Portfolio

Andrew Thompson

About Me

I am a **user-centred** and **research-driven Product Designer** with cross-sector experience in healthcare and precision engineering.

I'm driven, hard-working, and passionate about creating solutions that are both **innovative** and **commercially viable**. I build side projects, explore emerging tech, and stay closely connected to industry through **conferences** and **networking**. My work blends physical product design with a deep interest in **user interaction**, systems thinking, and **real-world impact**.

Professional Experience

My professional background includes pivotal roles as a **Design Engineer** at **Ametek** (Taylor Hobson), where I led commercial product redesigns and optimized fixture design, and as a **UX/Product Designer** within the **NHS**, where I designed intuitive clinical tools to promote data-driven decisions for clinicians and management. I also have experience in contract SharePoint development for medical centres and PC Technician work for consumers and businesses.

I hold a **BSc** in **Product Design** (IED Accredited) from Nottingham Trent University where I graduated with a 2:1.

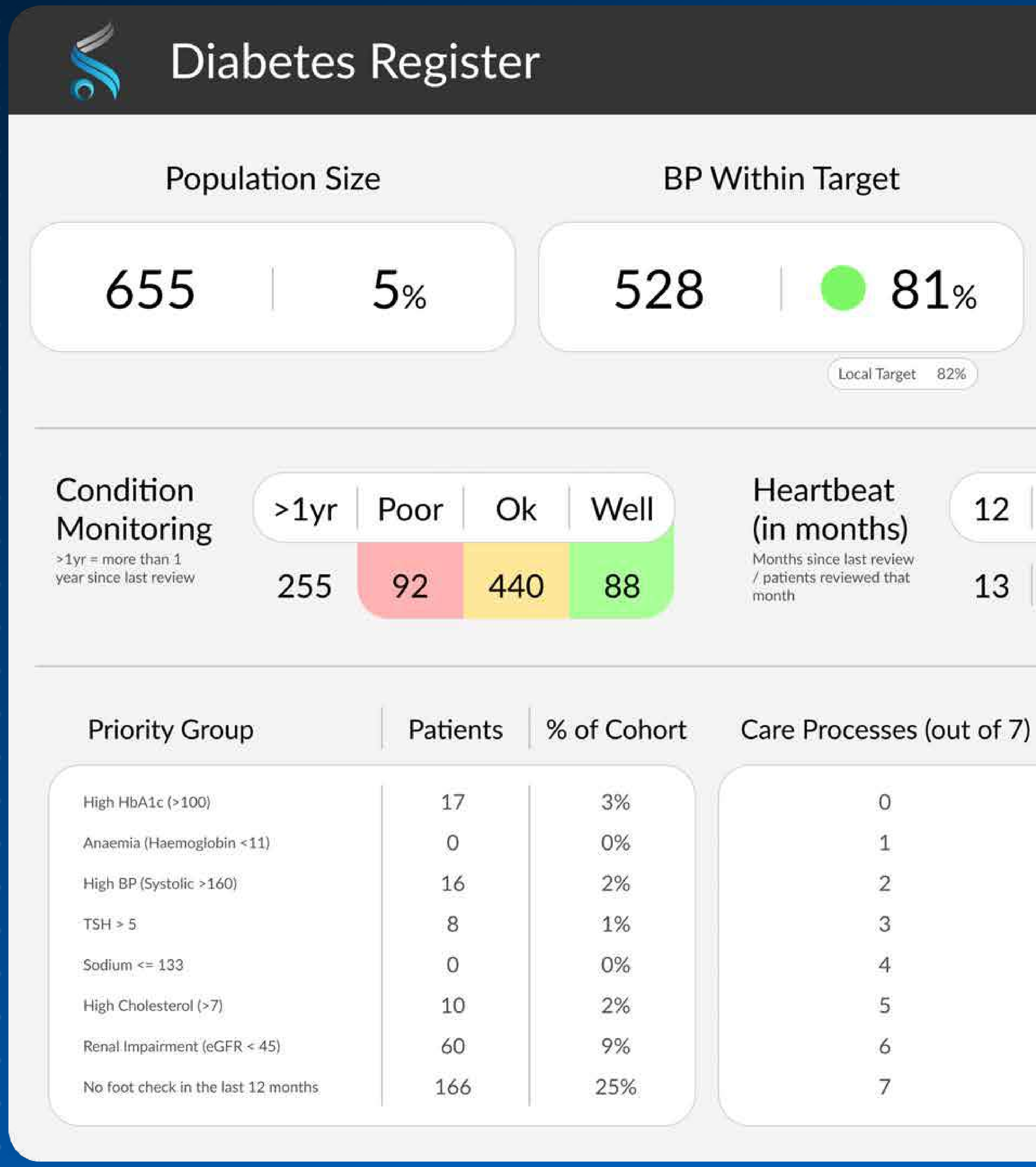
Skills

Sketching · Ideation · CAD · Rendering · DFM · Workshop Skills · Prototyping · 3D Printing · Layout · 3D Modelling · Photography

- Photoshop
- InDesign
- Illustrator
- Solidworks
- Keyshot
- Fusion 360
- AI Workflows
- Video Editing
- Sound Design

Precision Engineering

Product Design BSc SW



NHS Primary Care

TAYLOR HOBSON®

AMETEK®

ULTRA PRECISION TECHNOLOGIES

Design Engineer

Responsible for the design and manufacture of high precision measurement intruments

Talyrond®

Led the aesthetic and ergonomic redesign of a flagship metrology instrument to modernise usability and form.

Surtronics®

Delivered a complete aesthetic overhaul of handheld measurement devices (DUO and S200), improving design language and visual clarity.

Fixtures

Engineered and refined custom fixturing solutions to support accurate testing and prototyping during product development.

TAYLOR HOBSON / AMETEK

Highlight Project

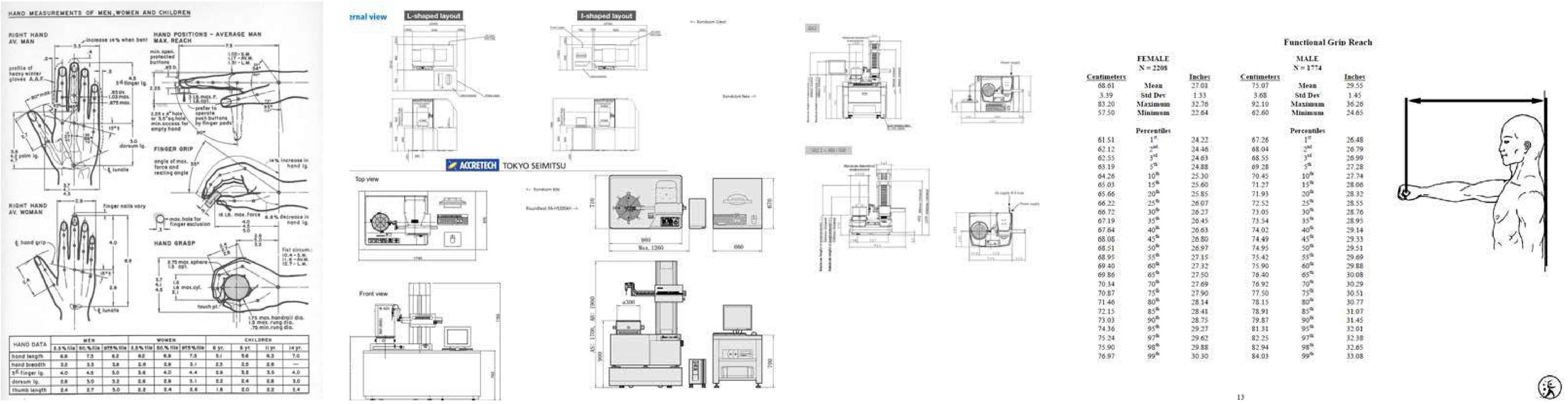
Talyrond®

Redesigned a legacy, industry-leading roundness metrology instrument, the **Talyrond®**, optimizing its aesthetics and ergonomics for precision engineering applications across various industries.

Research Integration

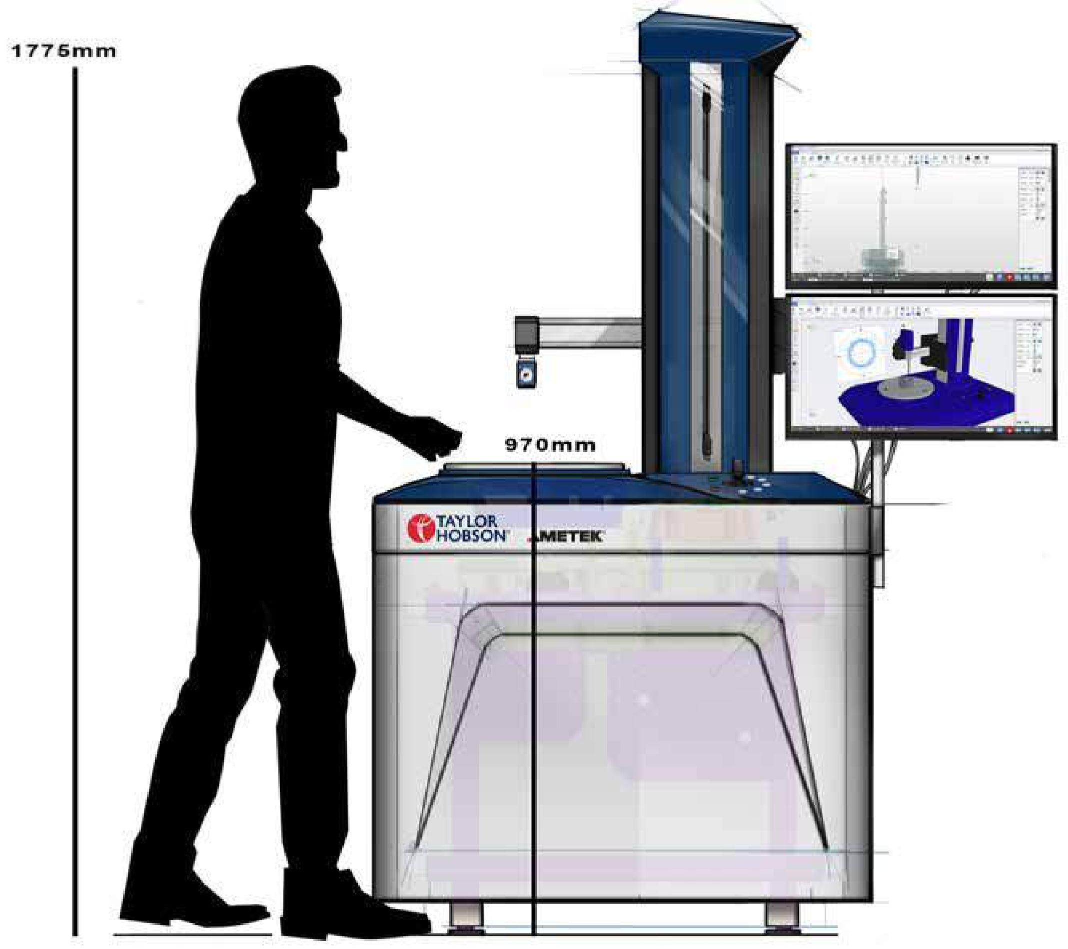
User research and feedback were integrated through methods like usability testing, prototyping, and design reviews. Design decisions were further informed by consumer, competitor, and internal research, while concurrently examining and updating existing design languages.

The old design had an outdated aesthetic design and ergonomic issues, including suboptimal height for standing users and a unintuitive button layout.



Country Average (M)	Country Average (F)	Height	Chair Height	Seated Desk Height (In)	Sitting Eye Height	Standing Desk Height	Standing Eye Height	Sitting Desk Height (mm)	Sitting Desk Height (mm)
		5 ft 0 in	14.5"	22.5	42.0"	36.60	56.3"	572 mm	930 mm
		5 ft 1 in	14.6"	23.2	43.3"	37.80	57.5"	589 mm	960 mm
	UK + US + China + Japan	5 ft 2 in	15.2"	23.5	44.0"	38.10	57.8"	597 mm	968 mm
		5 ft 3 in	15.7"	24.5	44.9"	39.00	59.1"	622 mm	991 mm
		5 ft 4 in	16.1"	24.8	45.6"	39.70	61.0"	630 mm	1008 mm
		5 ft 5 in	16.5"	25.1	46.8"	40.50	62.2"	638 mm	1029 mm
China + Japan		5 ft 6 in	16.9"	25.9	47.6"	41.30	63.3"	658 mm	1049 mm
		5 ft 7 in	17.3"	26.3	48.4"	41.70	64.5"	668 mm	1059 mm
		5 ft 8 in	17.7"	26.7	49.2"	42.50	65.7"	678 mm	1080 mm
UK + US		5 ft 9 in	18.1"	27.5	50.0"	43.50	66.8"	699 mm	1105 mm
		5 ft 10 in	18.2"	28.0	50.5"	44.00	67.5"	711 mm	1118 mm
		5 ft 11 in	18.3"	28.3	51.0"	45.00	68.0"	719 mm	1143 mm
		6 ft 0 in	18.5"	29.0	51.5"	46.00	68.5"	737 mm	1168 mm
		6 ft 1 in	19.3"	30.0	52.3"	46.50	68.8"	762 mm	1181 mm
		6 ft 2 in	20.0"	31.4	53.5"	48.20	70.0"	798 mm	1224 mm
		6 ft 3 in	20.2"	32.2	54.3"	49.20	71.6	818 mm	1250 mm
		6 ft 4 in	20.4"	33.0	55.5"	50.00	72.8"	838 mm	1270 mm
		6 ft 5 in	20.8"	33.4	56.2"	50.70	74.0"	848 mm	1288 mm

TH Instrument Height (mm) Review		
		Key
TR 585	890	Height suitable for:
TR585 SW	901	Sitting
TR 5XX Active AV	944	Standing
TR 500 XL	985	Neither
Novus	865	*based on desk heights
Novus Shelf	690	
Thin Drawer Desk	760	Range from 5'5" - 6'2"
Computer Rack	870	
Other Instrument Height (mm) Review		
Mahr MMQ 400	1070	
Accretech Roncom Crest	930	
Accretech Roncom 65b	952	
Roundtest RA-H5200AH	900	
Rondcom Nex	1000	
Average	970	
TR585 +	75	mm

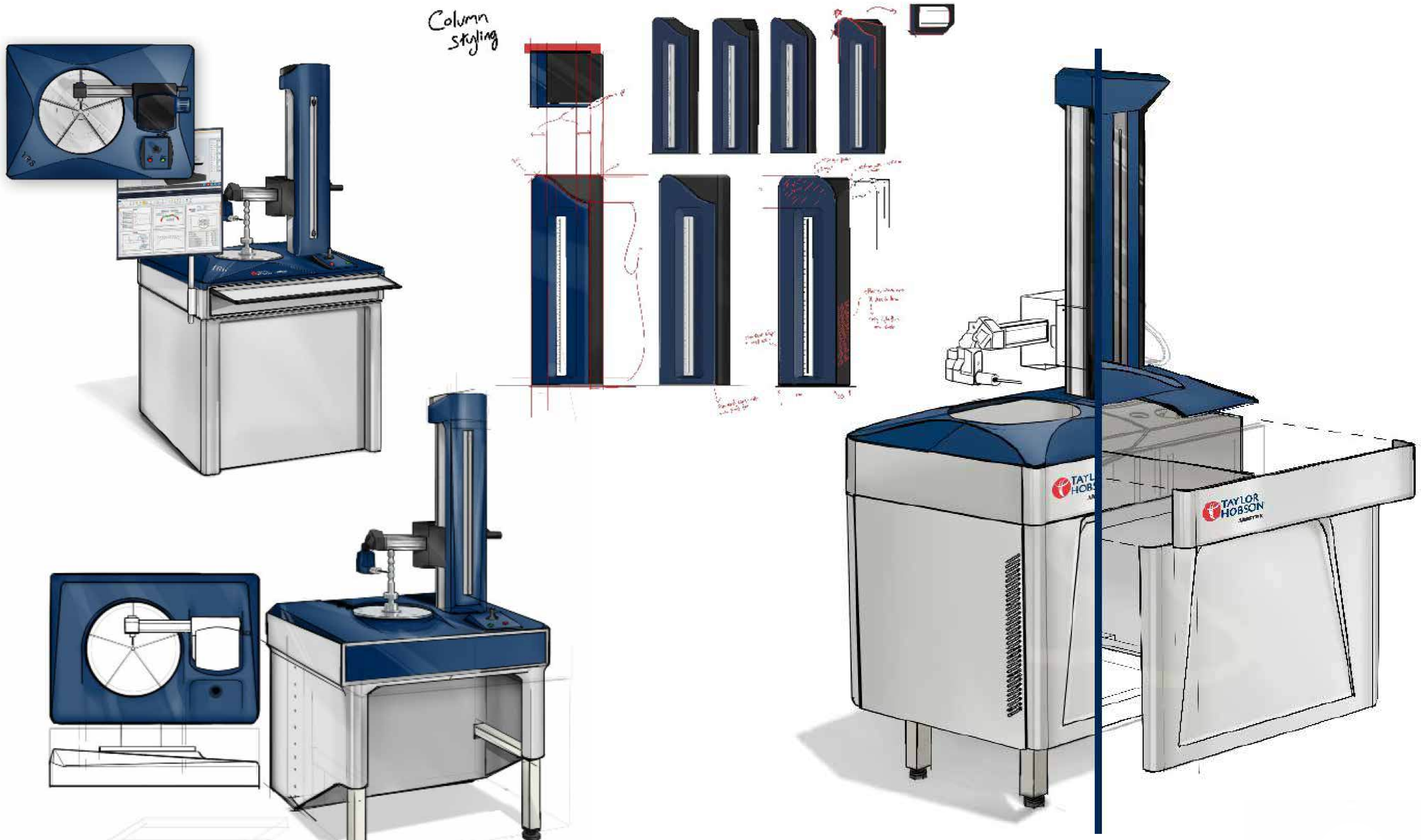


Review Previous Design → Synthesise User, Sales, and Ergonomic Data → Develop New Concepts

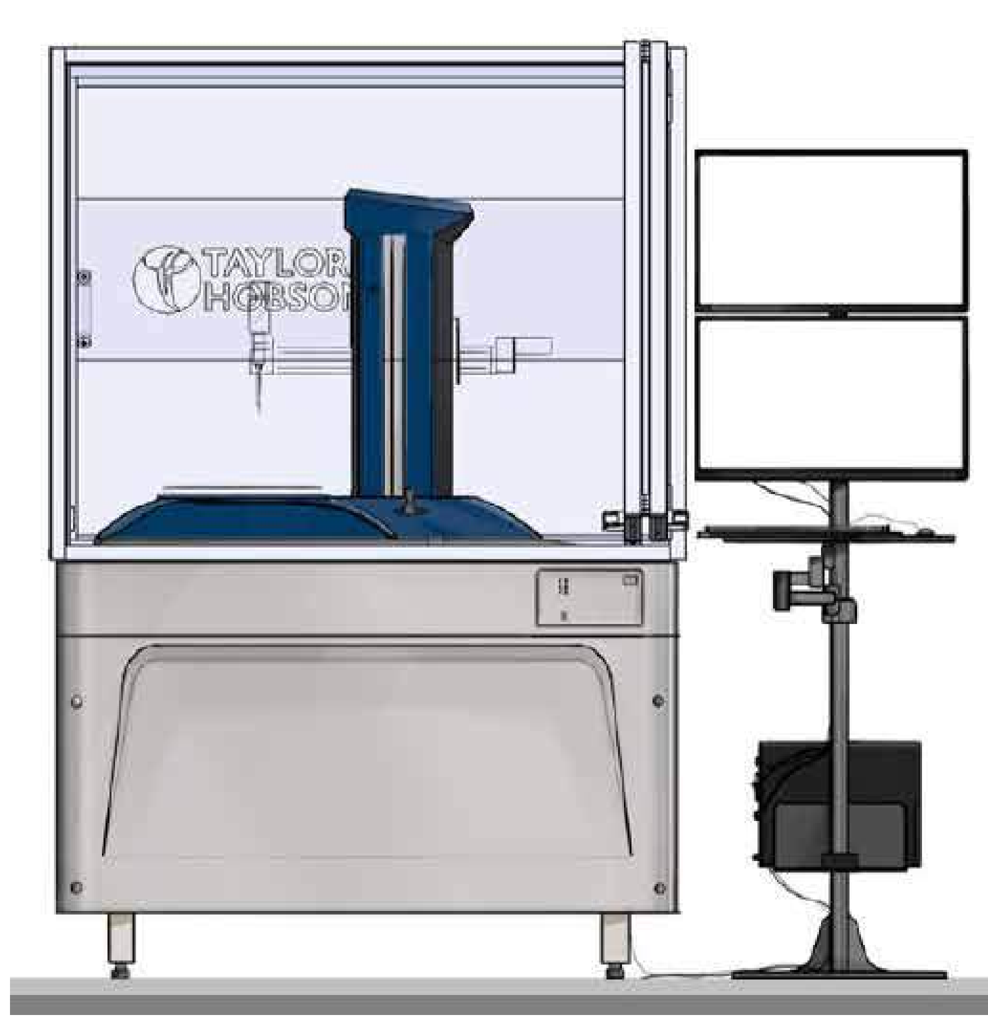
The Design Process

The Talyrond design process involved taking the project from a written brief through to a manufacturable outcome. This included leading weekly design reviews with business development, engineering, and marketing teams to present ideas, designs, and models, and to receive constructive feedback, often in collaboration with external engineering partners in Canada.

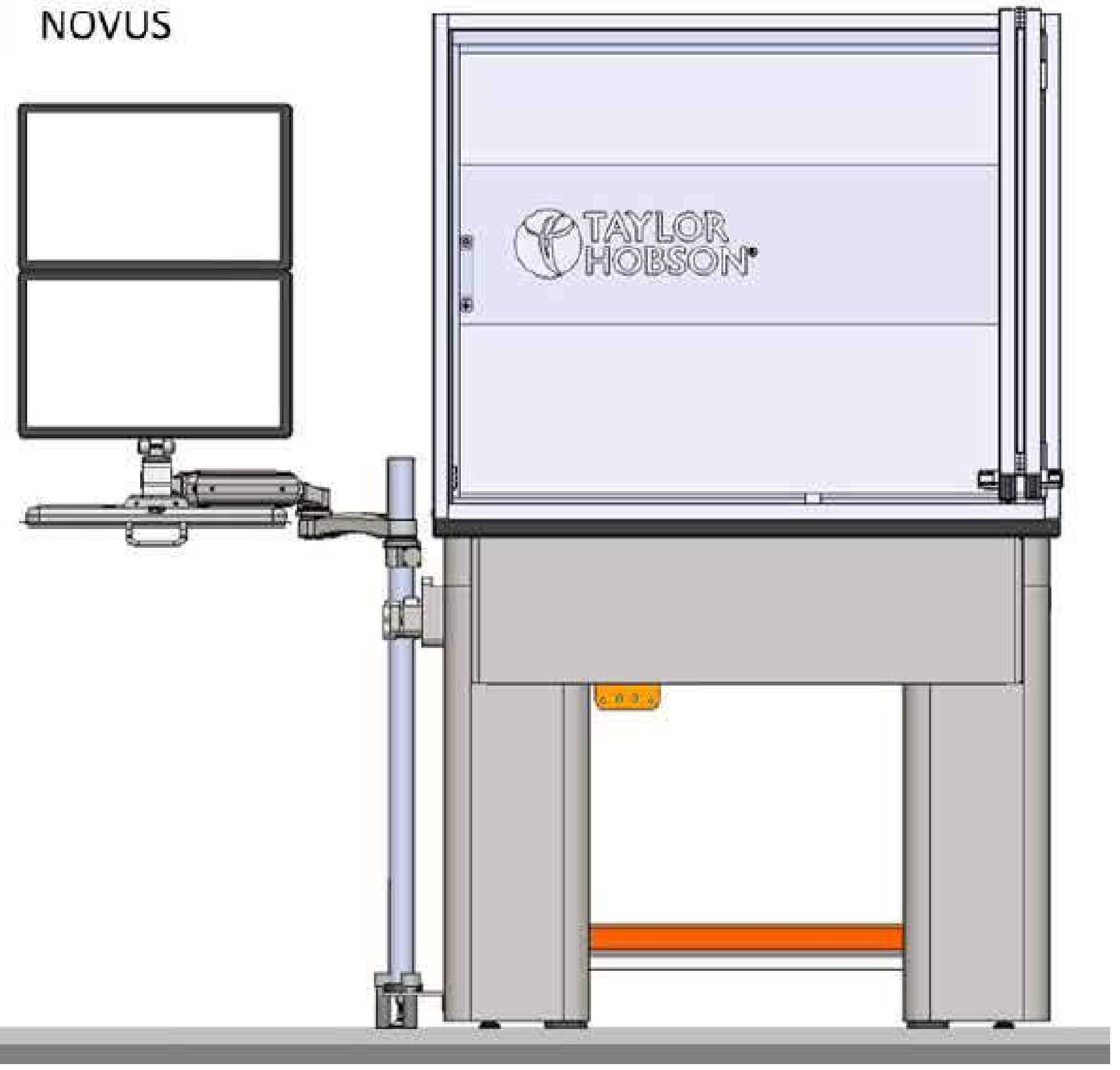
Digital shaded sketches were used as they were easier to interpret and received more comprehensive feedback, and could be shared easily on online meetings.



TR600 AV



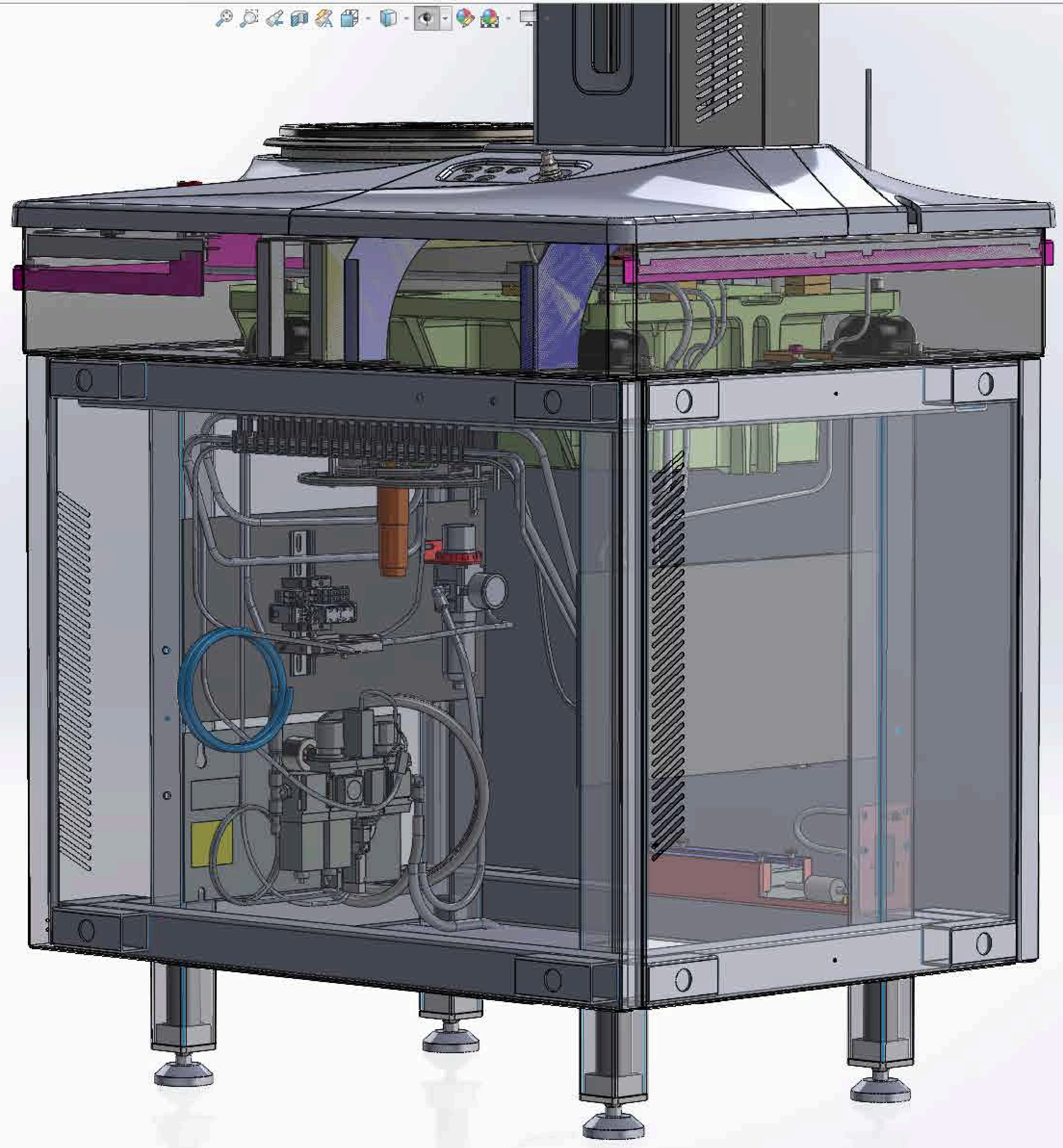
NOVUS



SolidWorks

The Talyrond project involved working extensively in complex SolidWorks assemblies, necessitating meticulous documentation to ensure design integrity and manufacturability. This collaborative process relied on effective product data management principles and version control, essential when coordinating with cross-functional and international teams.

I created initial concepts and then version controlled CAD models inside SolidWorks after a series of design reviews over a month.



The design focuses the spindle by using a concentric design pattern, blending precision edges with a curved form to maintain the product lines' curved design language.

The Outcome

User Interaction

Ergonomics

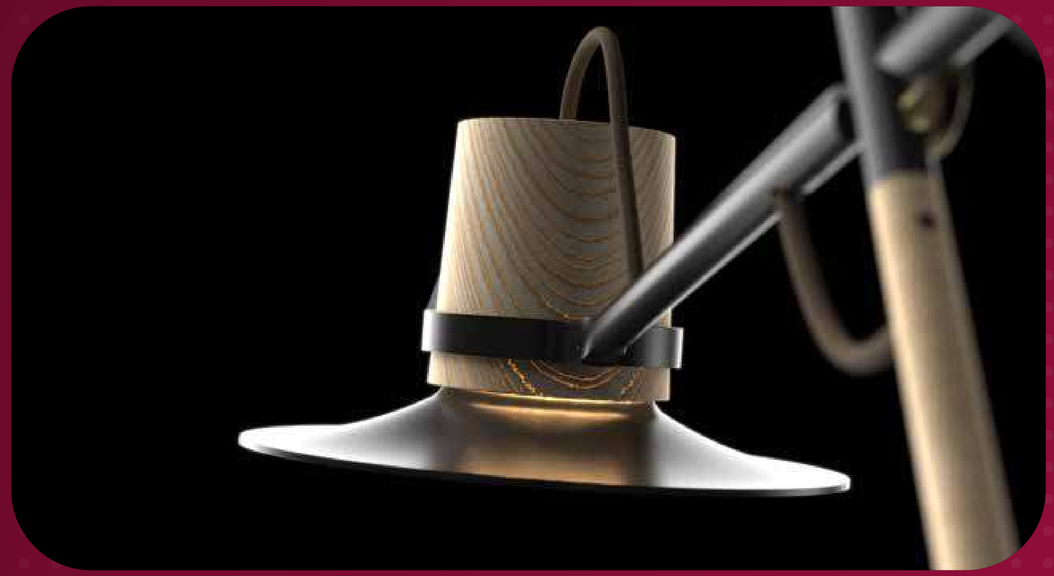
The Talyrond project resulted in a modernized product line with optimized aesthetics that update the brand language, whilst retaining product line continuity.

It also provided improved ergonomics, featuring a revised height and a more functional button layout. This design was successfully brought from its initial brief to a manufacturable outcome, which involved the comprehensive handover of technical specifications and design files to the production teams, often in collaboration with external engineering partners, facilitating the manufacture of finished items for clients.

Product Design BSc

Completed a BSc in Product Design, focusing on user-centred design, industrial design, and developing commercially viable solutions across the full product lifecycle.

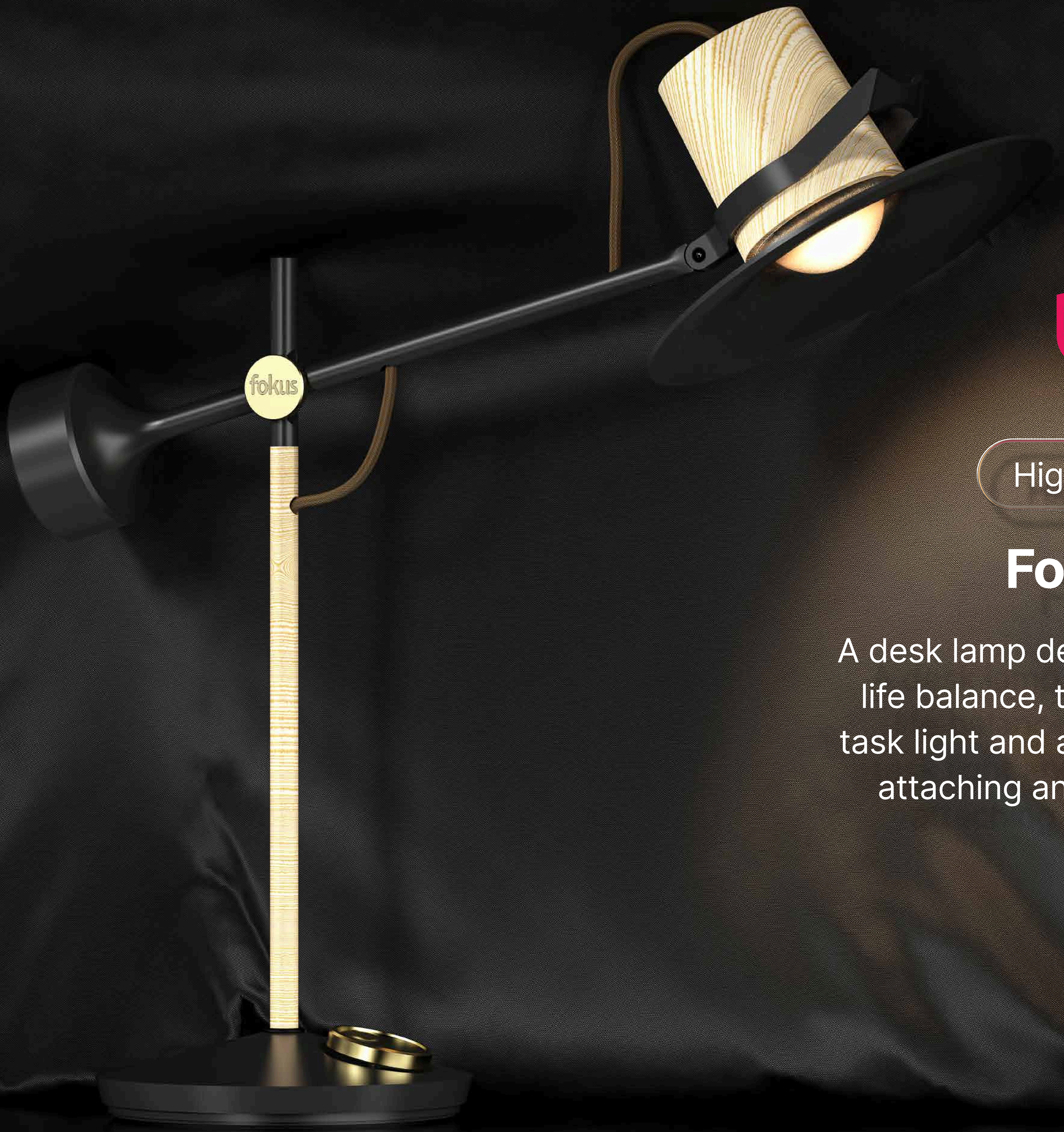
Fokus One



I developed a dual-purpose lamp that shifts from task to ambient lighting via a removable shade, combining user insights with custom materials and electronics.

StageScape

I developed a stage monitoring system for musicians that tracks sound levels for hearing safety, combining expert input with user-focused design and integrated technology.



NTU iED

Highlight Project

Fokus One

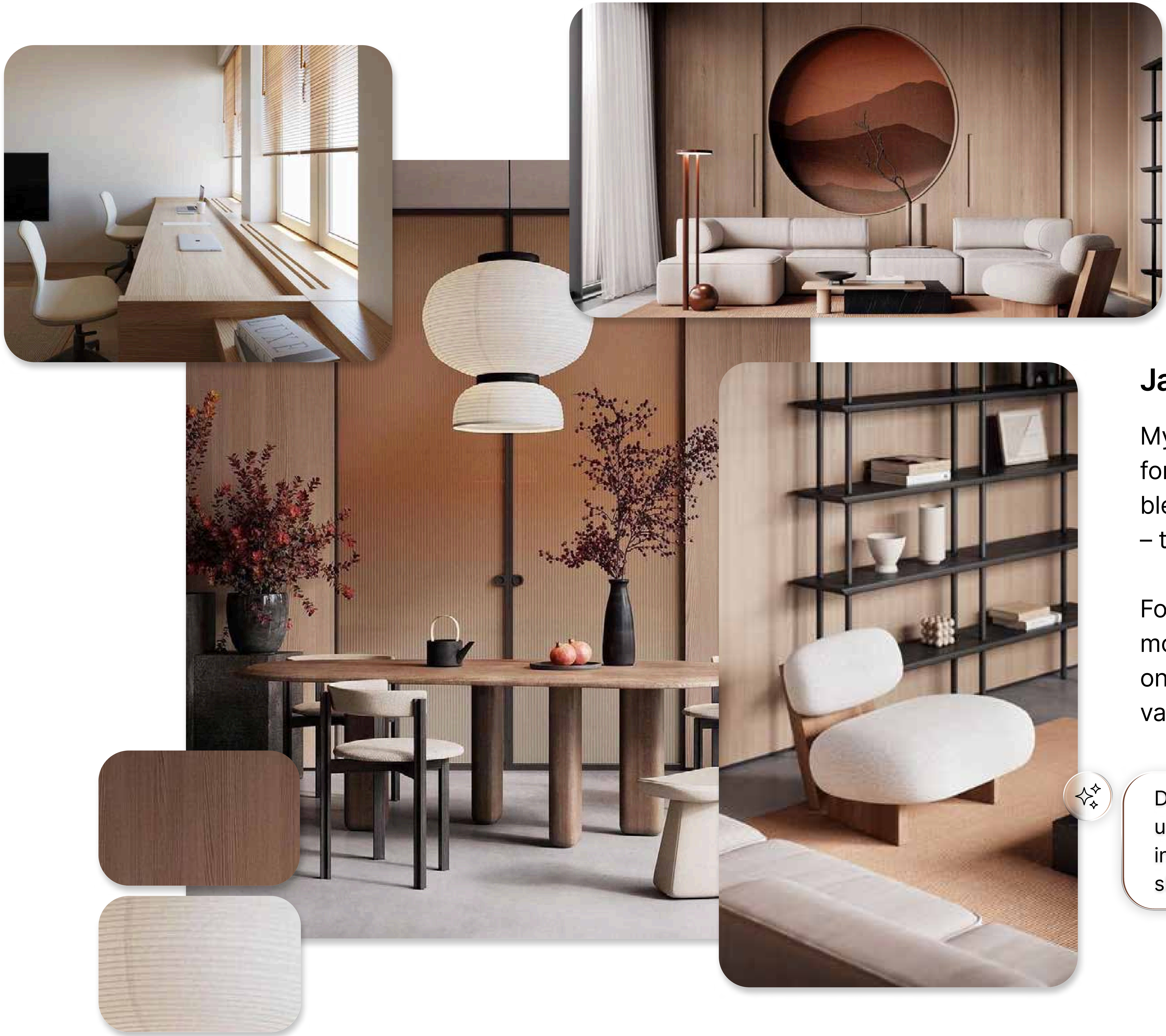
A desk lamp designed to explore work-life balance, transitioning between a task light and an accent light by simply attaching and removing its shade.

Bridging Work and Life

This project addresses the evolving home office environment by designing the Fokus Desk Lamp. It seamlessly transitions between a task light for work and an ambient light for relaxation, adapting to diverse user needs throughout the day.

The core vision was to create a single, elegant product that enhances both functionality and aesthetics in multi-purpose living spaces, reflecting the increasing prevalence of working from home.

This initial phase involved extensive secondary research and conceptual ideation to define the problem space, with further research to establish market direction.



Japandi Aesthetics & User Needs

My design was guided by user research, highlighting the need for adaptable lighting. I adopted the "Japandi" aesthetic – a blend of Scandinavian minimalism and Japanese craftsmanship – to achieve both functionality and artistry.

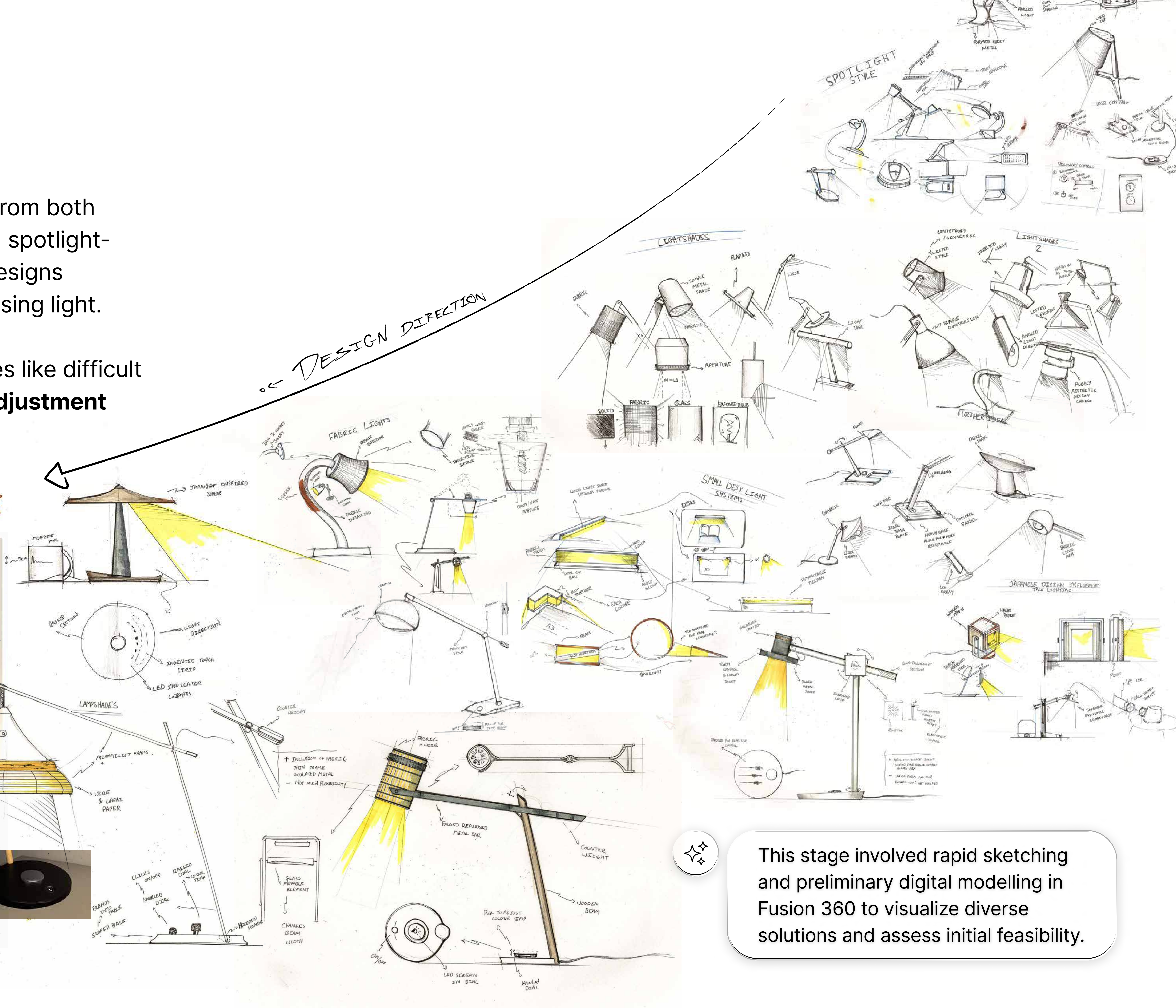
Focus groups revealed key user preferences: effortless movement for light positioning, intuitive on-device controls (not on cables), and adjustable brightness and color temperature for various tasks and moods.

Direct engagement with potential users through focus groups provided invaluable qualitative insights that shaped the design direction.

Exploring Form and Function

Initial concept generation explored various forms and functionalities for the desk lamp, drawing inspiration from both **industrial** and **Japanese** design principles. I sketched spotlight-style lamps with **counterweighted** movements and designs incorporating **fabric** for aesthetic appeal without diffusing light.

These early ideas focused on addressing known issues like difficult **cable switches**, sub-par **user interaction**, and **stiff adjustment** mechanisms.

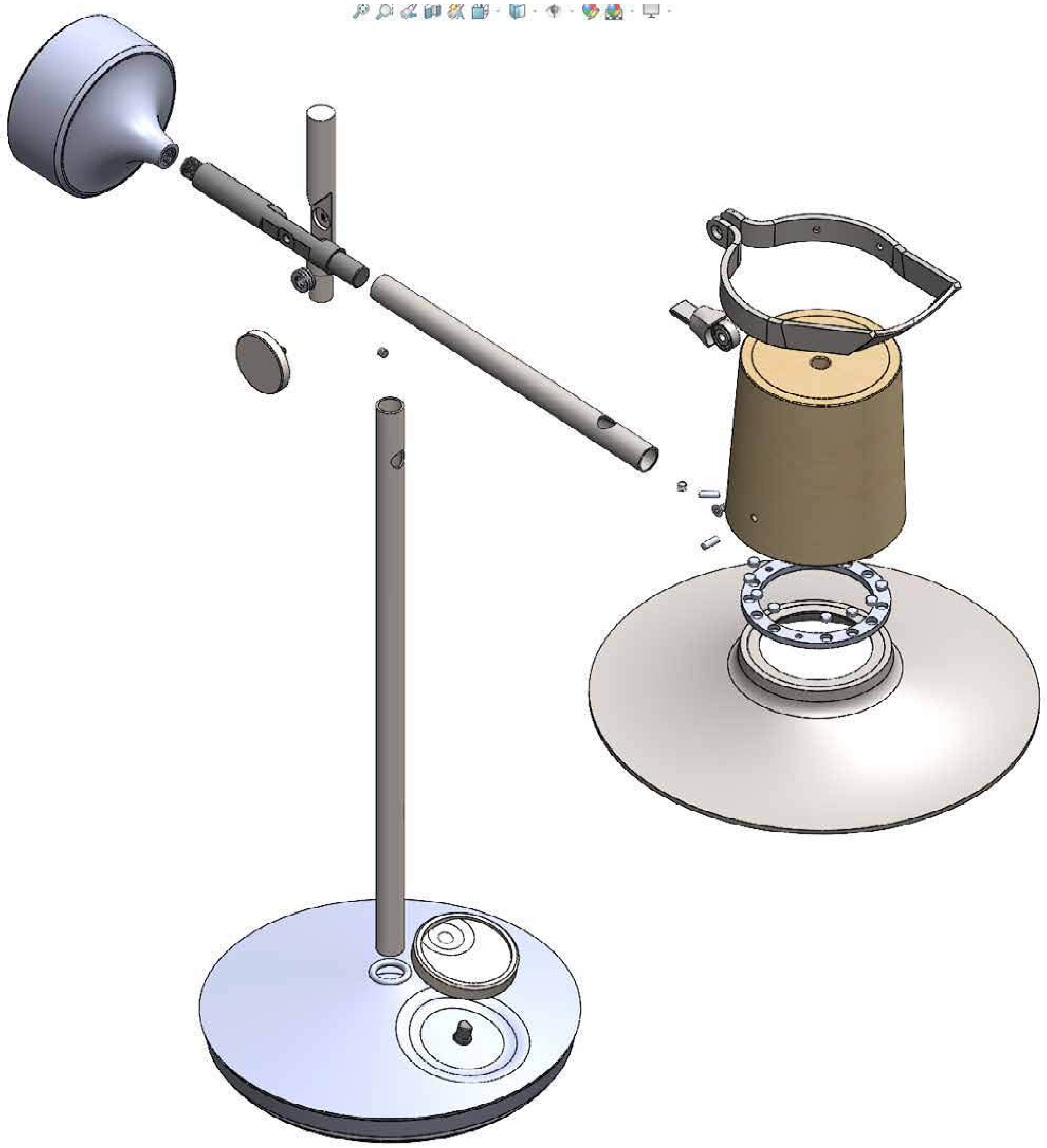


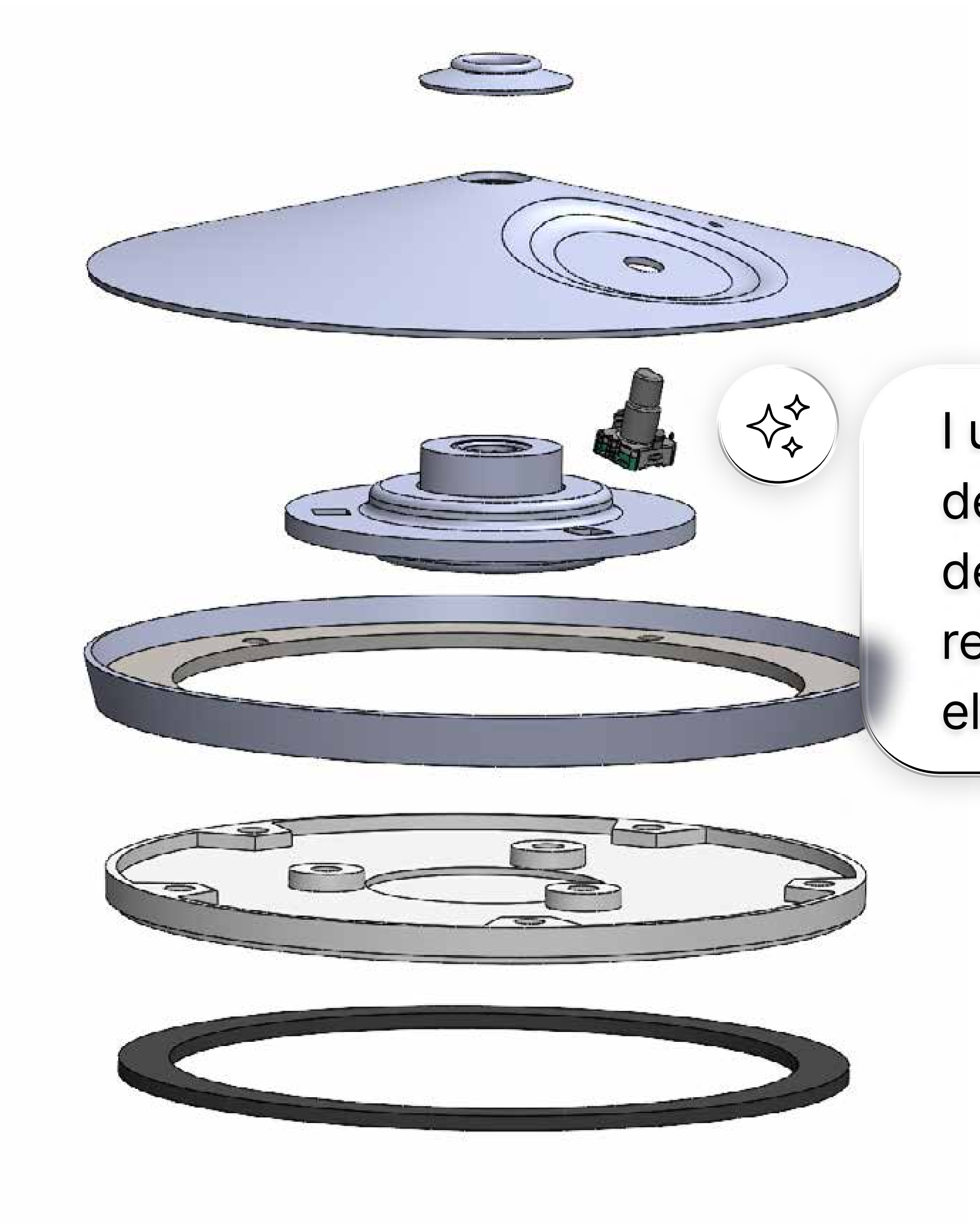
This stage involved rapid sketching and preliminary digital modelling in Fusion 360 to visualize diverse solutions and assess initial feasibility.

Thoughtful Engineering

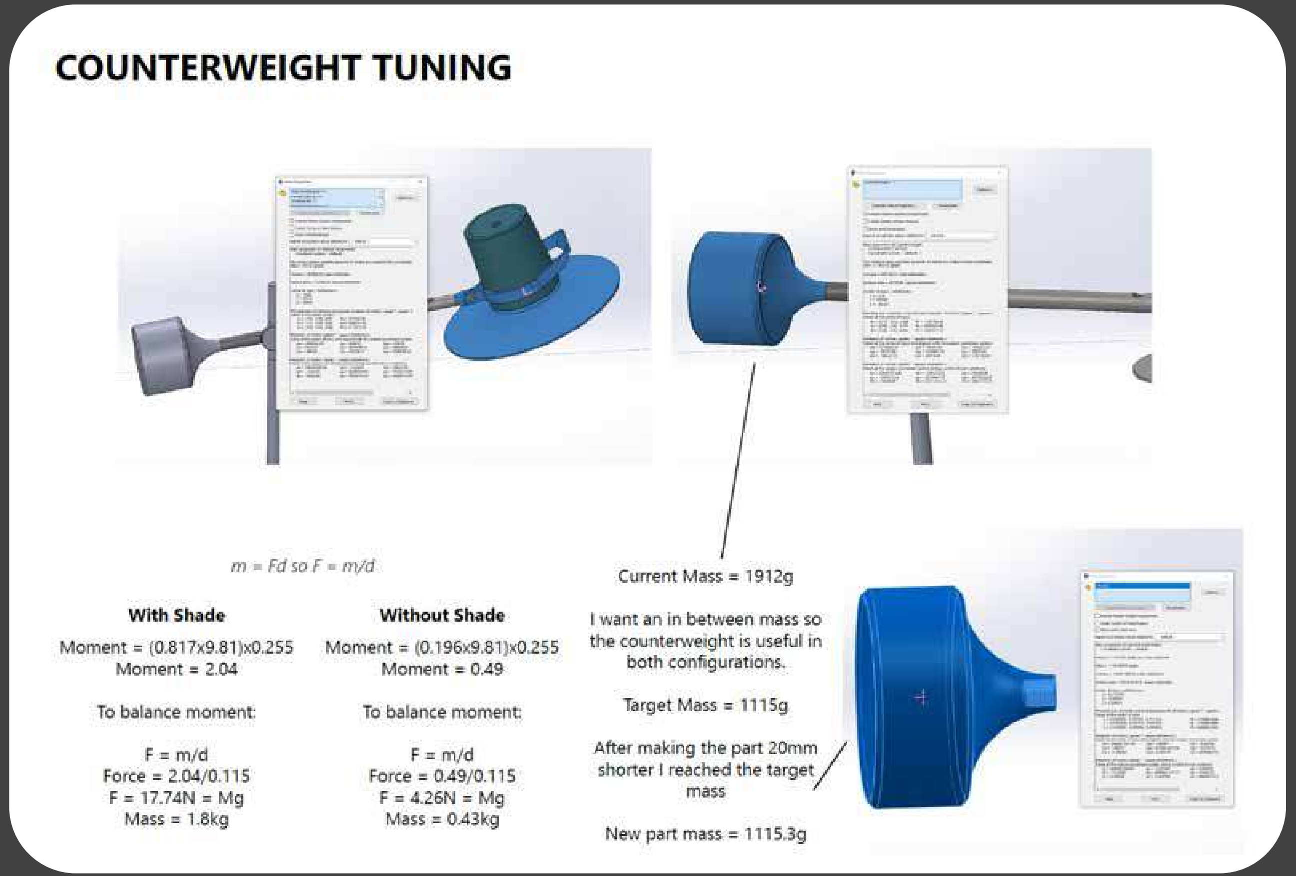
The Fokus Desk Lamp features a counterweighted arm for effortless, precise light adjustments, overcoming issues with stiff lamps. Its detachable shade allows quick shifts between direct task lighting and diffused ambient light.

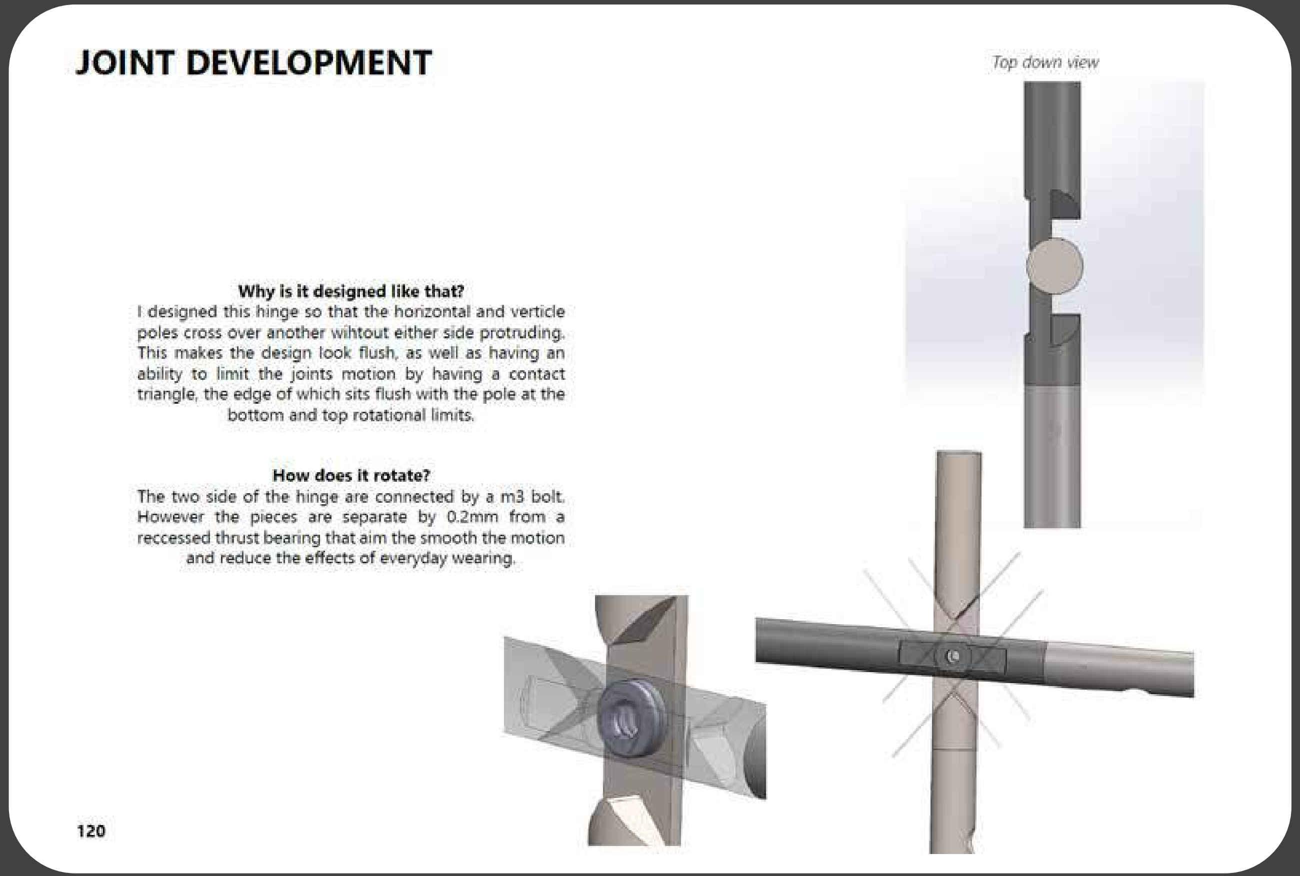
Integrated LED technology provides energy-efficient, customizable illumination, with adjustable color temperature from warm to cool. Controls are conveniently located on the device for intuitive user interaction.

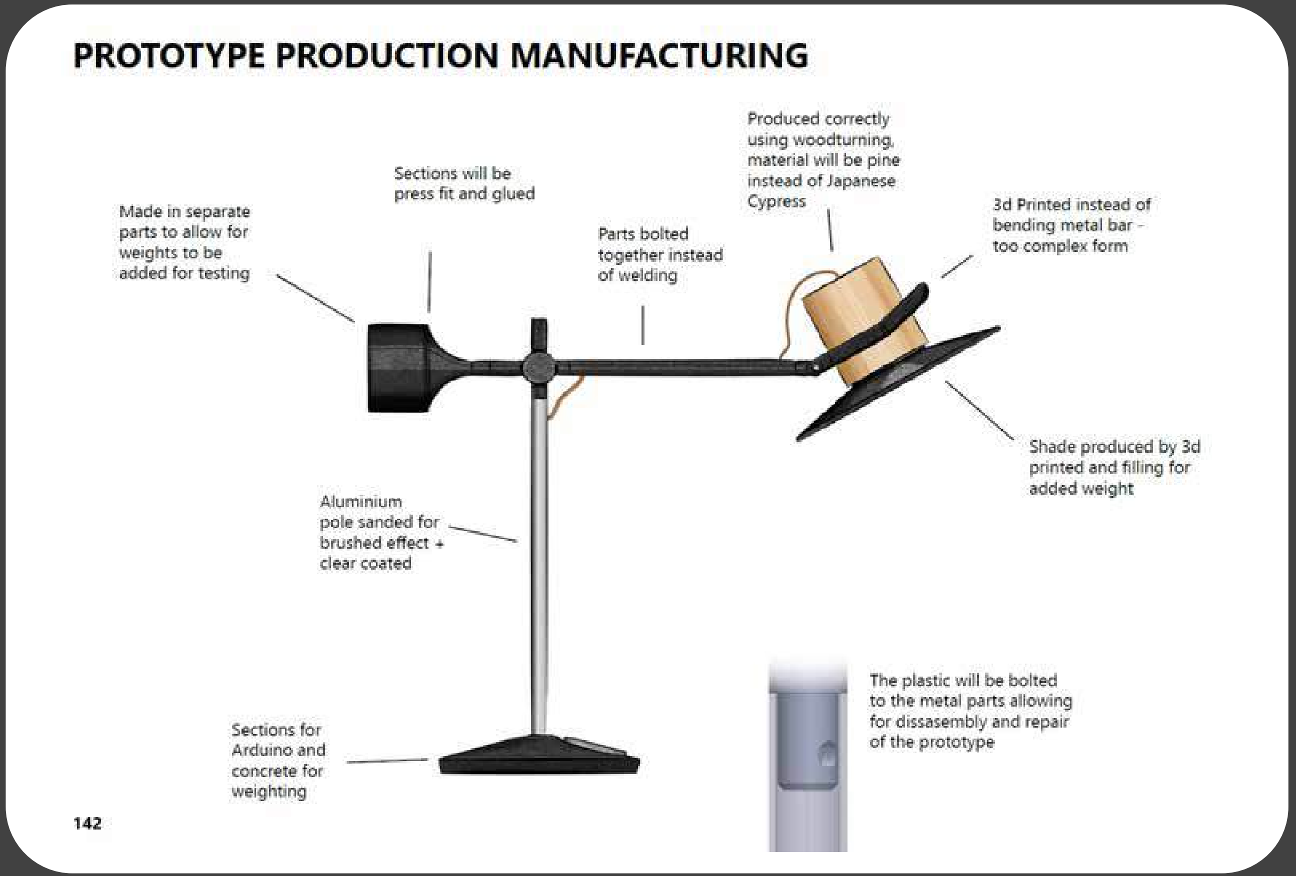




I utilized SolidWorks for detailed 3D modelling to develop, simulate, and refine these functional elements.







COSTING OVERVIEW

ITEM NO.	PART NUMBER	MANUFACTURING	Material	Weight	QTY.	£
1	BaseBottomCone	Sheet Metal Cutting + Metal Spinning + Welding	Plain Carbon Steel	59.16	1	12.23
2	BaseTopCone	Sheet Metal Cutting, Metal Spinning, Welding	Plain Carbon Steel	241.81	1	11.30
3	BoltPlate	CNC Machining, Thread Tapping	Material <not specified>	28.77	1	6.5
4	Bearing				1	7.48
5	BaseBearing22mmDepth				1	11.20
6	PlassticBase	Injection Moulding	PET	79.77	1	6.30
7	EC11-THT-15F				1	1.45
8	BoltRingBase	Metal Sheet Cutting	Plain Carbon Steel	140.76	1	35
9	Rubber Base Ring	Injection Moulding	Rubber	12.67	1	1.20
10	Rubber Gasket				1	1.30
11	VertPole	Cutting to Size, Drilling, Thread Tapping	AISI 321 Annealed Stainless Steel (SS)	76.91	1	8.2
12	JointHorizontal	5 AXIS CNC	AISI 316 Annealed Stainless Steel Bar (SS)	70.91	1	22
13	JointVertical	5 AXIS CNC	AISI 316 Annealed Stainless Steel Bar (SS)	68.06	1	23.10
14	JointBearing				1	7.40
15	HorizontalPole	Cut To Length, Drilling, Thread Tapping	AISI 321 Annealed Stainless Steel (SS)	Mass	1	6.80
16	Counterweight	Metal Lathe Machining, Thread Cutting	Plain Carbon Steel	1115.30	1	35
17	WoodenShadeProduction	Woodturning, Drilling	Pine	69.64	1	13.34
18	JointHandle	5 AXIS CNC	Plain Carbon Steel	17.37	1	12
19	HandleProductionRight	Cut and Bent from Steel Bar	Plain Carbon Steel	36.83	1	8
20	HandleProductionLeft	Cutting and Bending Metal Bar	Plain Carbon Steel	36.63	1	8
21	HandleProductionConnect	5 AXIS CNC	Plain Carbon Steel	12.03	1	6.55
22	Steel Ring Lampshade	CNC Milling	Plain Carbon Steel	24.17	1	3.5
23	5diax2mmMagnet				12	5
24	SpunMetalShade	Sheet Metal Cutting, Metal Spinning, Welding	Plain Carbon Steel	617.33	1	31.23
25	Metal Shade Plate	CNC Machining	Plain Carbon Steel	10.52	1	10
26	EncoderDial	CNC Milling, Knurled Finish	AISI 321 Annealed Stainless Steel (SS)	86.98	1	4.60
27	3x8.9mm DowelPin				4	0.80
28	M4GrubScrew				3	0.6
29	DialM3	Metal Lathe Machining, Thread Cutting	AISI 321 Annealed Stainless Steel (SS)	25.18	1	6.40
30	BS EN ISO 10642 - M3 x 10 - 10S				1	1.20

SOLIDWORKS Educational Product. For Instructional Use Only.

Final Cost = £298.58

Final Cost + 60% Markup =£477.56

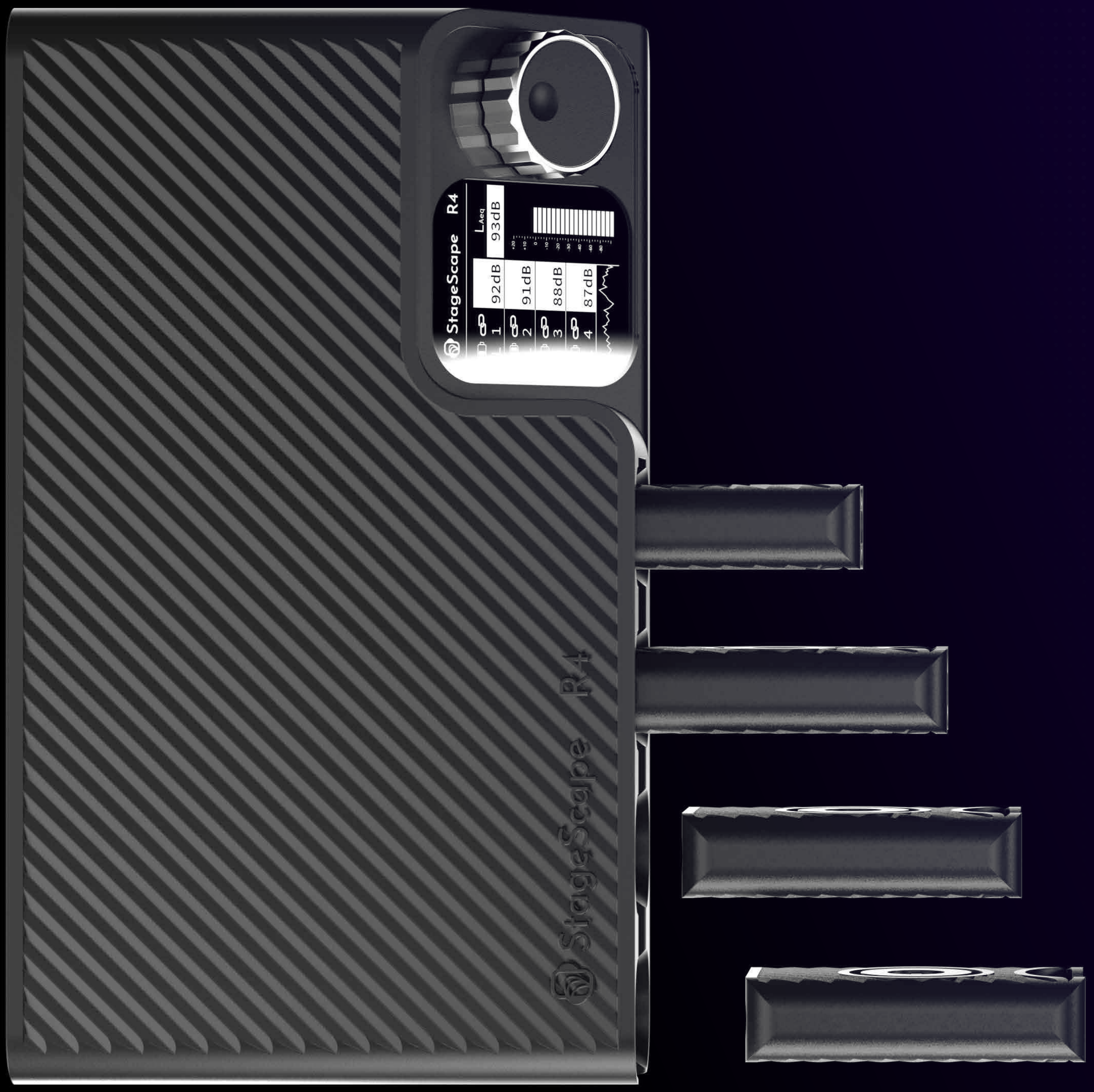
163

The Outcome

Natural Lighting

Work-from-home

Central to Fokus was a commitment to quality and tactile details. The final design and was crafted using materials like steel and Japanese Cedar, reflecting the Japandi focus on natural elements. Using metal spinning for the unique shade geometry and industrial wood turning for wooden components, ensuring both design feasibility and production quality.

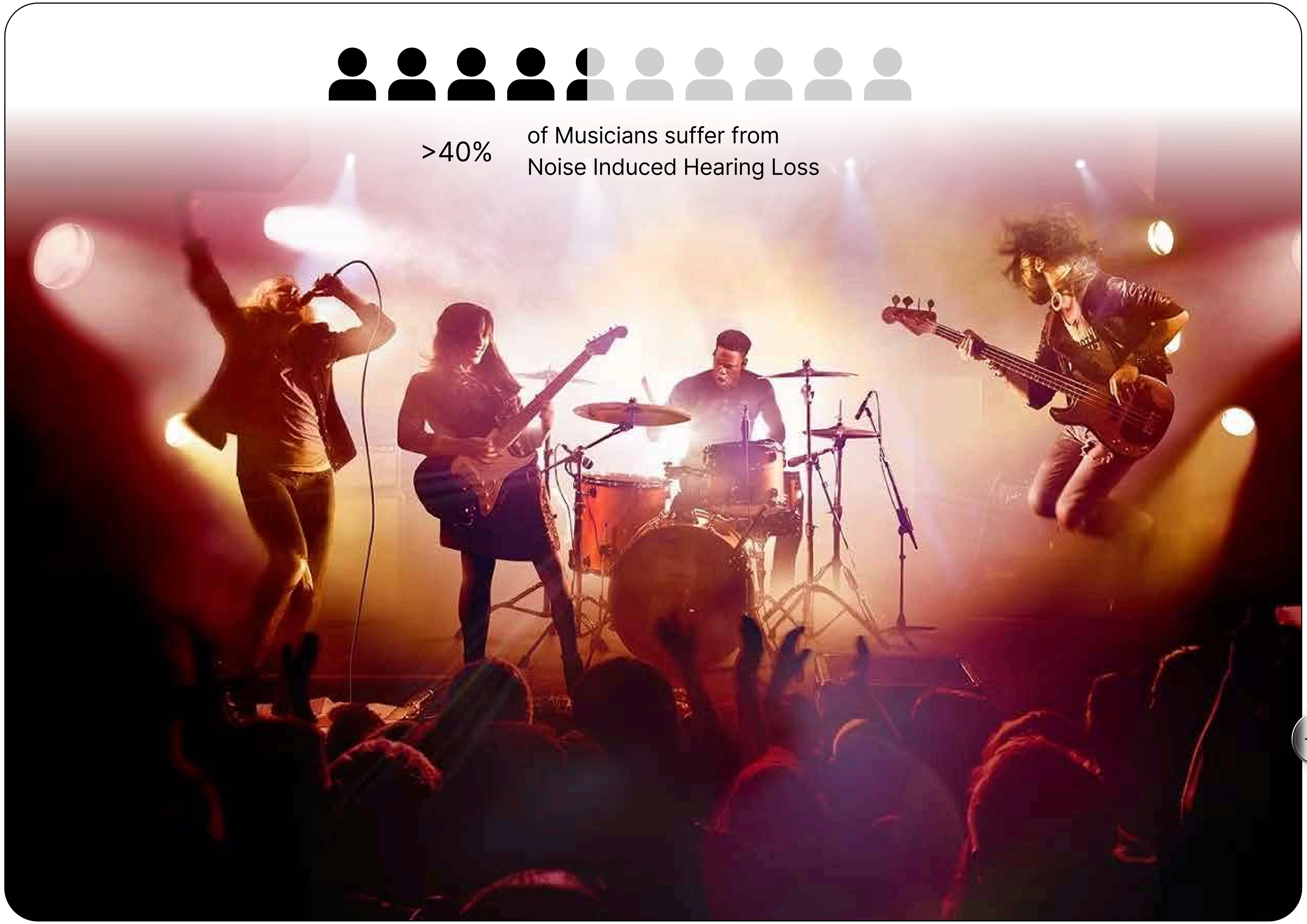


NTU iED

Highlight Project

StageScape R4

A sound level monitoring system for live music environments, designed to provide accurate sound level information and reduce hearing loss through an easy-to-use software interface.



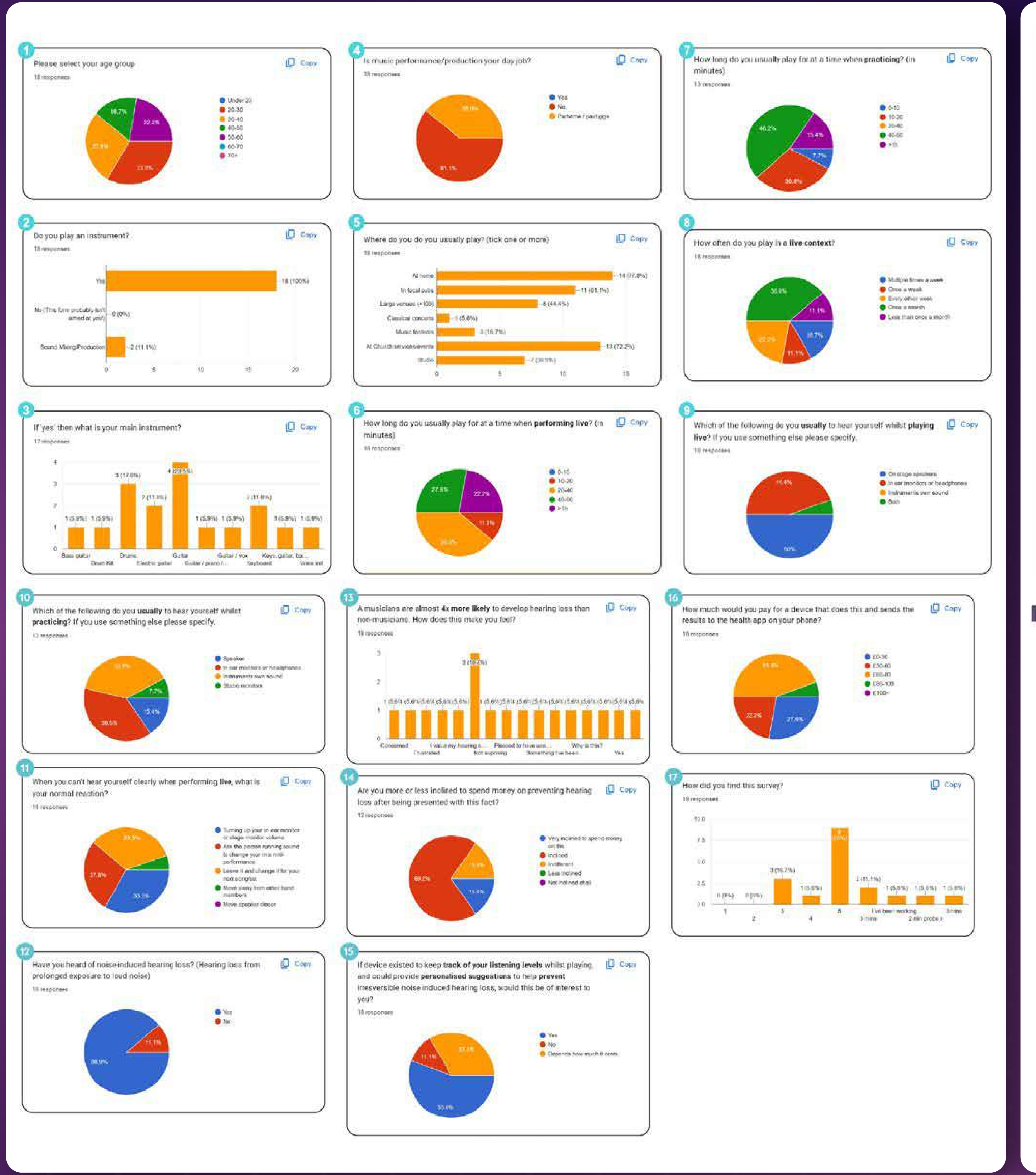
Preventing Hearing Loss

The StageScape project addresses the critical issue of Noise-Induced Hearing Loss (NIHL) among professional musicians, a direct result of excessive noise exposure during live performances and practices.

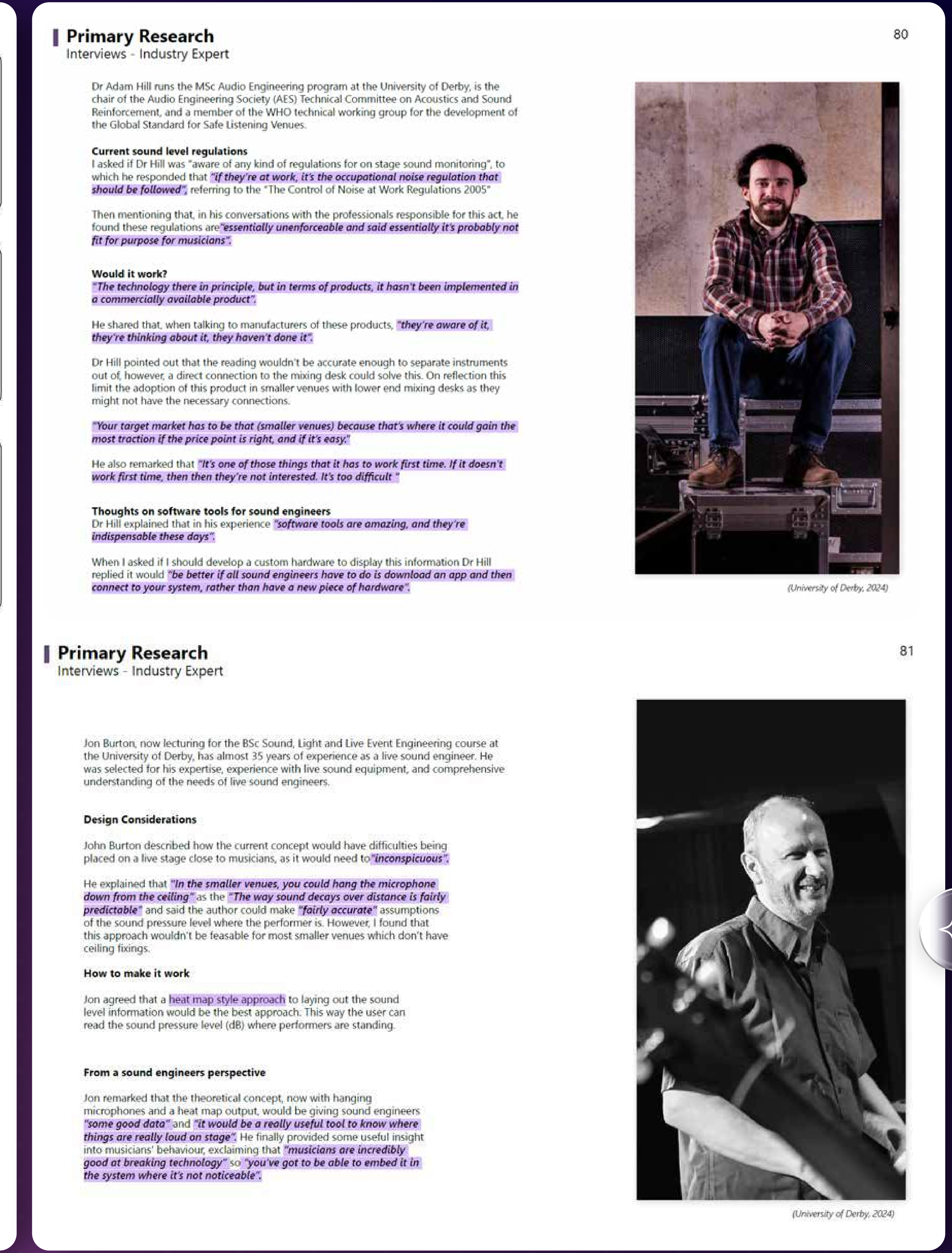
With over 40% of musicians experiencing NIHL, and legal rulings highlighting the industry's responsibility to monitor noise levels, there's a clear need for a preventative solution. StageScape aims to provide sound engineers with accurate, real-time stage sound level information, mitigating "volume wars" and enabling a safer performance environment.

This initial phase focused on extensive research into the problem of NIHL in live music, its physical implications, and current industry practices.

Extensive Public Surverys



Sound Level Monitoring Experts



Primary Research
Interviews - Industry Expert

80

Dr Adam Hill runs the MSc Audio Engineering program at the University of Derby, is the chair of the Audio Engineering Society (AES) Technical Committee on Acoustics and Sound Reinforcement, and a member of the WHO technical working group for the development of the Global Standard for Safe Listening Venues.

Current sound level regulations
I asked if Dr Hill was "aware of any kind of regulations for on stage sound monitoring", to which he responded that ***"if they're at work, it's the occupational noise regulation that should be followed"***, referring to the "The Control of Noise at Work Regulations 2005"

Then mentioning that, in his conversations with the professionals responsible for this act, he found these regulations are ***"essentially unenforceable and said essentially it's probably not fit for purpose for musicians"***.

Would it work?
"The technology there in principle, but in terms of products, it hasn't been implemented in a commercially available product".

He shared that, when talking to manufacturers of these products, ***"they're aware of it, they're thinking about it, they haven't done it"***.

Dr Hill pointed out that the reading wouldn't be accurate enough to separate instruments out of, however, a direct connection to the mixing desk could solve this. On reflection this limit the adoption of this product in smaller venues with lower end mixing desks as they might not have the necessary connections.

"Your target market has to be that (smaller venues) because that's where it could gain the most traction if the price point is right, and if it's easy."

He also remarked that ***"It's one of those things that it has to work first time. If it doesn't work first time, then then they're not interested. It's too difficult."***

Thoughts on software tools for sound engineers
Dr Hill explained that in his experience ***"software tools are amazing, and they're indispensable these days"***.

When I asked if I should develop a custom hardware to display this information Dr Hill replied it would ***"be better if all sound engineers have to do is download an app and then connect to your system, rather than have a new piece of hardware"***.

(University of Derby, 2024)

Primary Research
Interviews - Industry Expert

81

Jon Burton, now lecturing for the BSc Sound, Light and Live Event Engineering course at the University of Derby, has almost 35 years of experience as a live sound engineer. He was selected for his expertise, experience with live sound equipment, and comprehensive understanding of the needs of live sound engineers.

Design Considerations

John Burton described how the current concept would have difficulties being placed on a live stage close to musicians, as it would need to ***"inconspicuous"***.

He explained that ***"In the smaller venues, you could hang the microphone down from the ceiling"*** as the ***"The way sound decays over distance is fairly predictable"*** and said the author could make ***"fairly accurate"*** assumptions of the sound pressure level where the performer is. However, I found that this approach wouldn't be feasable for most smaller venues which don't have ceiling fixings.

How to make it work

Jon agreed that a heat map style approach to laying out the sound level information would be the best approach. This way the user can read the sound pressure level (dB) where performers are standing.

From a sound engineers perspective

Jon remarked that the theoretical concept, now with hanging microphones and a heat map output, would be giving sound engineers ***"some good data"*** and ***"it would be a really useful tool to know where things are really loud on stage"***. He finally provided some useful insight into musicians' behaviour, exclaiming that ***"musicians are incredibly good at breaking technology"*** so ***"you've got to be able to embed it in the system where it's not noticeable"***.

(University of Derby, 2024)

Designing for Impact

Through detailed primary research, including **surveys** and **expert interviews**, I identified the key user (sound engineers) and environment (small to medium-sized live music venues) for StageScape.

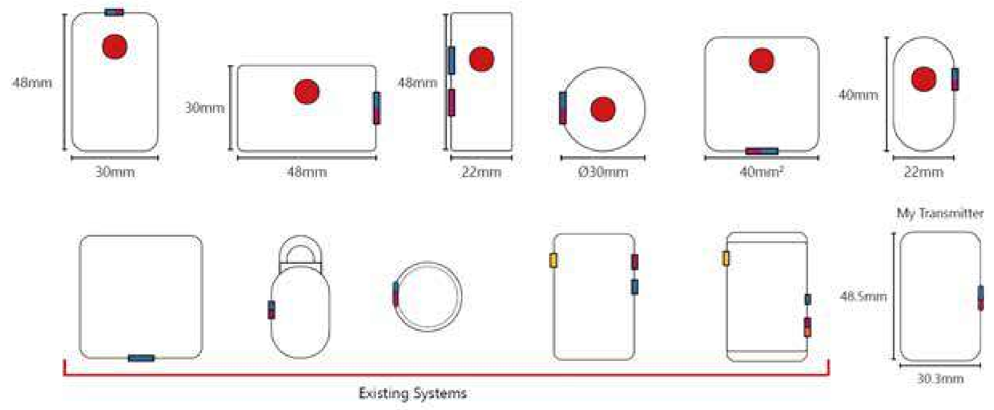
Sound engineers control stage monitor levels (musician-facing speakers), allowing the system to benefit an **entire band**. Small-medium venues primarily use stage monitors, highlighting a significant gap for comprehensive, affordable noise monitoring.

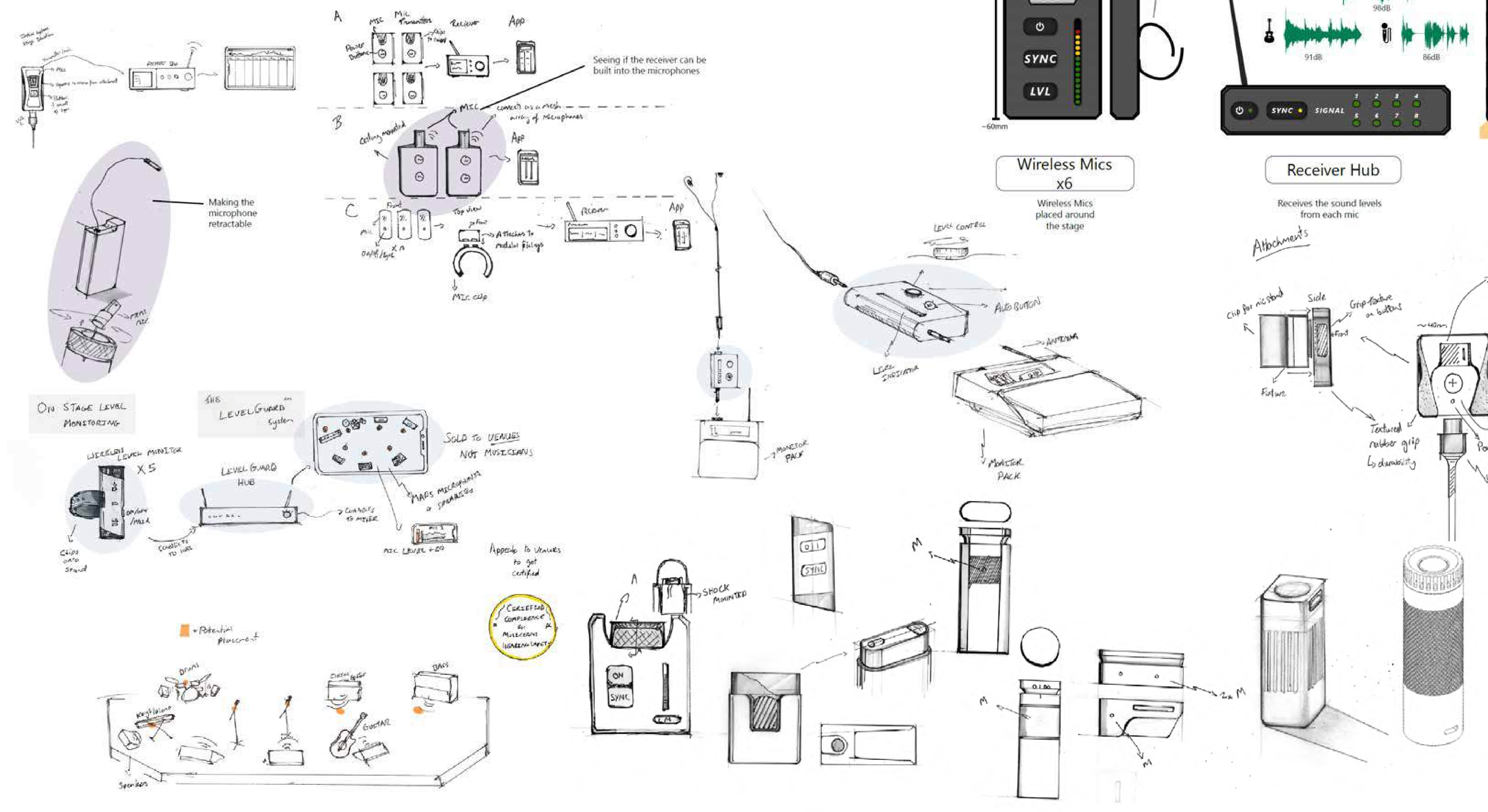
This stage leveraged comprehensive survey data and qualitative interviews to define the optimal product pathway and target market.

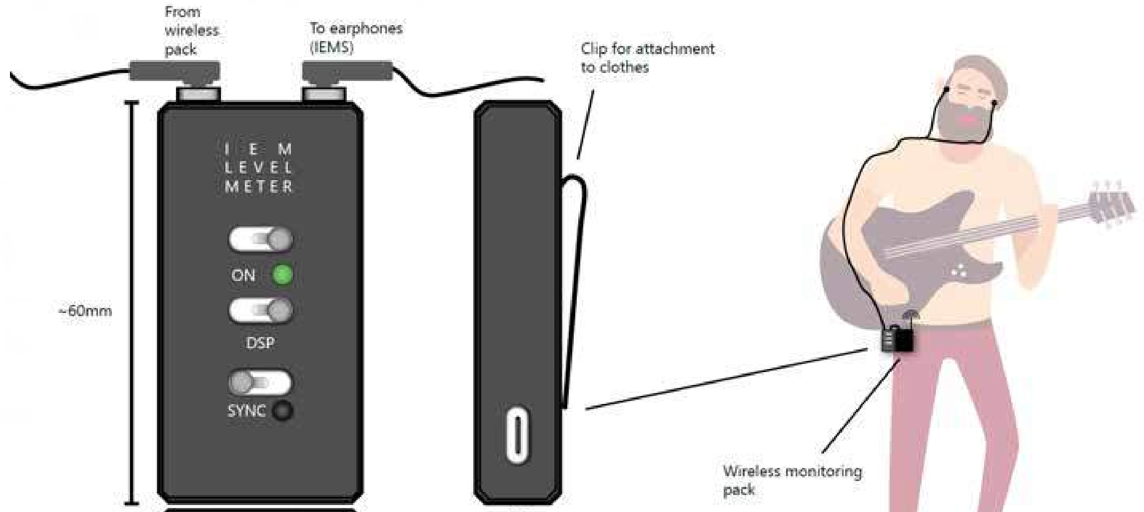
Exploring Form and Function

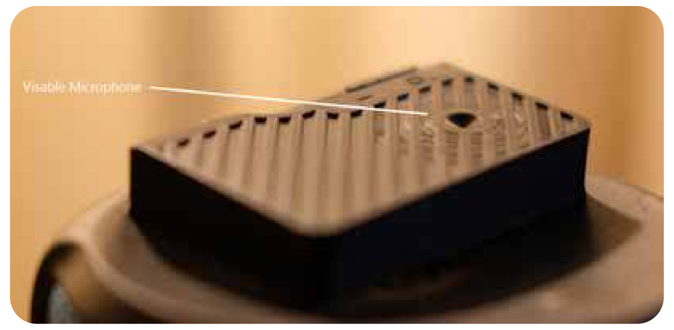
Early sketches visualized different system configurations, from separate units to combined devices. It became clear that, to measure the sound that the musician was hearing, multiple microphones would have to be placed around the stage. Neccesitating a **3 part design** of **microphone**, **receiver** and **display**.

This phase also involved rapid form generation for wireless microphone units, experimenting with shapes, button placements, and internal layouts to optimize ergonomics and discreetness.









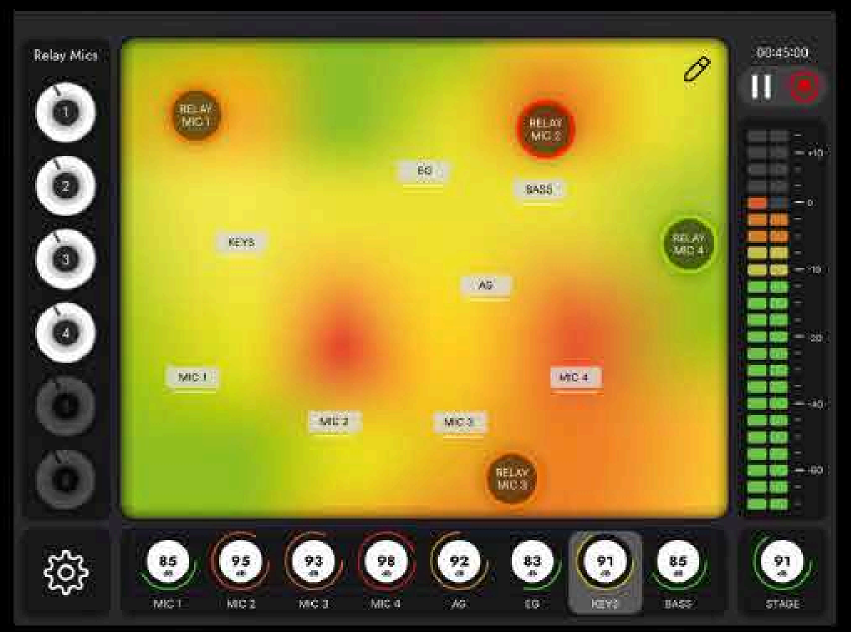
This stage involved extensive sketching and preliminary 3D modelling, focusing on iterative development and exploration of diverse design possibilities.

Relay Mics x 4

Wireless Mics placed around the stage

Receiver Unit

Receives the sound levels from each relay mic (and charges them)



StageScape App

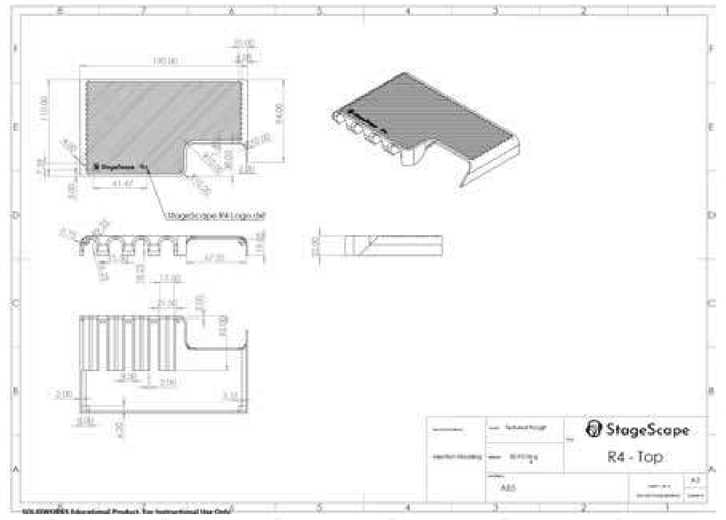
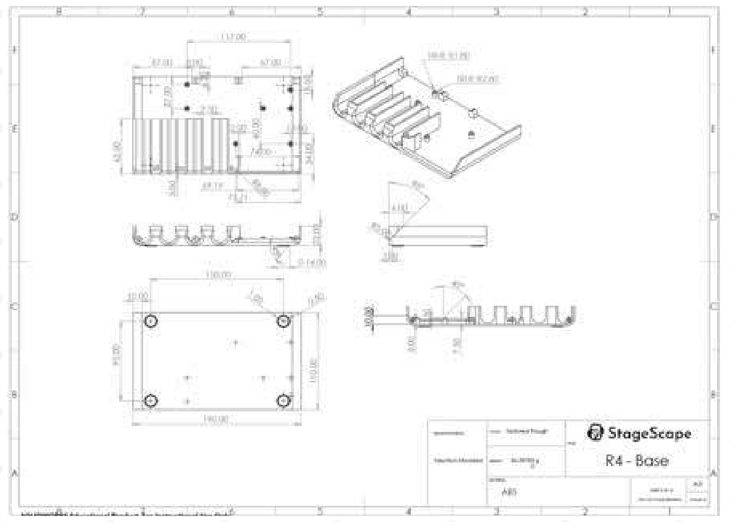
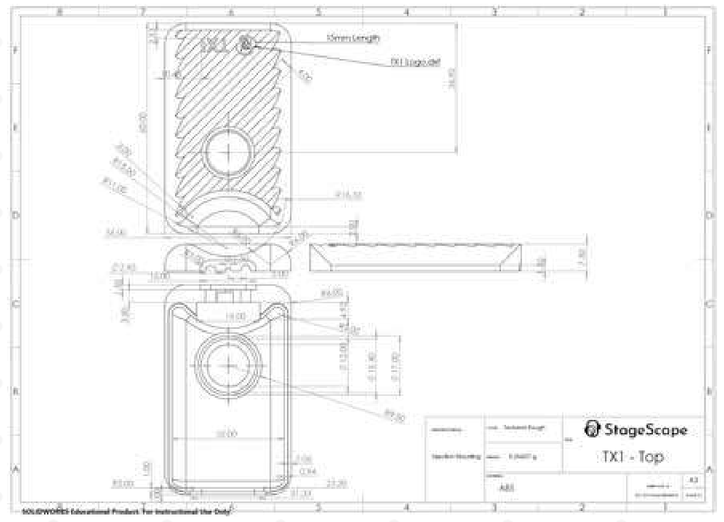
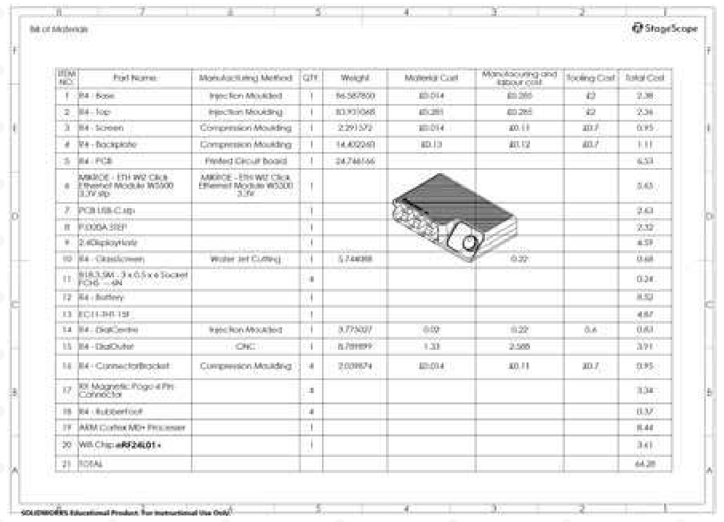
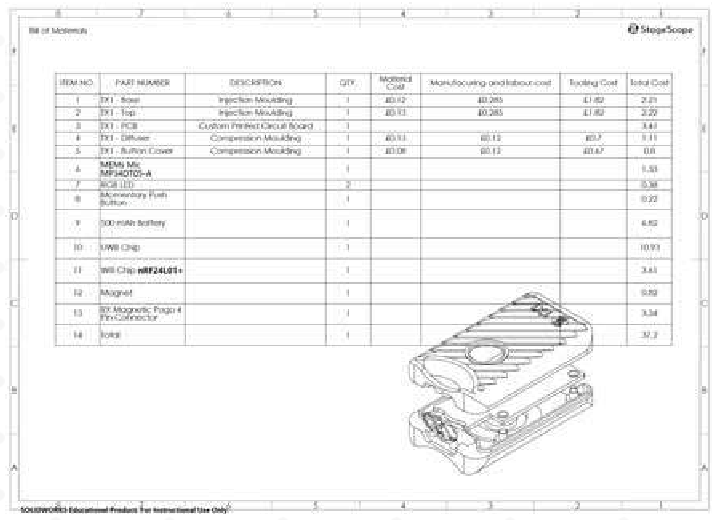
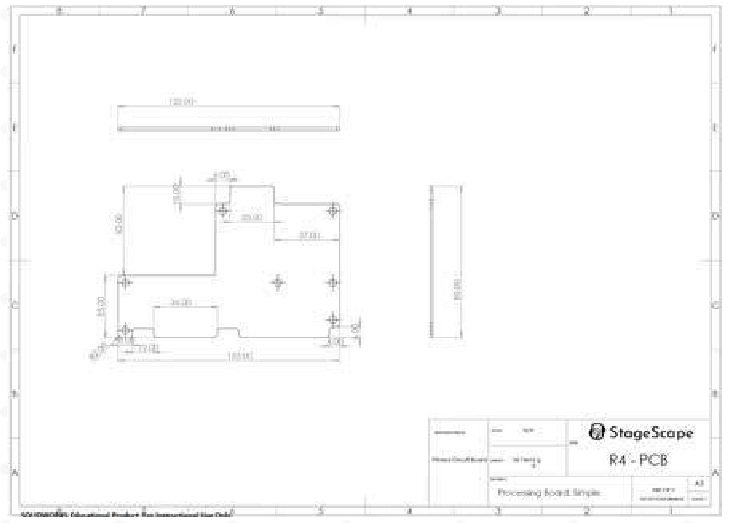
Shows sound levels across the stage using a heatmap

Refined Aesthetics, Ergonomics & UI

Through user input, I landed on a **3 part** design, a **wireless microphone** (TX1), a **receiver** (R4), and a **software interface** (iPad-based).

Each StageScape component underwent meticulous design iterations for **discreet aesthetics** and **robust functionality** in demanding **live music environments**.

This stage focused on refining the physical design, integrating detailed componentry, and ensuring a user-friendly interface through iterative prototyping and user feedback. Also designing for manufacture.

The Outcome

Audio Monitoring | System Design

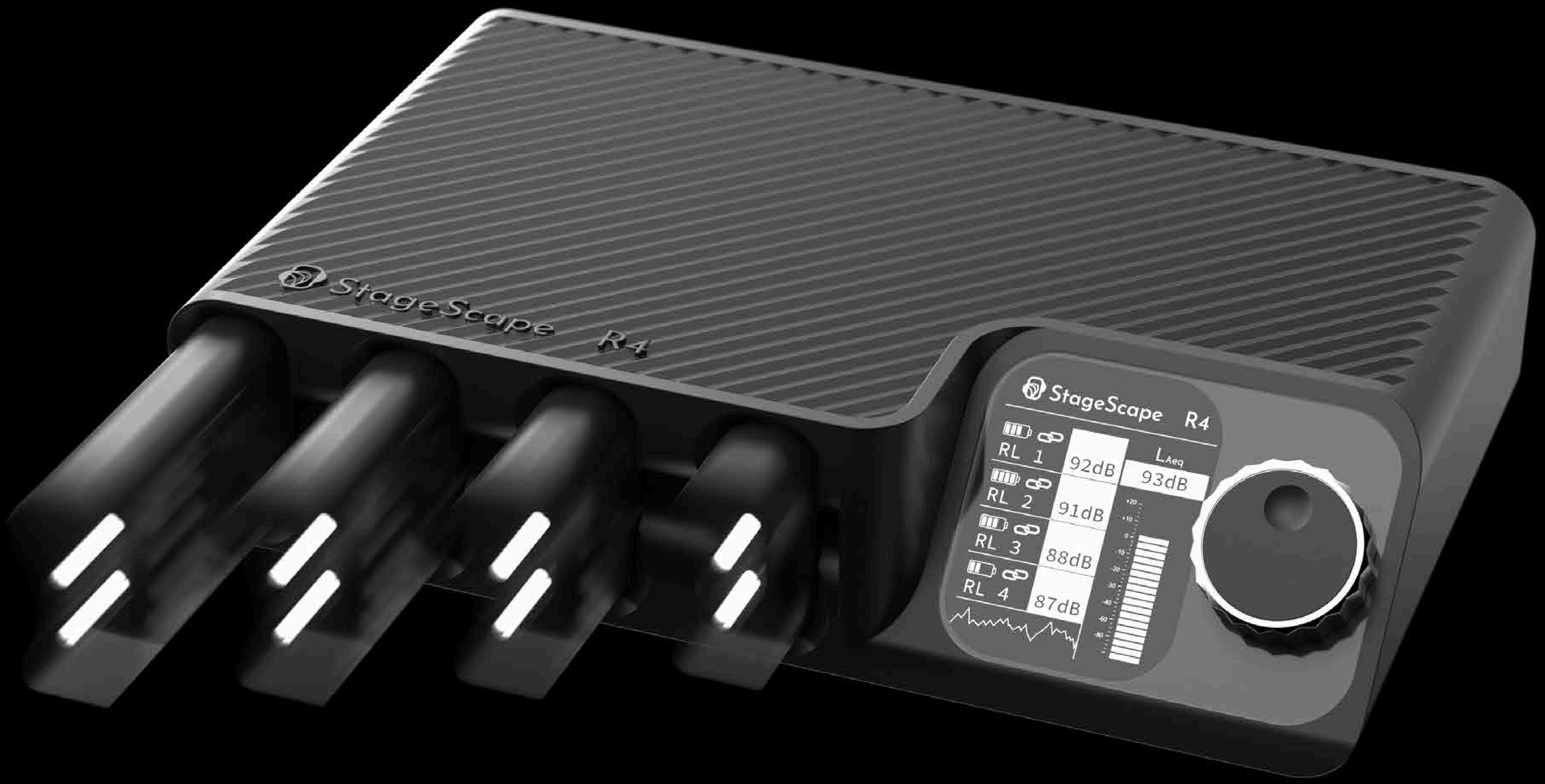
StageScape provides accurate, **real-time** sound level information across a stage, displayed as a **heat map**. This enables sound engineers to **identify** and **manage** loud areas, helping to **prevent noise-induced hearing loss** (NIHL) in musicians.

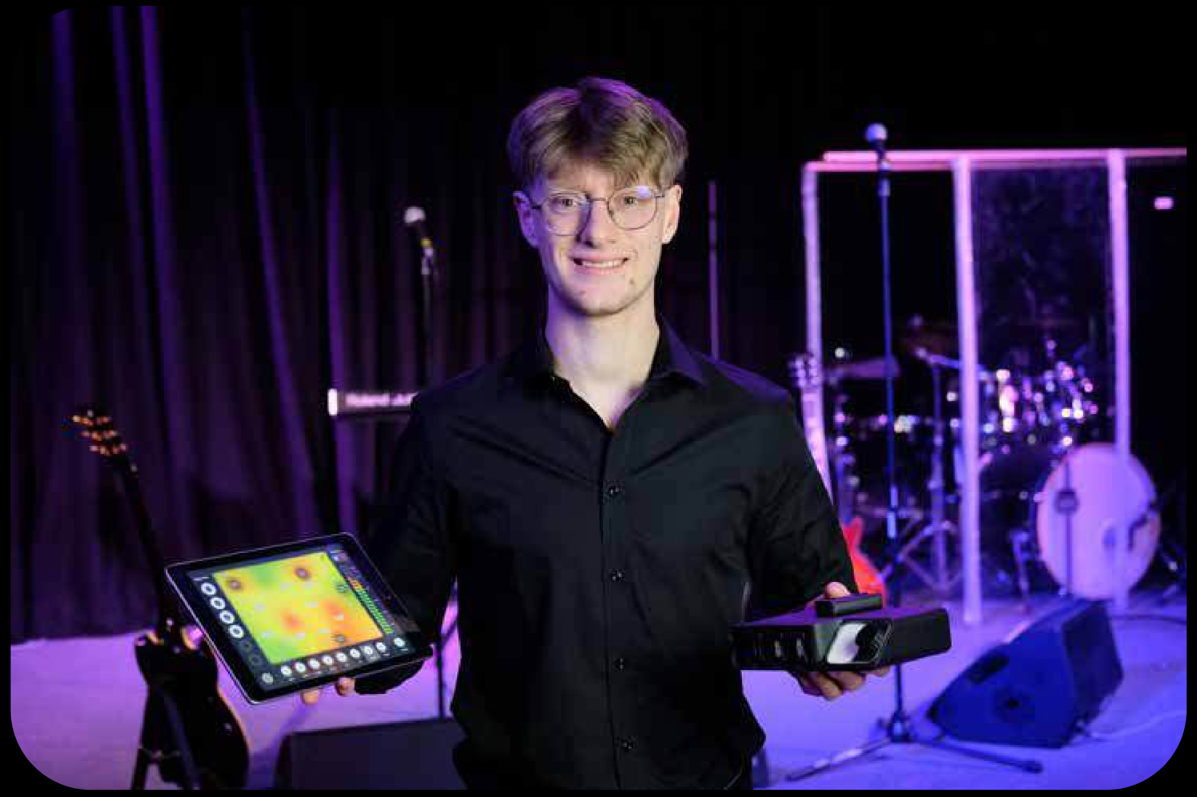
By offering clear data, StageScape facilitates **informed adjustments** to on-stage sound, promoting **safer** performance environments without automatically controlling levels.

Invited to:

ENGINEERING DESIGN SHOW

NTU Design Industries

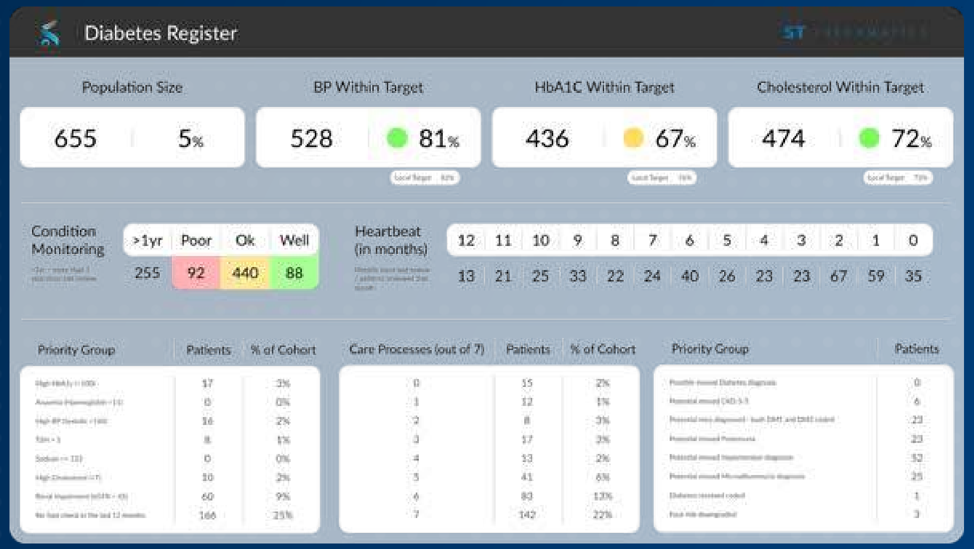




Designer (Digital)

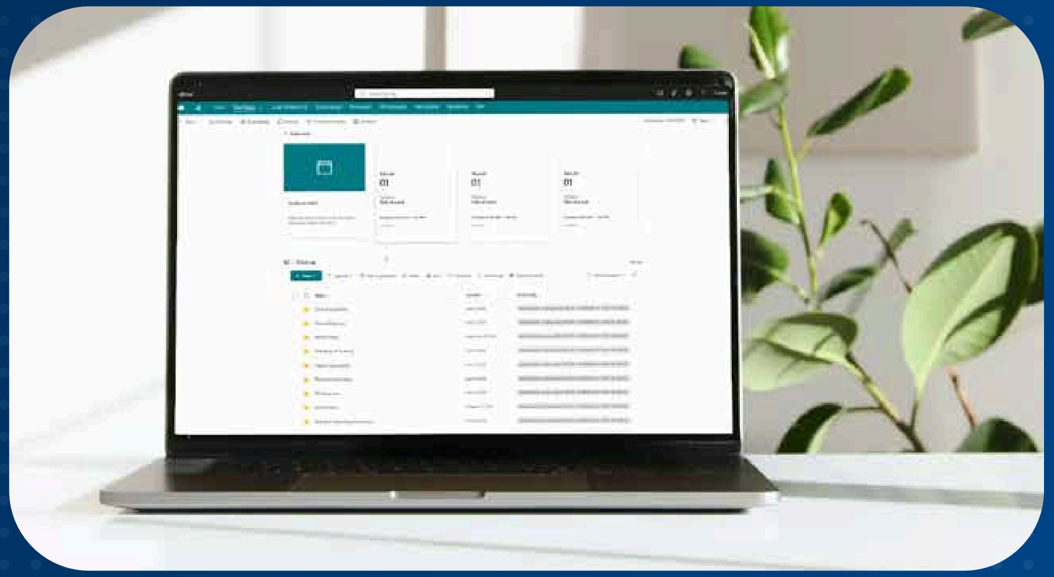
Worked on digital design initiatives across NHS primary care, improving clinical interfaces, patient care, and internal systems through user-centred, data-informed solutions.

Dashboards

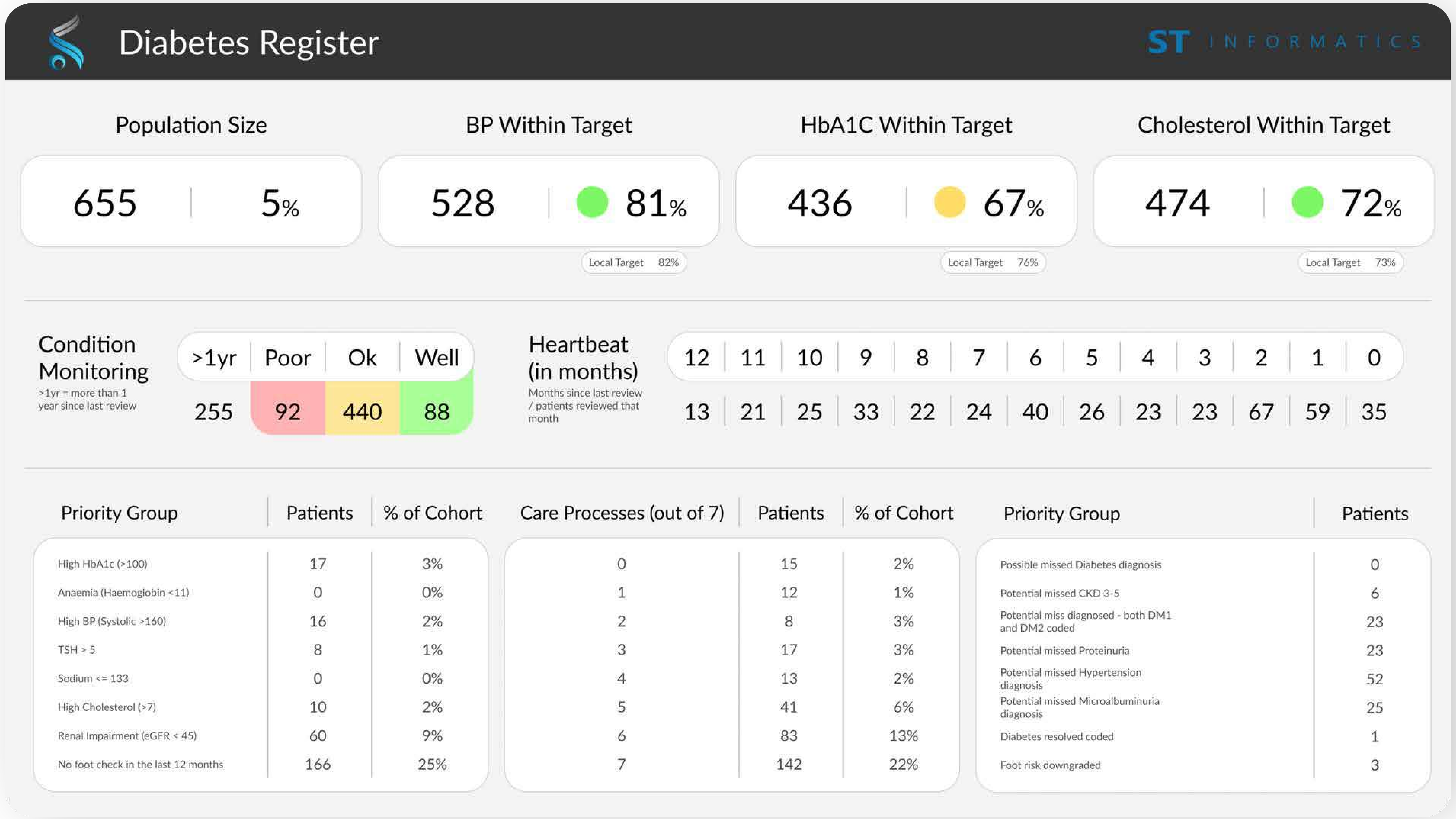


Designed and deployed data-driven dashboards to streamline decision-making and highlight key performance metrics in primary care.

GP Intranet



Built a custom SharePoint intranet to improve internal communication, navigation, and knowledge sharing across a GP practice.

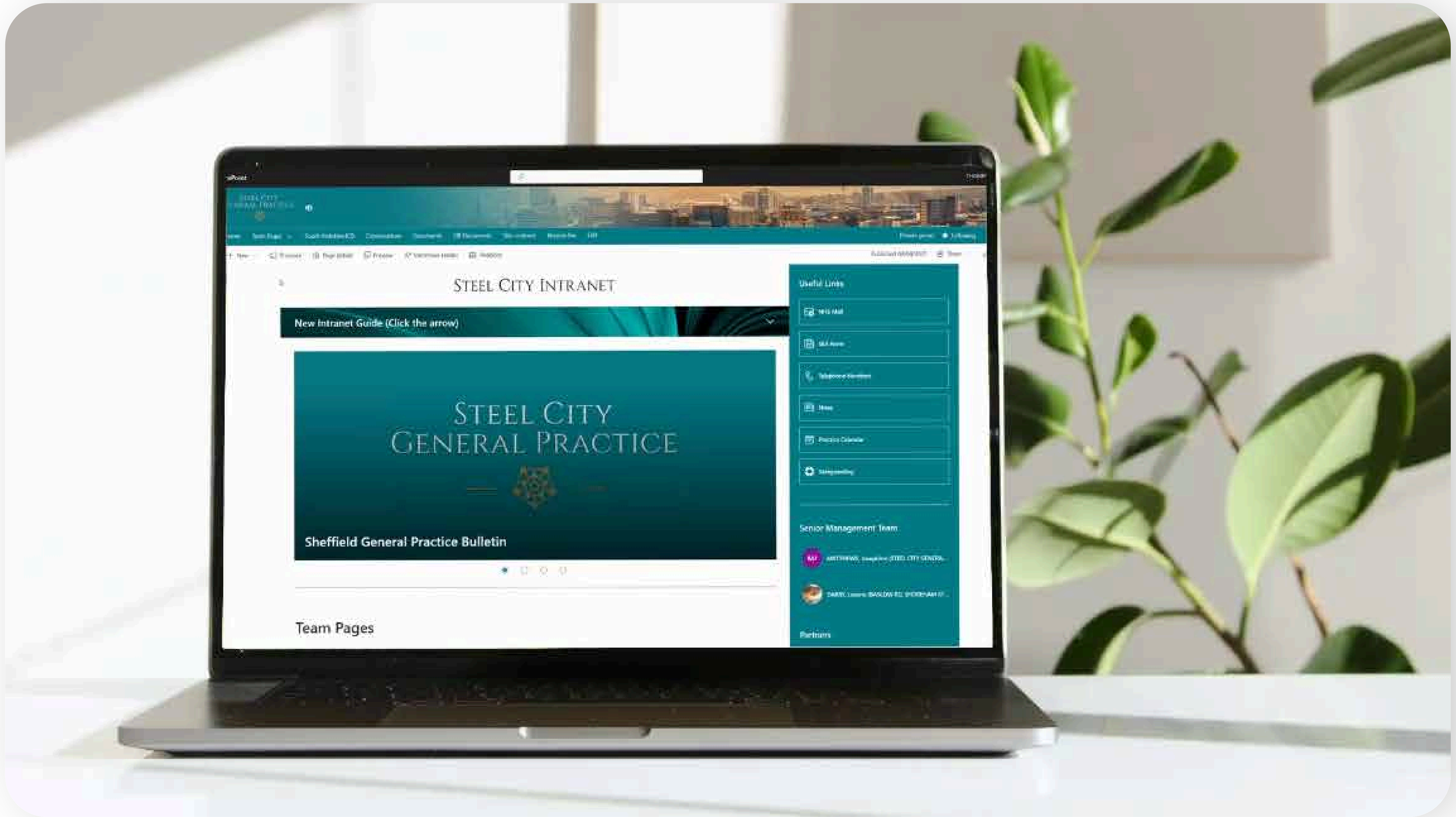


Highlight Project

Data Dashboards

Built data dashboards for an NHS clinical system to support clinical decision-making and workforce planning.

NHS ST INFORMATICS



Highlight Project

SharePoint Intranet

Designed and developed a custom intranet with an intuitive UI for a GP practice, integrating event calendars, document management, and internal communications tools.

Contact Me

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Details

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