

FROM INVENTORY TO ON DEMAND

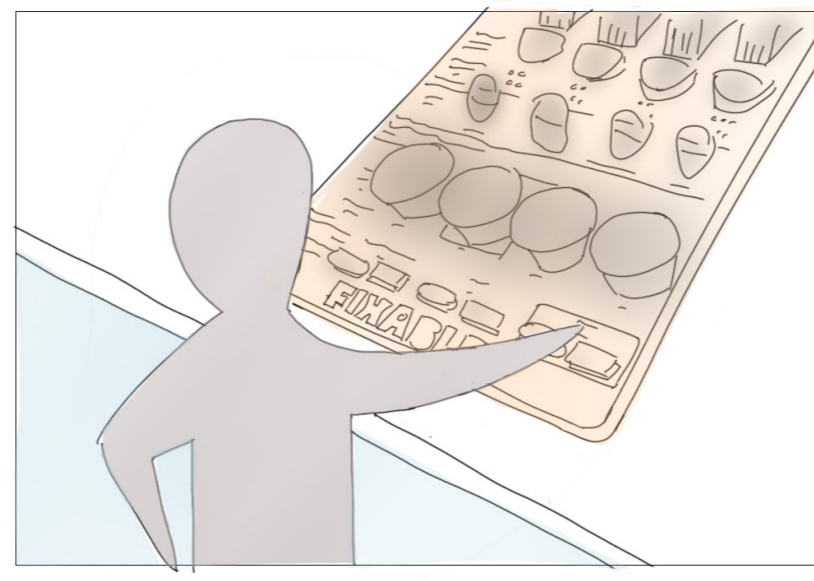
Printable spare parts for Philips Personal Health

Design vision:

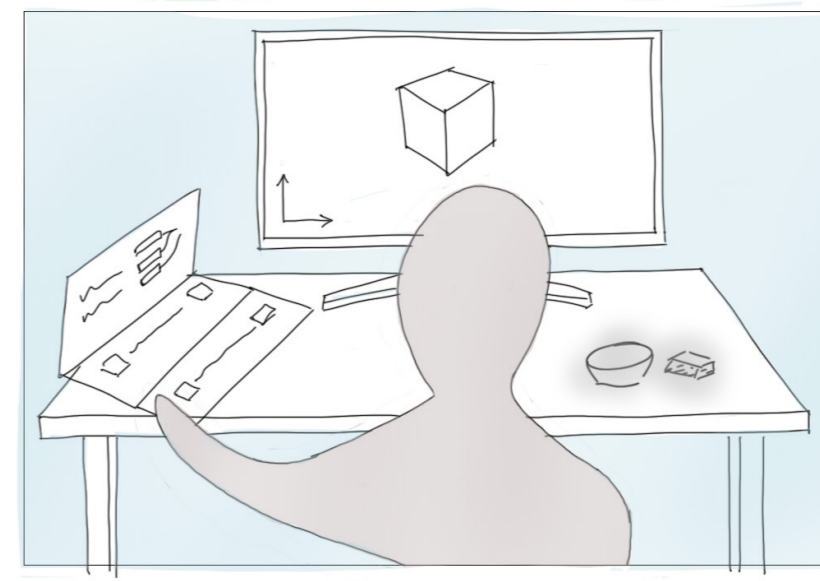


The redesign framework developed in this research consists of three components: a prototype display, redesign guidance cards, and a redesign decision pathway. The prototype display makes Additive Manufacturing (AM) design decisions tangible by presenting printed parts alongside their original injection moulded counterparts, enabling hands-on exploration as well as serving as a communication tool across stakeholders. The decision pathway provides a sequence for identifying constraints and opportunities and translating this into redesign concepts, creating a repeatable and traceable process. The guidance cards complement the pathway with visual, Philips-specific examples that translate key requirements into actionable design strategies. Together, these tools aim to reduce unnecessary print iterations, clarify redesign boundaries, and improve portfolio coherence. The framework is based on the insights from the successful redesign of four Philips Personal Health parts, which revealed recurring patterns and decision points that shaped its final form.

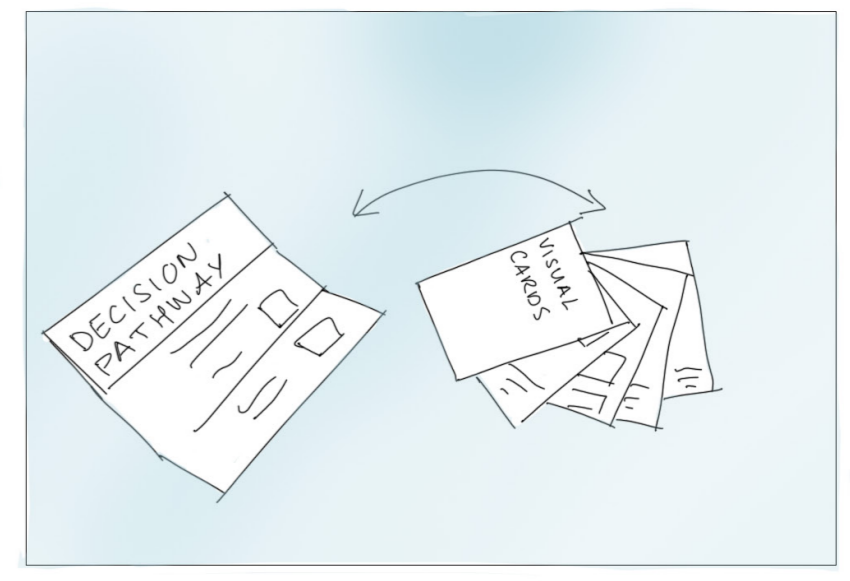
"Enable designers to develop a shared way of thinking when redesigning Philips Personal Health parts for consumer 3D printing by providing a framework that offers structured guidance and highlights feasible redesign directions without relying on prescriptive rules, focusing on the early exploration phase of the redesign process."



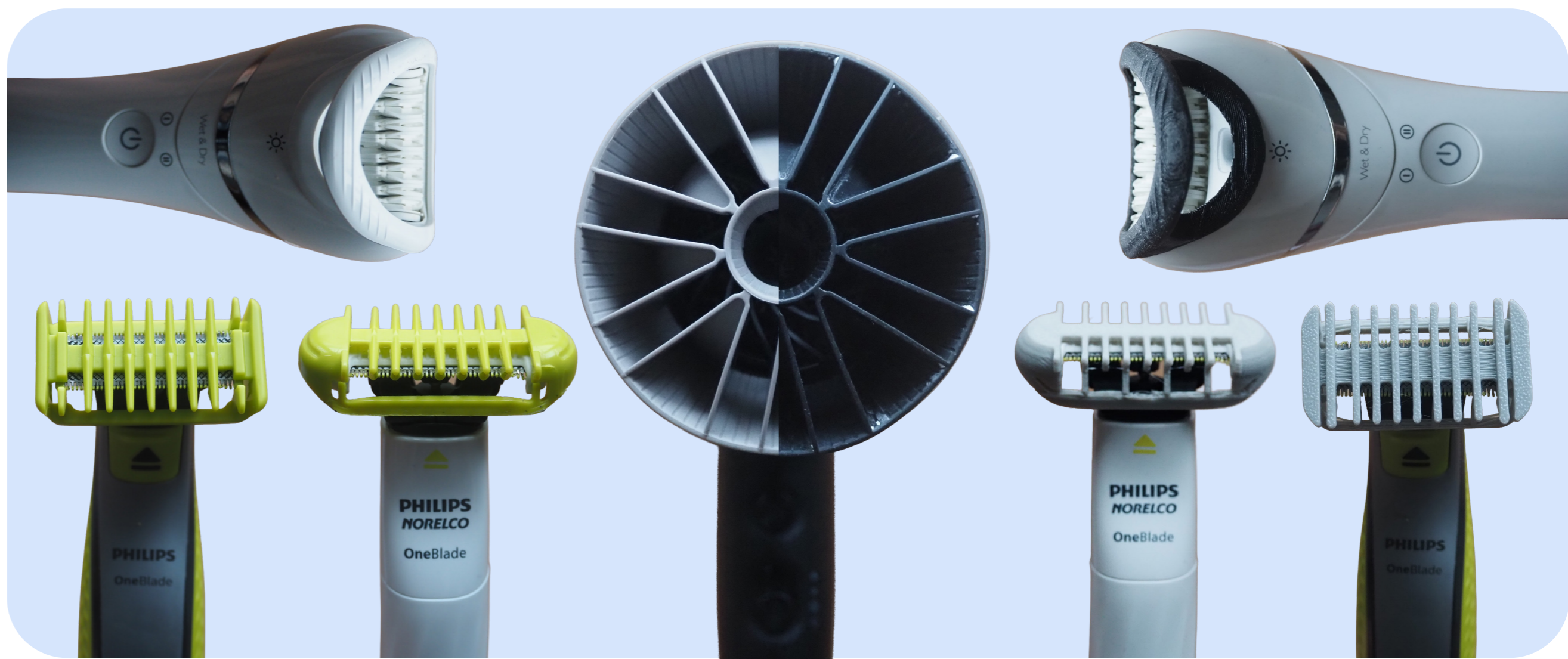
The designer explores the prototype display, to understand how materials, technologies, and redesign choices translate into physical outcomes.



The designer uses the Redesign Decision Pathway to structure the early redesign phase and identify feasible concept directions before modelling.



The designer consults the visual guidance cards for concrete examples that clarify requirements and support design choices throughout this process.



THE VALUE PROPOSITION

Of Additive Manufacturing for consumers

AM becomes viable when economies of scale don't apply; value comes from on-demand parts and extending product life.

AM enables repairs that otherwise wouldn't happen by replacing parts that are unavailable, too expensive, or too slow.

AM should not aim to match IM, it should expand possibilities. From enabling home repair to lifetime spare parts on demand.

Of Additive Manufacturing in Spare Parts Management

Hybrid sourcing strategy combining traditional sourcing with AM.

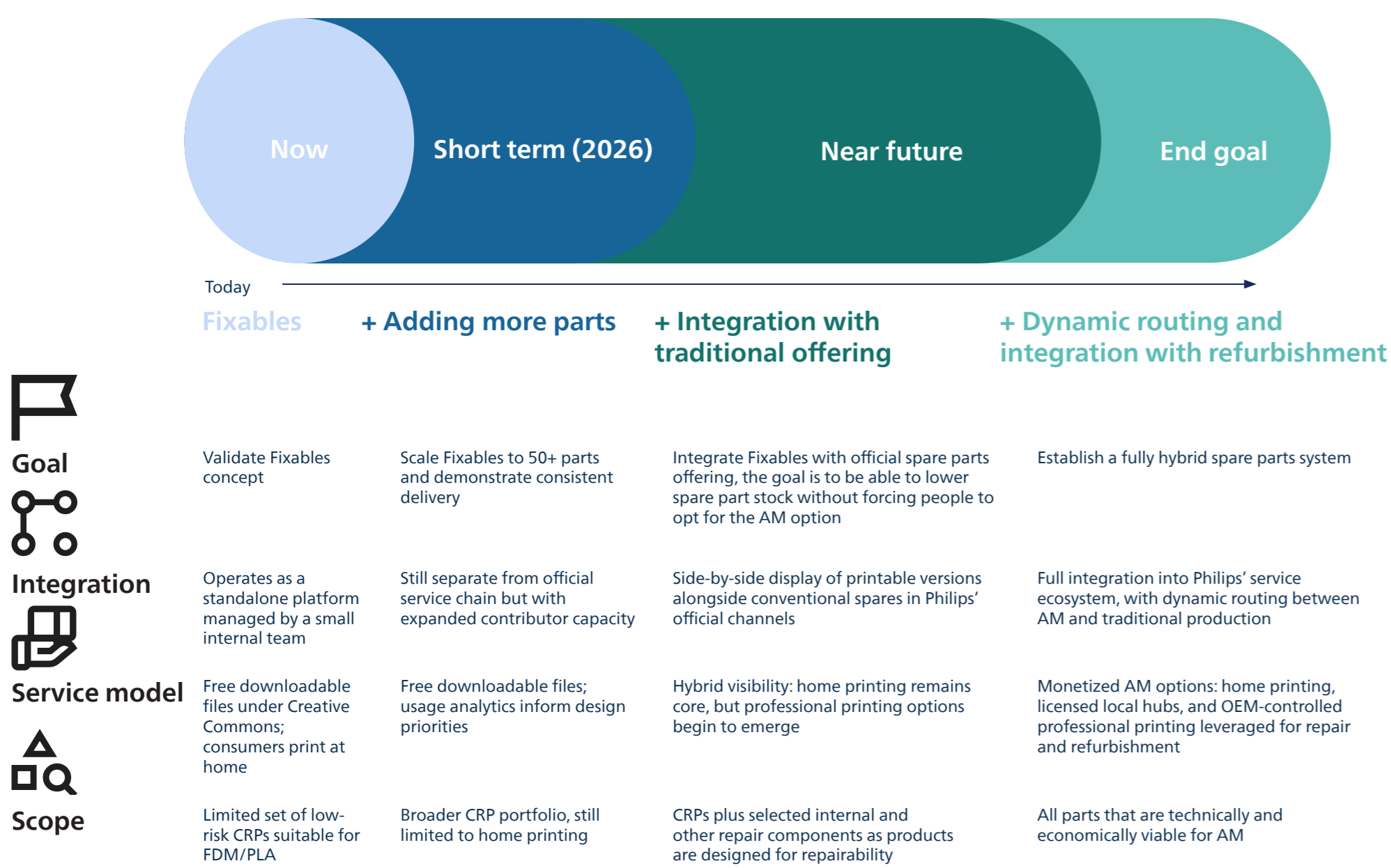
Cost efficiency for low-demand, legacy, and critical parts where traditional sourcing is uneconomical.

Reduced lead times and logistics complexity through local, on-site AM.

Lower inventory and obsolescence risks by producing on demand.

Enhanced supply chain resilience and sustainability through decentralized AM networks.

THE ROADMAP



Layered roadmap

Each cell highlights an example of a development that could support the feasibility of the corresponding time horizon (Now/Short-term/Near future/End goal). Reading horizontally shows how AM might evolve within each layer, while reading vertically within each time horizon suggests how different factors could progress together to enable the feasibility of AM spare parts.

PRODUCT CATEGORY READINESS	MARKET & CONSUMER MATURITY	TECHNICAL READINESS OF AM	BUSINESS AND PRODUCTION MODEL EVOLUTION	LEGAL & REGULATORY MATURITY
Grooming & Beauty in scope for consumer FDM	Adoption limited to hobbyists with 3D printers	Consumer FDM adequate for simple non-critical parts (PLA/PETG)	Home printing and Fixables initiative	No legal or regulatory pathways for AM exist
Scale Grooming & Beauty printable CRPs (50+)	Increased accessibility of printers	In process monitoring and closed loop control improving print quality and reliability	Enhanced service offering by expanding on number of parts on Fixables	IP protection and warranty / liability allocation frameworks
Add haircare CRPs (via professional AM)	Reduced demand for conventionally stocked parts	Improvements in precision and materials diversity; more complex geometries	Predictable cost models and quality assurance systems; local print hubs emerge	Emerging certification for professional AM workflows & hub licensing and certification
Include Mother & Childcare and Oral Healthcare parts (through dedicated AM production lines)	AM seen as fully accepted alternative	Certified first-time-right production	Fully hybrid fulfilment system and sufficient demand for AM production lines	Harmonized international AM standards and certified materials
			Hybrid fulfilment spare parts system	
			AM fully integrated into Philips' spare parts ecosystem, fulfillment via AM or traditional based on best fit	
			Leverage AM for refurbishment and repair.	
Pilot launch Fixables trial as standalone platform	Portfolio expansion Scale to 50+ printable parts	Service integration Connect Fixables with Philips official service parts channels		
Now	Short term	Near future	End goal	

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Philips printable spare parts: Evaluating the feasibility of Additive Manufacturing for spare parts in the Philips Personal Health Portfolio
March 5th 2026
Master's thesis

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