# Digital First Strategy:

## Finding the Right Roadmap for Healthcare Modernization

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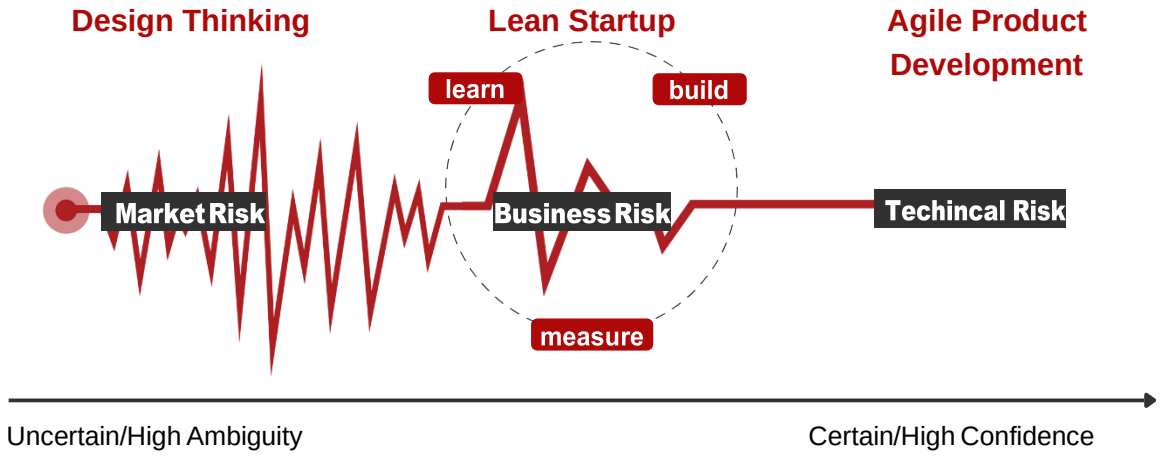
A journey is every bit as important as its destination. However, the journey frequently is down to preference; some relish the control coming from driving, others might choose to sit back on the plane and trust in the pilot, and others prefer a road with challenging obstacles such as running or cycling.

The same principle applies to digitizing healthcare, if it's a destination. To digitalize healthcare, every company has a different route to take depending on business needs, capability, and preference. The destination and its preferred route force many organizations to fast track their digital transformation efforts to meet the new consumer demands and improve productivity, all while still focusing on achieving growth.

In this document, Bio Farma outlines its digital strategy to arrive at its destination -digitized, integrated, affordable, and high-quality healthcare products and services. Bio Farma's digital strategy is outlined as: Innovation strategy, Technical strategy, People and process transformation strategy.

### Innovation Strategy

In a world of uncertainty, today's leading brands are creating promises not to just shareholders but to customers, employees and societies. Bio Farma plans to change its way of businesses to deliver incredible experiences to the people who matter most, patients, first. The powerful convergence of marketing and technology in today's marketplace means brands are no longer built through advertising, but through experiences. We connect deep human and business insights with the possibilities of technology to define and deliver new realities, creating experiences that can make better quality of life: easier, healthier, safer, more productive and rewarding life. Bio Farma's core digital strategy is to create an 'Innovation Engine' which adopts design thinking, lean startup, and agile product development.

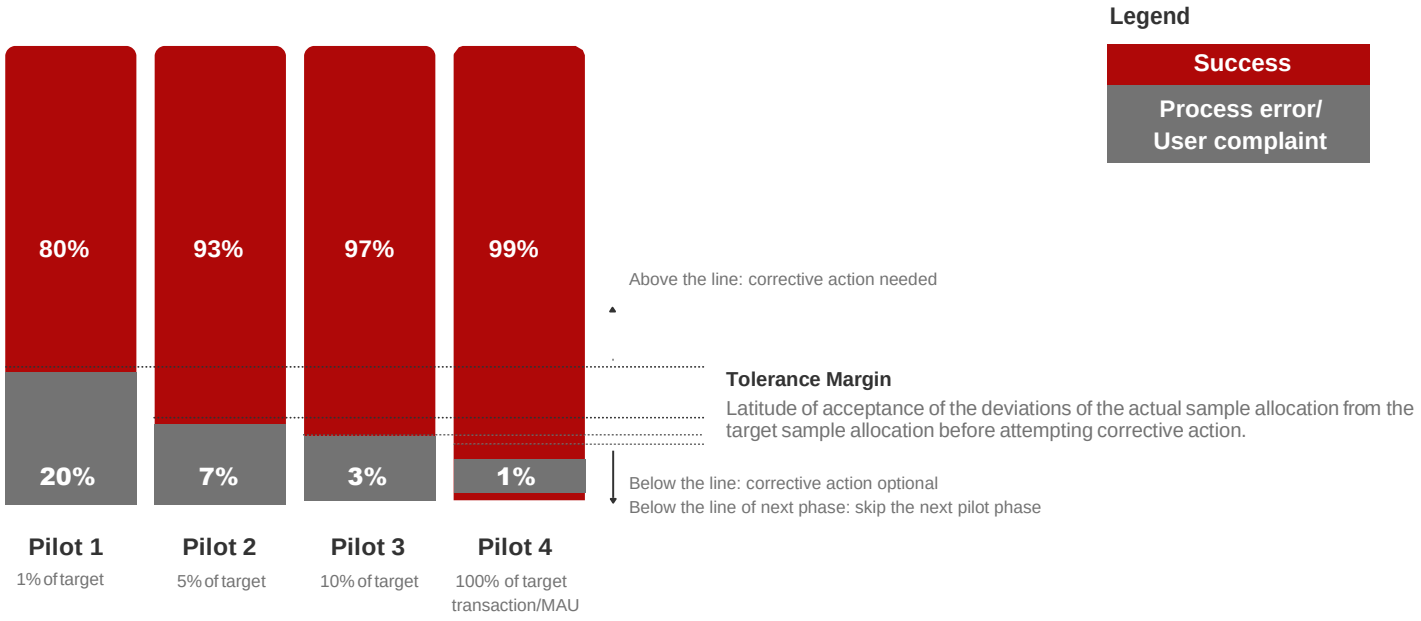



Design thinking is a standard approach when building digital solutions. Using this approach, Bio Farma can effectively confirm the problems and make sure that the solutions created meet -or exceed- user expectations, are technically possible, and while at the same time align with the business strategies:

- To ensure that the new and transformative innovations work on the market, our approach is to start with a minimum viable product (MVP), execute pilot on a small scale, and make it perfect on the go. This approach also allows risks to be managed and mitigations to be developed properly.
- To support agility and continuous improvement, we need to tolerate some degree of hurdles to create a resilient, innovative team who is comfortable (and holds ownership) for failures in piloting. Therefore, we adopt the strategy of tolerance margin and multiple phased pilots as depicted below.

**Setting standardized tolerance margin and multiple phased pilots to support business agility**

**Agility and continuous improvement from 'comfortable' failures**




In establishing Innovation Engine, Bio Farma will adopt two approaches:

- **Consulting approach: Bio Farma Digital Consulting Team**

This method utilizes streamline innovations by means of (i) a need assessment from business process analysis, (ii) innovation generation using the design thinking, lean startup, agile product development framework, (iii) stakeholder management, (iv) implementation through multiple phased pilots, and (v) evaluation. The consulting team consists of a team dedicated to Bio Farma innovation engine sourced from both internal and external resources.

- **Innovation crowdsourcing approach: Bio Farma Digital Lab Fellowship**

Bio Farma Digital Lab Fellowship is a formal Bio Farma program to talent-seek future company's digital transformers sourcing from internal Bio Farma. This fellowship is not only aimed to raise digital awareness internally and create unstoppable competitive innovation, but alsoto generate 'painkilling' innovation from senior to junior employees who understand the main pain points of people and process in Bio Farma. This program includes but is not limited to 'Sayembara Digital' competition and 6-month long paid fellowship with 8 hours a week commitment.

## Technical Strategy

The ultimate goals of Bio Farma's digital strategy are to create deep integrated dots of all products and services, support business agility, andcreate new values by creating innovation with highest accessibility and highest adoption possible. For those to be achieved, we need to specify the core strategies necessary to be adopted.


The journey to the cloud is underway for many organizations, whether it is rehosting legacy applications or refactoring and rewriting applications for the new cloud environment. Some organizations are also replacing existing core legacy applications with Software as a Service (SaaS) applications.

Bio Farma is no different, we decide to go with the Cloud- first strategy to support our business strategy as well as to transform our current business offerings.

Technically, the ultimate goal of the Cloud-first strategy is to ensure that all digital solutions are robust, scalable (auto-scale), efficient (pay as you go), serverless, easy to manage and enabling business agility. Step taken by Bio Farma to achieve this objective include conducting an optimal and practical cloud-first study properly and assessing which applications are on-site or in public/private clouds, and where they will reside post-migration.

This means that Bio Farma needs to understand how its digital solutions are designed, will be accessed, where the data resides, and how data flows to and from the application. It is also important to ensure that data retention and use meet the compliance scrutiny of regulators such as the Ministry of Health, the Ministry of Communication and Information Technology, the National Agency of Food and Drug Control, and others.


Some organizations are creating a portfolio of Application Programming Interfaces (APIs) from a consumption standpoint, such as for mobile apps and self-service portals. Others are integrating cloud-based and cloud- native apps, along with existing legacy enterprise apps for seamless connectivity between back-end and front- end systems. Bio Farma believes that to build deep and integrated businesses ecosystems with robust digital tools and processes, APIs are among the most critical parts of all. A strategic intent to expand the business ecosystem and/or create new business opportunities and channels to reach new markets, improve efficiency or improve customer experience forces Bio Farma to look to discover, create, and deploy APIs.

The APIs, which are consolidated under one hood called API-Factory, will play an important role as an engine connecting all dots of healthcare products and services provided by Bio Farma.

However, before going into detail of API-Factory, Bio Farma needs to define its digitally-enabled business goals. It may wish to improve efficiency, build new revenue channels, and improve the customer and employee experience. An assessment of Bio Farma's readiness to transform, including what steps are needed to put that readiness in place, needs to be conducted.

One of the crucial technology assessments needed to be conducted is assessing how an API-led integration approach can address the integration flows required to satisfy the business use case. This also allows for the exposing and unlocking of siloed data and services, opening them for broader consumption by internal and external customers, as well as covering reusability, security, and governance requirements. Moreover, easy access and reuse for developers will be available while still giving IT visibility into security and control over how APIs are used.

The ultimate technology goal for the API-Factory is leading to the creation of reusable technical components and services, connected with purpose-built APIs, as a foundation for an agile, flexible technology infrastructure. This concept may be new for the healthcare industry, but it is not the case for the other, even high-regulated, industry such as finance. For example, Bank BRI, one of the largest banks in Indonesia, drove over $50M in new revenue through Apigee by creating an API product marketplace with more than 50 monetized open APIs for over 70 ecosystem partners in credit scoring, business assessments, and risk management.


With the exponential increase in the importance of mobile phones inmodern society, it has become important for enterprises to focus on mobile. Thus, prioritizing a good experience digital touch point is crucial. Moreover, the mobile-first strategy will likely become the norm, due in part to the decision of major solutions, if not almost all, to prioritize the mobile version of websites or mobile apps.

With a mobile first strategy, a web designer or mobile app developer will build a digital solution given the constraints of a mobile platform (small screen, slower processors) and at the same time given its strength of being highly accessible anywhere anytime.

Bio Farma decides that interfaces of all legacy systems need to be converted into mobile friendly, and all new ones must be designed for mobile devices. Getting into detail, all concepts of Responsive Web Design (RWD) or Progressive Advancement & Graceful Degradation must be familiarized by all Bio Farma team members.


A different approach is needed where there is reliance on monolithic legacy infrastructure and applications, as in some cases at Bio Farma and its subsidiaries. Many organizations are entirely refactoring their legacy systems and moving forward with a microservices and API-based architecture. This is not always practical – others might need to implement an integration layer to integrate services and APIs with modern technologies.

The same principle applies at Bio Farma. Identification of which systems can be transformed into a more modern and agile API-based architecture is a necessary step for the overall digital transformation. Then, a business case for modernization is developed to show all investments related to technology modernization have significant business impacts. This will involve identifying the core data residing on the legacy systems, and then working out the time and effort needed to extract it.

## People and Process Strategy

Bio Farma's digital strategy is underpinned by 3 functions (enhancer, enabler, automator) and 3 focuses (new product, supply chain, customer experience).

In function, the concept is equivalent but not equal to the

concept of 'digitization, digitalization, and digital transformation'. Those 3 functions are digital strategy as:

### People and process' enhancer

Digital as an enhancer is defined as the function of the innovation to enhance the quality of information stream in specific corporate's people and process. This is similar with digitization.

### People and process' enabler

Digital as an enabler is defined as the function of innovation to enable a sustainable new business model, create new values, or establish a new model of operation. This is similar with digitization and digital transformation.

### People and process' automator

Digital as an automator is defined as innovation that enhances and enables less human-dependent processes.

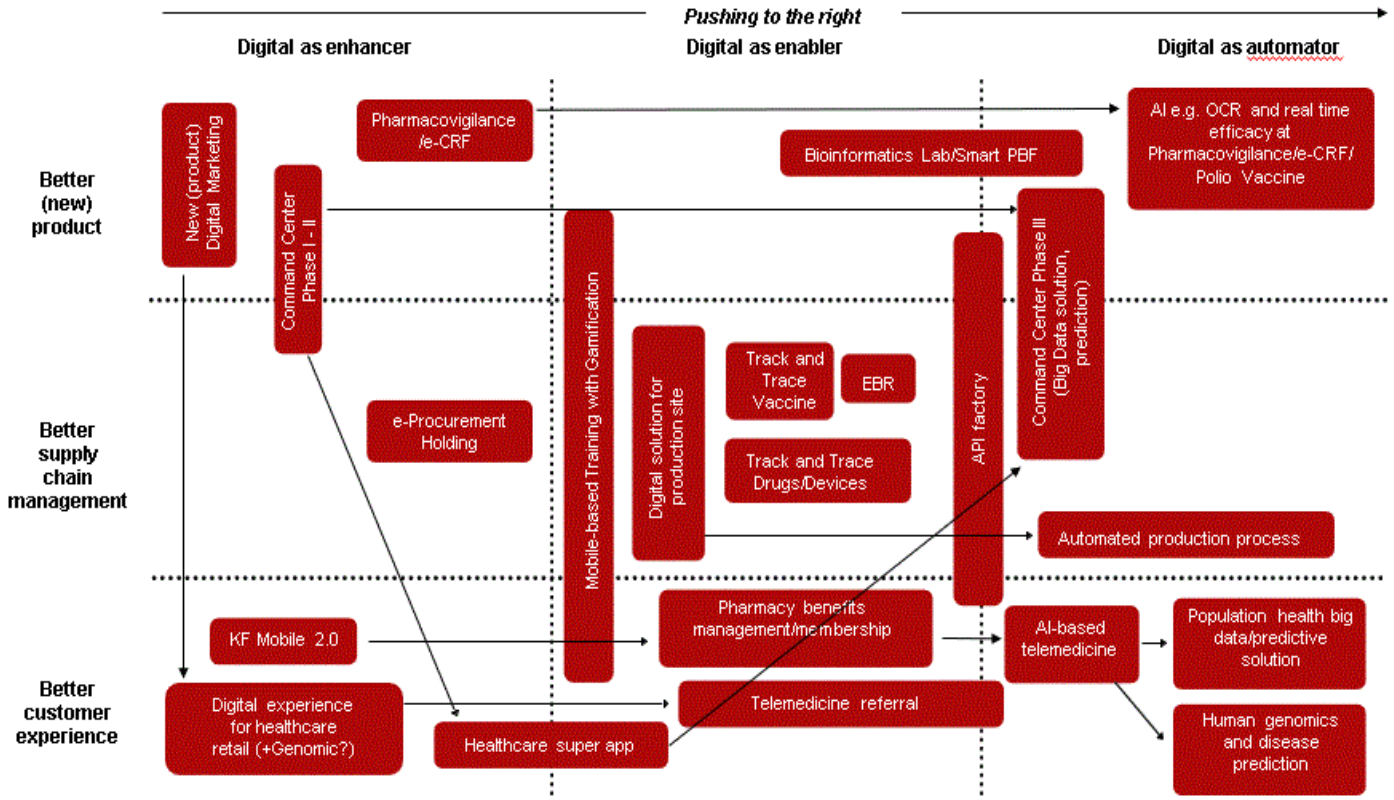
**In focus, similar to the functions, the 3 focuses are not mutually exclusive.**

**There are some intersections between some focuses and some functions. The 3 focuses in Bio Farma's digital strategy are:**

Those functions and focuses intersect into the 9 quadrants depicted below. Bio Farma's digital innovations 2021-2022 will fall into one or more quadrants. The phased projects will gradually push the initiatives and innovation to the right, from enhancer to enabler and ultimately to automator.

## Pushing the initiatives and innovation to the right

### Creating unstoppable innovation through incremental digital transformation




To build a successful digital transformation at Bio Farma, digital mindset and culture will be nurtured in all employees through the following approaches, among others:

- Innovation crowdsourcing: Bio Farma Digital Lab Fellowship (refer to the Innovation Strategy section).
- Digital training with gamification: Creating a competitive learning environment to trendsetting digital mindset and improve employee's analytical skills especially on data-driven decision making. In the next phase, this training will allow an integration to the HR system, performance review, and even a career path. AI and analytics will also allow the trainees to get instant feedback, coaching, and report.

## Trendsetting the digital mindset across organization with highly engaging andragogy

### Digital training gamification

#### Phase 1

**Creating competitive learning environment to trendsetting digital mindset and improve employee's analytical skills especially on data-driven decision making. First phase including incentivization using leaderboard, team quiz challenge, or monetary (optional).**

*Duolingo and Apple Health applications

#### Phase 2

**Stakeholder and management buy-in-will lead to its integration to HR system, KPI, performance review, and career path.**

#### Phase 3

**AI and analytics:**

- **AI-based feedback**
- **AI coaching**
- **Company training report**

Benefits:
- Creating digital habit and culture
- Cheaper training cost for 15.000+ employees
- Higher employee engagement