascimento	Operation	Sound level	dB	35	± 10	3
22	25/10/2022	All group members	Schedule	Project finished	dd/mm/yyyy	23/12/2022	/	3

Table 3: The list of requirements to fulfill.