Commentary

Technologies for Prevention and Personalized Monitoring: Sustainable Innovation Requires a Predictable Business Model

Michael Friebe[1,2]

1. AGH University of Science and Technology, Poland; 2. 5P Future of Health Investment, Germany

Technologies for personalized prevention and continuous health monitoring have enormous potential to relieve chronically overloaded healthcare systems. However, their large-scale introduction regularly fails due to a structural problem: There is no viable business model that is visible and credible to external capital providers. The existing, reactive care model offers neither the financial incentives nor the investment logic to sufficiently finance prevention innovations. A real transformation will only succeed if a new model is built in parallel with the existing one—one that offers investors a clear logic of return. Without this step, intelligent external capital will not materialize, and the urgently needed shift from treating sickness to maintaining health will progress too slowly.

This paper argues that the structural inertia of the reactive healthcare system can only be overcome by building a parallel business model. Without a recognizable investment logic, intelligent external capital will stay away and, without this capital, transformation remains trapped at the pace of the existing system—too slow in view of demographic and fiscal realities. Singapore, Estonia, and the UK provide empirical proof that a different architecture is possible—and the main economies of Europe should act now, not least because of the long-term economic perspectives and the technology developments required to realize them.

Corresponding author: Michael Friebe, info@friebelab.org

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1. Introduction: The Failure of the Reactive Model

The healthcare systems of most Western countries have historically been constructed as reactive systems —designed to treat disease, not to prevent it. This structure is not accidental but system inherent: financing streams, reimbursement mechanisms, and institutional incentives reward intervention, not prevention. In Germany, approximately 538 billion euros are spent annually on the healthcare system—around twelve percent of the gross domestic product—and the trend is rising.[1][2]

At the same time, current scientific evidence shows that extending the “healthspan”—the disease-free, active period of life—is economically far more valuable than simply extending lifespan. A slowdown in biological aging that increases life expectancy by one year has an estimated global economic value of around 38 trillion US dollars; for ten years, this value rises to 367 trillion US dollars. Nevertheless, hardly any structured investments flow into prevention and monitoring technologies, because there is no visible business model that convinces external investors.[3][4]

2. Structural Inertia: Why the Existing Model Blocks Prevention

The reactive healthcare system rewards treatment. Pharmaceutical companies, hospitals, device manufacturers, and health insurers have built their business models around the management of chronic diseases, not the avoidance of those diseases. This creates a fundamental dilemma between the actual purpose of the healthcare system—the well-being of patients—and the economic interests of dominant stakeholders.

As long as reimbursement systems and incentive structures focus exclusively on disease diagnosis and treatment, prevention cannot scale successfully within this system. This institutional inertia explains the Coase-style blockade: existing institutions persist because they minimize transaction costs within the reactive model. A reorientation toward prevention would jeopardize the internal efficiency gains of these institutions and therefore requires external force—that is, new capital and new market actors. As long as this does not happen, innovations in personalized health monitoring will remain underfinanced, even if their long-term cost-benefit profiles are clearly superior.[5][6]

3. The Financial Need for a Parallel Business Model

Building a new business model alongside the existing one is not an academic demand but an economic necessity. The figures are clear:

- The global longevity market is estimated to reach 44 billion US dollars by 2030.[4]
- In Europe, the “preventive health” sector grew by 88% to 869 million US dollars in 2025, making it the fastest-growing area in the digital health sector.[7]
- One study shows that if only ten percent of the aging US population remained healthy for one additional year, 29 billion US dollars in public social spending would be saved annually, while an additional 80 billion US dollars in economic output would be generated.[4]
- In Europe, EIT Health, together with the European Investment Fund, has mobilized more than three billion euros for over 79 startups through a public-private co-investment program.[8]

These numbers show that capital is in fact available, but it flows only where there is a clear, time-bound return structure. This is precisely what is currently missing in the prevention sector: a business model with predictable revenue streams that offers both institutional and private investors a solid basis for the future (Figure 1).[4]

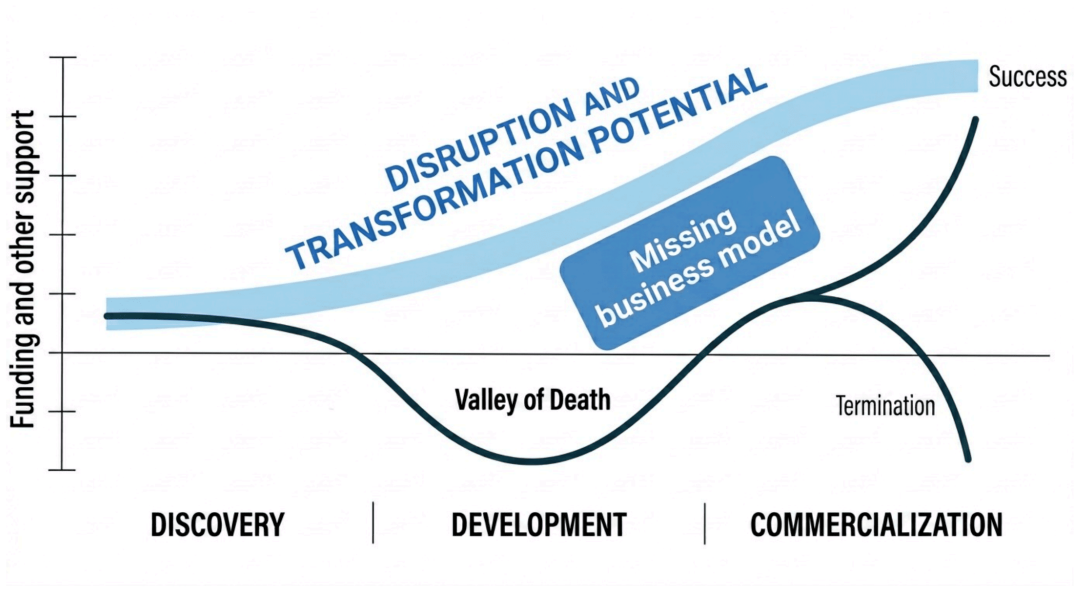

Figure 1. Investment capital is available in Europe and Germany, but venture capital, despite its potential impact, is risk-averse and therefore mainly invests in established return structures. Prevention and promotion of health are not (yet) part of these structures.

State-led initiatives must be created that are financially separated from the existing curative-care model and, ideally, are governed by institutions not funded through ministries of health. In fact, a minister of

finance should have a strong interest in a different “health business model”, and the ministry of economic affairs should care about the development of an industry and innovation environment in this new segment. Only in this way can the systematic misaligned incentives of the status quo be overcome.[1][6][9]

4. Prevention as Strategic Capital Reallocation: The Consumer Potential

Alongside institutional investments, there is a second, largely untapped source of capital: the informed, health-conscious consumer. German household data show that the average monthly budget for leisure activities, restaurants, and other goods is around 172 euros. Strategically redirected, this amount could finance a comprehensive proactive health strategy consisting of digital health services (15 euros per month), personalized nutritional supplements (100 euros per month), and quarterly preventive check-ups (150 euros per quarter). The total annual budget would be approximately 1,980 euros and thus within realistic consumer spending.[10]

This argument is not only culturally important; it also outlines a bottom-up market for prevention and monitoring technologies. Consumers who are willing to invest in their healthspan become payers in a new business model. The prerequisite is that the solutions offered are transparent, evidence-based, and easy to access. The growing spread of wearables, personalized diagnostics, and AI-enabled health platforms provides the technological foundation for this.[2][10]

5. Best Practice: Countries That Do It Differently

A comparison with other countries shows that transformation is possible when political and economic will is present.

Singapore has introduced a systematic prevention strategy at population level with the national program “Healthier SG”. The program combines general-practitioner-centered prevention, digital health tools, and financial incentives for health-promoting behavior. Singapore and the UAE lead global investments in healthspan technologies and have actively addressed the deficits of traditional healthcare models. At the end of 2025, the UK MHRA and the Singapore Health Sciences Authority established a joint “Regulatory Innovation Corridor” to accelerate approval of breakthrough innovations in prevention, early diagnosis, and digital health.[4][11][12][13]

Estonia is regarded as a European model for data-driven healthcare delivery. Its nationwide digitalized healthcare system enables genomics-based prevention programs and rapid integration of AI-based diagnostic tools into routine care. Estonian healthtech startups successfully scale into Singapore and the Middle East and benefit from a clear regulatory framework and a nationally understood digital health model.[12][13]

In the United Kingdom, the National Health Service (NHS) has embedded an explicit prevention strategy within its "10-Year Health Plan". In Europe, the dedicated health innovation support of the European Institute of Innovation & Technology (EIT Health)—including grants of up to 350,000 euros per startup and a total volume of over three billion euros in mobilized capital—aims to drive market readiness of digital health solutions in prevention and early detection.[8][11]

Most european countries, including Germany, lag structurally behind, although initial instruments exist. The Innovation Fund in Germany, under §92a SGB V, finances new care models and digital health solutions, but it is difficult for startups to access. McKinsey explicitly recommends creating clear, investible business cases with tiered risk–return profiles for Germany as the only way to overcome misaligned incentives.[1][9]

6. The New Business Model: Architecture and Requirements

A viable business model for prevention and monitoring technologies must meet the following requirements:

1. **Measurable outcomes instead of treatment episodes**—Compensation must be based on biomarkers, healthspan indicators, and avoided costs rather than diagnosis and intervention codes.[6]
2. **Scalable data infrastructure**—Wearables, continuous monitoring, and AI-based early-warning models must be embedded in interoperable data systems to generate longitudinal evidence.[1][2]
3. **Hybrid financing model**—A combination of public seed funding (e.g. Innovation Fund, Horizon Europe), private venture capital, and consumer-based subscription models is required.[8]
4. **Independent governance**—The new model must not be subject to the institutional incentives of the existing disease-care system; it needs separate steering entities, similar to dedicated sovereign wealth funds or ARPA-like units.[4]

5. **Clear investment thesis for venture capital**—VC operates on the basis of predictable returns. Healthspan investments must be supported by quantifiable key metrics such as reductions in hospitalizations, avoided chronification, and gains in quality-adjusted life years (QALYs).[3]

In the United States, projections indicate a dramatic shift from reactive to proactive spending by 2040, alongside the emergence of a new business model. The goal is to place prevention and individual well-being at the center. Venture capital is already flowing at scale into this new segment in anticipation of its growth from around one trillion US dollars today to 3.6 trillion US dollars (Figure 2).[14]

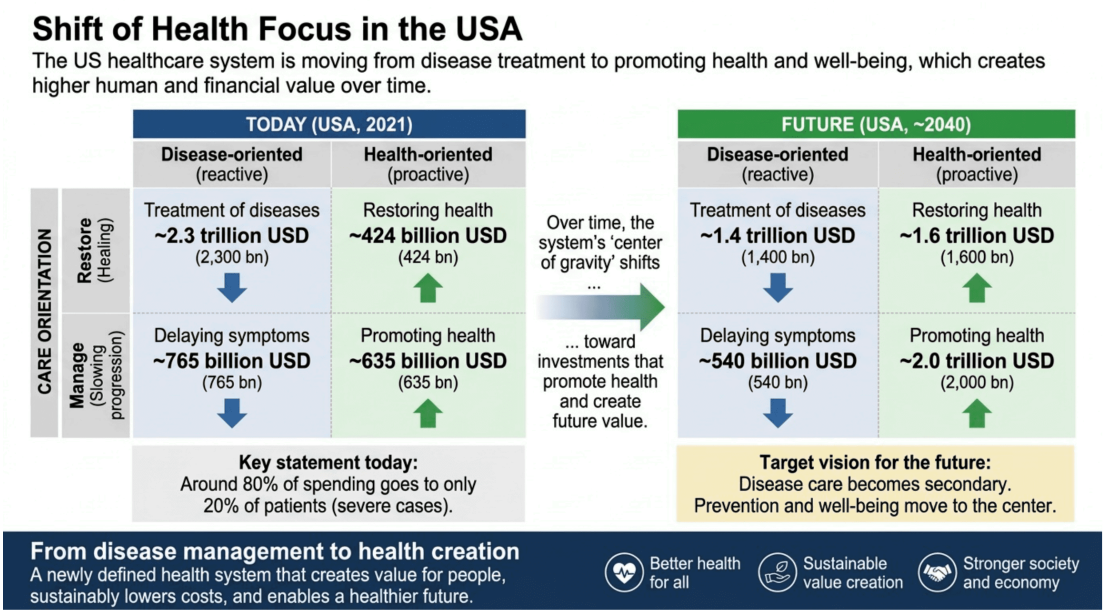

Figure 2. Projected shift in the United States by 2040 from reactive to proactive health spending and the emergence of a new business model focused on prevention and individual well-being. Market volume for proactive health is expected to grow from roughly 1 trillion to 3.6 trillion US dollars. Based on [14].

7. Why Transformation Fails Without a New Business Model

Intelligent capital—that is, risk capital from investors who think systemically—always follows a recognizable logic of return. As long as prevention and personalized monitoring have no clear revenue pathway, this capital will stay away however. The result is a structural underfunding of precisely those innovations that would generate the largest systemic savings in the long term.

From an investor's perspective, Western healthcare systems do not fail for lack of knowledge, but because of systemic misaligned incentives and institutional inertia.[1][5] Transformation cannot be implemented quickly enough without innovation in the business model, because the existing system has no capacity, no financing logic, and no internal incentives to replace itself. The new model must grow from the outside, driven by informed consumers, visionary investors, and states that treat prevention as a strategic economic factor (Figure 3).[6][15]

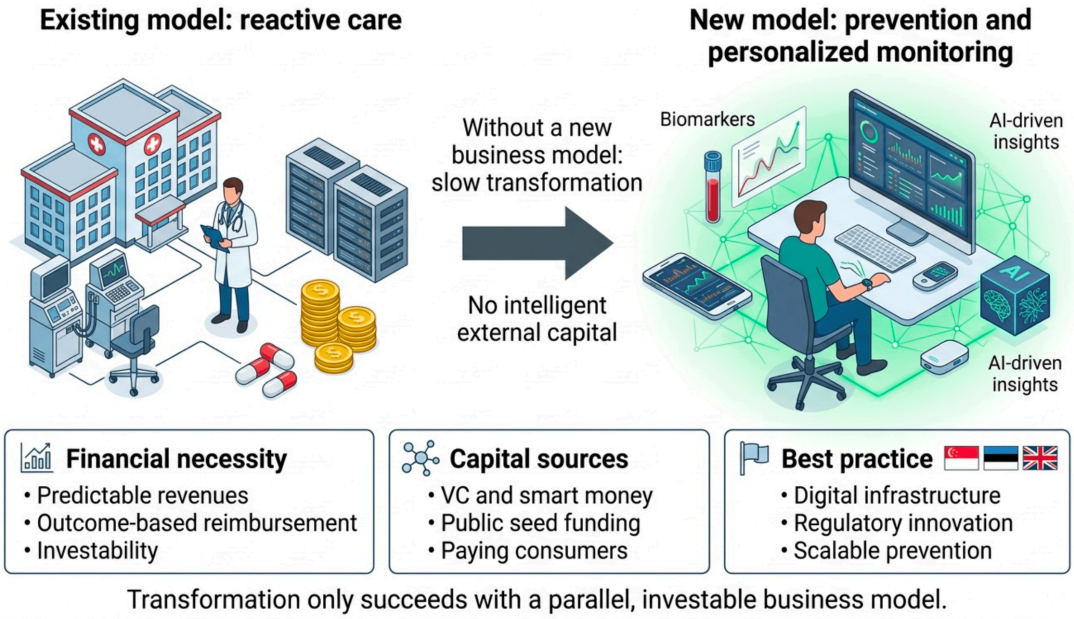

Figure 3. Transformation of an established system typically occurs in small steps and therefore takes a long time, also because the system resists change. External intelligent capital will only invest in new technology developments if policymakers also create the framework conditions for a parallel business model.

In the context of reforming the current system, as is currently being discussed in Germany, action must also be taken in this segment, not only to secure future care but also to advance and stimulate relevant technology developments.[9] But the already received reactions on some obvious change proposals to ensure financing of the current setup show how resistant the system is and how reluctant it is to move towards a transformation. Germany and Europe should strive to assume technological leadership beyond medical system development for reactive care. However, this will require appropriate framework conditions as well.[1][8]

8. Conclusion

Technologies for prevention and personalized health monitoring already exist. Evidence for their benefits is growing. What is missing is a predictable business model that simultaneously addresses investors, consumers, and policymakers.[3][6] Singapore, Estonia, and the UK show that such a model is possible.[11][12][13]

Germany and other Western countries must establish a new financing and innovation ecosystem in parallel with the existing reactive model. If they fail to do so, the necessary investments will not materialize, and transformation of the healthcare system will proceed too slowly, with serious consequences for social and economic sustainability.[1][4]

About the Author

Prof. Dr.-Ing. habil. Dr. rer. medic. Michael Friebe is a German engineer, entrepreneur, and professor focusing on diagnostic imaging and healthtech innovation. After a BSc in electrical engineering, he worked for five years in San Francisco as an R&D engineer for MRI and ultrasound systems while completing an MSc in Technology Management at Golden Gate University. Back in Germany, he obtained a PhD in medical physics at the University of Witten. He is currently Professor of HealthTech Innovation at AGH University in Krakow, honorary professor at the medical faculty of Otto von Guericke University Magdeburg, research fellow at TUM, and adjunct professor at QUT Brisbane. In recent years, he has been involved in more than 35 company foundations, has filed more than 100 patents, and is author or co-author of over 200 peer-reviewed publications.

Statements and Declarations

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