

In the “Trusted Health Ecosystems” project we are creating a concept and a product vision for a national health platform of the future. This text is part of the overall concept which is published at www.trusted-health-ecosystems.org.

The transformative nature of digital ecosystems

Offering numerous benefits to everyone involved, the collaborative nature of digital ecosystems and platform economies has led to significant transformations in various domains of life. This overview highlights the appealing aspects of digital ecosystems and their platforms and explores ways to harness their innovative potential.

Digital ecosystems are appealing

Delivering real added value is the only way digital ecosystems can succeed in convincing independent participants to get involved. One major advantage of these ecosystems is the access they offer to a diverse community of participants, each contributing to the system either as suppliers or consumers, depending on their role. This diverse and geographically dispersed community can generate various additional advantages. To ensure widespread participation, digital ecosystems typically maintain an inclusive approach and strive to attract as many individuals, organizations, and companies as possible. As a result, access to their ecosystems is rarely restricted (Choudary 2017).

The appeal of digital platforms for providing and consuming ecosystem services lies in their high-level harmonization, user-friendly interfaces, and excellent user experiences. These factors enable efficient access to a wide range of ecosystem participants. Initiators and operators of digital platforms invest significant time and resources to achieve this harmonization, encompassing various aspects such as business models, technical standards (e.g., standardized access via APIs), and legal frameworks (e.g., standardized contractual relationships), particularly for commer-

cial ecosystems. This harmonization is reflected in functions like payments, search capabilities, and data transformations. Not-for-profit ecosystems follow a similar approach, although their goals are not profit-oriented. Users often don't realize the effort invested in creating seamless processes due to the smooth and enjoyable experiences provided. However, it is important to recognize that the simplicity and elegance of a digital ecosystem's services do not imply a lack of complexity in its design.

Digital ecosystems offer bundled online services, eliminating the need for users to extensively research individual service providers. The added value lies in the integration of the digital platform and the active participation of the community members, which results in a combined power that enhances the services provided. To attract users, a digital ecosystem must ensure seamless interaction between its platform and community.

Digital systems are scalable

Digital ecosystems present operators with significant opportunities to develop innovative business models. By becoming a central point of contact for a large number of participants, organizations can strategically reposition themselves in the market or sector and expand their influence. The scalability and high growth potential of digital ecosystems are facilitated by their ability to provide services in a purely digital form. As the ecosystem attracts more participants, network effects come into play, generating increased business activity within the ecosystem. This growth opens up avenues for further expansion of the platform and services, enhancing the overall attractiveness of the ecosystem as a whole.

Digital ecosystems are disruptive

A digital ecosystem doesn't exist in isolation or simply emerge out of nowhere. Instead, it is intricately woven into a landscape that involves multiple stakeholders and their interconnected relationships. We refer to an established network of partners and value chains in an industry as a domain ecosystem. Today, we witness the constant emergence of new digital ecosystems, each catering to specific needs and offering unique services. When these ecosystems thrive, they disrupt existing business relationships within their respective domains. The introduction of a new digital ecosystem and the involvement of its participants bring about changes in the dynamics and positions of various stakeholders within the domain ecosystem (Trapp 2020).

Multiple digital ecosystems can coexist within the same domain ecosystem, and they can either compete or complement each other. It is also possible for an actor to participate in multiple digital ecosystems simultaneously, assuming different roles in each. In the mobility industry, for instance, there are various digital ecosystems such as Uber and Lyft that offer services in the realm of personal trans-

portation. Flixbus, as a digital ecosystem, has transformed and harmonized the market for long-distance bus travel. Additionally, there are numerous other digital ecosystems focused on mobility services, including those involved in capturing and providing telematic data from vehicles manufactured by different companies.

Digital ecosystems are only lucrative in the long term

Creating a digital ecosystem is a complex and time-consuming process that requires more than just developing a software system. It involves a holistic and well-coordinated design approach to continually attract and engage participants.

This process typically unfolds over several years and starts with gradual growth, which gains momentum as network effects come into play. Looking at successful digital ecosystems like Amazon and Airbnb, we can see that it takes around ten to fifteen years for them to reach a substantial size and become self-sustaining operations. During the building phase, significant investments are made to fuel growth, and it's only in the later stages that the ecosystem becomes self-sustaining. Therefore, building a successful digital ecosystem requires long-term commitment and a willingness to invest resources. In other words, digital ecosystems cannot be expected to generate a positive return on investment within a short period, like 18 months.

Digital ecosystems are diverse

While the provision of ecosystem services is a fundamental principle shared by all digital ecosystems, it doesn't mean they are all the same. In fact, they can vary significantly in terms of the providers and consumers involved and the assets they focus on, ranging from accommodations to vehicle data or even initiating contacts. Digital ecosystems can adopt various business models, whether they are nonprofit or profit-oriented. They can facilitate business-to-business matchmaking (B2B), serve as intermediaries between private individuals (C2C), or operate with a combination of different relationship types. Government agencies can also play a role in these ecosystems.

The design possibilities for digital ecosystems are nearly limitless, as long as they remain attractive to participants and secure sufficient funding to navigate the startup and growth phases. This is why there is still ample space for the emergence of new digital ecosystems.

Digital ecosystems are powerful

Despite all the potential benefits, digital ecosystems can also entail risks, depending on how you look at them. These risks primarily stem from the self-reinforcing network effects that occur when digital ecosystems achieve success and attract a growing number of participants. On the one hand, this can lead to a concentration of power in the hands of the ecosystem operator. On the other hand, it often results in a limited number of successful competing ecosystems, typically only one to three direct competitors. Consequently, profits become centralized within the ecosystem service provider, potentially creating a situation where local providers become highly dependent on the ecosystem.

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Dr. Matthias Naab and Dr. Marcus Trapp, co-founders of Full Flamingo, an eco-tech startup, aim to leverage the power of the platform economy for the greatest possible impact on sustainability. Before 2022, they held senior executive positions at Fraunhofer IESE, where they played a pivotal role in developing and overseeing the field of “Digital Ecosystems and the Platform Economy.”

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