

Managing Digital Health Product Portfolios with a First-Principles Systems Framework: MAPPS



BUSINESS PROBLEM

MedTech companies rely on M&A as primary growth strategy (\$38.8B spent in 2025), rapidly acquiring capabilities to address R&D costs, regulatory complexity, and digital health demands. Acquisition-driven growth presents opportunity for stronger alignment across digital health portfolios in heterogeneous global markets--where products designed under different clinical, regulatory, and market assumptions must coordinate across functions. Traditional portfolio management approaches lack frameworks to systematically assess integration opportunities, prioritize alignment efforts, and evolve strategy with market-specific clinical realities.

DATA SOURCES

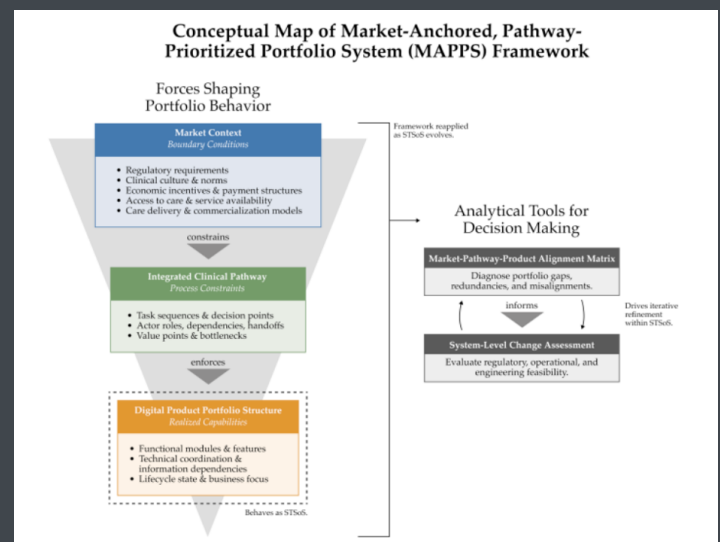
Regulatory Documentation - FDA, CE, regional regulations, reimbursement policies, clinical pathways
Product Architecture - Design documents, API specs, training materials, feature roadmaps
Product Manager Interviews - 29 interviews covering product scope, capabilities, design assumptions
User Studies - Quantitative and qualitative research on provider workflows, user experience, care

Data Types and Format

Categorical (nominal), Numeric, Relational Data, Structured, Text, Unstructured

APPROACH

Applied systems engineering concepts, particularly system decomposition, to assess how digital health product portfolios interact within heterogeneous environments. Mixed-methods research (68 interviews, documentation, systems analysis) explored portfolio behavior as emergent from market constraints, clinical pathways, and product capabilities. Iterative framework development through three decomposition iterations (provider-centric to market-conditioned pathways to integrated clinical pathways) uncovered relationships between regulatory requirements, care delivery, and portfolio alignment.



IMPACT

This research developed MAPPS (Market-Anchored, Pathway-Prioritized Portfolio System), a framework for analyzing digital health product portfolios as socio-technical systems where behavior emerges from market constraints, clinical pathways, and product capabilities.

Applied to Resmed's OSA diagnostics portfolio, MAPPS revealed that portfolio complexity concentrates at specific clinical pathway transitions, invisible through product analysis. Bottlenecks are administrative and coordination constraints (referrals, insurance verification, scheduling) rather than technical issues, reframing priorities toward operational redesign. Market heterogeneity analysis (FDA vs. CE, reimbursement variation, provider workflows) showed structured adaptation, not one-size-fits-all solutions, is needed. This enables more rigorous M&A due diligence by evaluating whether acquired capabilities align with market-specific pathway constraints. For Resmed, MAPPS provided disciplined reasoning to prioritize integration across global markets. By distinguishing externally imposed constraints from configurable design choices, leadership can allocate resources to high-leverage opportunities rather than consolidation conflicting with market requirements.

More broadly, MAPPS addresses a critical gap in how acquisition-driven healthcare companies approach portfolio evolution. Rather than treating acquisition integration as isolated projects, MAPPS enables organizations to embed portfolio-market alignment analysis into ongoing lifecycle management, anticipating misalignment as markets evolve. MAPPS is generalizable across disease domains and applicable to any MedTech company pursuing inorganic growth.

 DRIVERS	Resmed's portfolio grew through acquisition and organic development, but lacked unifying strategy for integration and evolution. The company needed a disciplined framework to assess integration complexity and align portfolio decisions with market and clinical realities.
 BARRIERS	No existing framework in literature addressed portfolio analysis through integrated market- pathway-product lens. Required developing novel analytical approach. Single case study limited generalizability. Multiple portfolios and disease domains would reveal broader patterns across different market and regulatory contexts.
 ENABLERS	Strong management support and organizational alignment. Direct access to documentation, regulatory files, user studies. Open collaboration with product, regulatory, UX/CX teams. Researcher had open access to all stakeholders and decision-makers. Organizational culture receptive to change and new portfolio strategic frameworks.
 ACTIONS	Conducted iterative research with product, regulatory, UX/CX teams to understand problem space, pathways, operational constraints. Developed MAPPS iteratively, integrating stakeholder feedback through three cycles. Mapped provider workflows and patient journeys with clinical teams. Analyzed regulatory requirements with regulatory affairs. Gathered product architecture and dependencies with engineering teams.
 INNOVATION	MAPPS is completely novel and applies first-principles systems decomposition to digital health portfolios. This integrated market-pathway-product analysis is new to literature. Systems engineering decomposition rarely applied to healthcare portfolio strategy. Deliberately sequenced analysis begins with externally imposed constraints rather than internal assumptions. Distinguishes unchangeable constraints from configurable choices.
 IMPROVEMENT	Resmed has disciplined framework for portfolio strategy and decision-making. Enables rigorous M&A due diligence evaluating acquisition fit through market-pathway-product lens. Leadership allocates resources toward high-leverage opportunities with constraint-aware reasoning. Portfolio team anticipates misalignment as markets evolve. Framework supports ongoing evolution and organizational design. Method repeatable for future acquisitions.
 BEST PRACTICES	Understand system before analyzing. Begin with market boundaries, then pathways, then product. Test frameworks on real products with real people. Distinguish externally imposed from configurable early. Integrate regulatory, clinical, engineering, commercial perspectives. Embed into lifecycle management, not isolated projects.
 OTHER APPLICATIONS	Generalizable across digital product portfolios in heterogeneously regulated markets. Applicable to MedTech pursuing inorganic growth. Extends to consumer/hybrid pathways. Relevant for platforms integrating remote monitoring, telehealth, care coordination. Supports organizational design and post-merger integration planning.