

Engagement-Frequency Architecture in Care-Driven Digital Platforms: A Conceptual Framework from the Pet Care Industry

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Abstract

Digital platform ecosystems have become central to corporate strategy, yet existing literature offers limited guidance on how to structure multi-product portfolios in care-driven industries, that is, sectors where user engagement is shaped by emotional attachment, long-term responsibility, and variable need frequency. This paper introduces the Engagement-Frequency Architecture (EFA), a conceptual framework for organizing digital product ecosystems along a frequency spectrum ranging from daily habitual engagement to episodic, need-triggered interactions. Drawing on platform ecosystem theory (Parker et al., 2016; Jacobides et al., 2018), behavioral design literature (Eyal, 2014; Fogg, 2009), and the author's direct experience building a pet care ecosystem at a Fortune 500 corporation, EFA proposes two original constructs: the Frequency Spectrum Model, which maps product positioning by interaction cadence, and the Trust Entry Point, which identifies the acquisition layer that establishes relational credibility before monetization. The framework is illustrated through a pet care industry case where five digital products were organized across daily content, monthly subscription, periodic insurance, and episodic telehealth layers. Implications for product managers, ecosystem architects, and researchers studying vertical platform strategy are discussed.

Keywords: platform ecosystems, product portfolio architecture, engagement frequency, care-driven platforms, behavioral design

1. Introduction

The digital platform economy has transformed how companies create and capture value. Ecosystems are projected to account for approximately 30% of global corporate revenue by 2025 (McKinsey, 2022). Yet most ecosystem literature focuses on horizontal platforms such as marketplaces, operating systems, and social networks, where engagement is driven by utility or network effects. Much less attention has been paid to what this paper terms care-driven platforms: ecosystems built around ongoing responsibility relationships where users manage the wellbeing of a dependent, whether a child, an aging parent, or a pet.

This paper addresses a specific gap: *how should product leaders structure multi-product ecosystems in care-driven industries where engagement frequency varies across the portfolio?* To fill this gap, I propose the Engagement-Frequency Architecture (EFA), consisting of two constructs: (1) the Frequency Spectrum Model, which maps products by natural interaction cadence, and (2) the Trust Entry Point, which identifies the acquisition layer that establishes relational credibility before monetization. The framework draws on platform theory (Parker et al., 2016; Jacobides et al., 2018), behavioral design (Eyal, 2014; Fogg, 2009), and the author's experience building a pet care ecosystem at Mars Petcare's Kinship division (2020–2022).

2. Theoretical Background

Platform ecosystem theory establishes that ecosystems create value through complementarities and modularity (Jacobides et al., 2018; Adner, 2017). However, existing frameworks assume the orchestrator's primary challenge is governing external complementors. In care-driven ecosystems, the challenge is different: orchestrating an

internal product portfolio where all products serve the same user segment at different frequencies with different behavioral logics.

Eyal's (2014) Hook Model and Fogg's (2009) Behavior Model describe how individual products form habits, but neither addresses multi-product portfolio contexts. When one company operates multiple products targeting the same user, products compete for behavioral triggers. If not deliberately spaced along a frequency spectrum, they risk trigger collision, where multiple products competing for the same behavioral window, causing notification fatigue and reduced engagement.

The trust dimension is equally critical. Arrow (1963) established that healthcare markets are shaped by information asymmetry and the need to trust providers. In pet care, owners cannot easily assess quality of food, medical advice, or insurance without trusted intermediaries (APPA, 2023). Unlike transactional platforms where users can be acquired through performance marketing and immediately monetized, care-driven ecosystems must first establish that the platform understands and respects the caregiving relationship. Rempel et al. (1985) identified three trust components (predictability, dependability, and faith), all applicable to the user-platform relationship in care contexts.

3. The Engagement-Frequency Architecture

3.1 The Frequency Spectrum Model

The core premise of EFA is that in care-driven ecosystems, **engagement frequency is the primary architectural dimension**. The Frequency Spectrum Model organizes products into four layers:

Layer 1: Daily Engagement (Habitual Layer). Content products, tracking tools, and community features designed for daily interaction. These generate habit loops through internal triggers and create the data foundation for the ecosystem.

Layer 2: Weekly-to-Monthly (Subscription Layer). Subscription commerce: recurring deliveries of consumables. These provide predictability, reduce decision fatigue, and generate recurring revenue through external triggers.

Layer 3: Monthly-to-Quarterly (Protection Layer). Insurance and wellness plans with periodic interaction but continuous psychological value through risk reduction.

Layer 4: Episodic (Crisis Layer). Telehealth and emergency services activated by urgent needs. Unpredictable frequency but highest emotional intensity and trust dependence.

Three architectural principles emerge: (1) Distinct Temporal Niches, where each product occupies a different frequency layer to avoid trigger cannibalization; (2) Upward Frequency Gravity, where users are acquired at the highest-frequency layer and gradually exposed to lower-frequency, higher-commitment products; (3) Cross-Layer Data Flow, where data from one layer informs personalization at other layers, creating the ecosystem's connective tissue.

3.2 The Trust Entry Point

The Trust Entry Point is the ecosystem's acquisition product, designed to establish relational credibility rather than generate revenue. Its function is to demonstrate three things: competence (the platform understands the user's care context), alignment (the platform's incentives match the user's caregiving goals, not just its commercial goals), and reliability (consistent delivery on small commitments before requesting large ones). A well-designed Trust Entry Point is typically free or very low cost, high-frequency in interaction, data-rich in what it collects, and low-stakes in what it asks of the user.

This challenges the common practice of leading ecosystem development with the highest-revenue product. In many corporate settings, the default instinct is to build and launch the product with the clearest monetization path first. EFA argues that in care-driven contexts, leading with insurance or subscription commerce before trust is established creates acquisition friction and reduces the user’s willingness to share the personal data that makes the rest of the ecosystem work. The recommended sequence is the opposite: start with the product that costs the company the most and the user the least.

3.3 The Complete Architecture

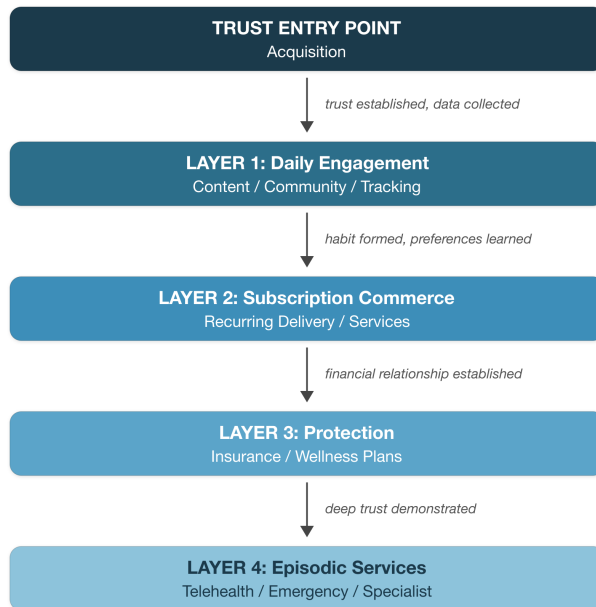


Figure 1. The Engagement-Frequency Architecture

Each transition between layers represents a user journey unfolding over weeks or months. The ecosystem architect’s job is to design the triggers, data handoffs, and value propositions that enable natural cross-product movement.

4. Case Illustration: Mars Petcare / Kinship

Between 2020 and 2022, the author led the development of a digital ecosystem at Mars Petcare’s Kinship division, expanding from one mature product to five across mobile and web platforms. The division was newly created with a mandate from global Mars Petcare leadership to build a connected digital platform for pet parents. About a year of internal alignment preceded active construction: senior leaders cascaded the ecosystem concept across business verticals, explaining how linked products would benefit both users and the business. The ecosystem development process itself began with three months of global market research across multiple countries, exchanging practices with international partners, followed by iterative integration design within a cross-functional team of four product teams.

Trust Entry Point: Pet Acquisition Marketplace. The first new product was a marketplace connecting prospective pet parents with verified breeders and shelters. It addressed the very beginning of the pet-owner relationship, at the moment of highest emotional intensity and information asymmetry. In the US market, adopting a pet involves long queues and organizations that screen candidates on many parameters. In other markets, the situation is reversed: shelters are overcrowded and need to match animals with owners as effectively as

possible. In both cases, a platform that reduces uncertainty about breed suitability, breeder reliability, and health guarantees establishes immediate trust. The marketplace was designed as an organic traffic engine: rather than relying on paid acquisition, it attracted users through search at their moment of highest intent, collecting foundational data (pet type, breed, age, location) that seeded the entire ecosystem. It grew to become one of the largest platforms in the CIS market. Critically, an M&A transaction was executed to acquire an established platform with existing organic traffic rather than build from scratch. This illustrates that the Trust Entry Point may justify acquisition given its strategic importance: building organic trust takes years, while acquiring it accelerates the entire ecosystem timeline.

The remaining layers followed the frequency model. Layer 1 consisted of daily content: educational articles, training resources, and community features covering pet behavior, nutrition, and health. Layer 2 was subscription commerce: monthly delivery of pet food and supplies, representing the user's first financial commitment to the ecosystem. Layer 3 was pet insurance addressing veterinary costs, a deeper trust commitment where the user entrusted the ecosystem with managing risk around their pet's health. Layer 4 was on-demand veterinary telehealth, activated by acute health concerns. Each product occupied a distinct frequency position, and the cross-layer data flow was critical: marketplace data (breed, age) personalized content recommendations; content engagement patterns (topics consumed, questions asked) informed subscription suggestions; and subscription data (purchase patterns, pet lifecycle stage) triggered insurance prompts at appropriate moments, such as when pets age and health risks increase. This data flow created what the author terms demand signals: organic behavioral indicators that a user is ready for the next ecosystem layer, different from traditional cross-sell triggers because they emerge from care-related behavior rather than purchase behavior.

5. Applicability and Limitations

EFA is proposed as generalizable to any care-driven industry where a digital ecosystem serves users managing the wellbeing of a dependent. In parenting technology, the frequency layers map naturally: daily feeding and sleep tracking, monthly diaper and supply subscriptions, child health insurance, and pediatric telehealth. The Trust Entry Point could be a pregnancy planning or newborn preparation tool, addressing the moment of highest uncertainty. In elder care, daily wellness monitoring and social engagement form Layer 1, medication management and recurring supply delivery form Layer 2, long-term care insurance is Layer 3, and geriatric telehealth is Layer 4. The Trust Entry Point might be a caregiver support community for adult children managing their parents' care. In chronic disease management (diabetes, cardiovascular conditions, mental health), daily condition monitoring, medication subscriptions, condition-specific insurance, and specialist teleconsultations follow the same structure. EFA is less applicable where the user-platform relationship is primarily transactional, engagement frequency is uniform across products, trust requirements are low, or care relationships are absent.

Limitations include: the framework derives from a single industry case; the practitioner perspective introduces potential ex-post rationalization bias; and EFA addresses product architecture but not governance, pricing, or competitive dynamics. Empirical validation across industries is needed.

6. Conclusion

This paper introduced the Engagement-Frequency Architecture for organizing multi-product digital ecosystems in care-driven industries. By mapping products along a frequency

spectrum and identifying a trust-based acquisition layer as the necessary entry point, EFA provides structural logic for portfolio decisions that existing frameworks do not address. The pet care industry provided the originating case, but the underlying dynamics (emotional investment, long-term care relationships, variable need frequency, high trust requirements) are present across childcare, elder care, and chronic disease management. As these industries increasingly adopt digital ecosystem strategies, the need for care-specific architectural frameworks will grow. For product leaders building in care-driven domains, EFA offers a practical principle that may feel counterintuitive: the most valuable product in your ecosystem may be the one that generates the least revenue, precisely because it earns the trust upon which everything else depends.

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