

Digital Thought  
Leadership  
Report 2023

# 5 shifts to Digital Personalized Healthcare

# How the technology shifts of the last 20 years can pave the way for a new personalized digital health system

Written by Ian Coyne  
Consulting Partner  
Coulter Partners

**“There are three key pillars to healthcare – access, affordability, and impact. What digital health allows you to do is massively increase access and massively reduce cost, and by combining traditional treatments with digital components, you increase the impact.”**

— Steve Roest, CEO & Founder @ PocDoc and Host of HealthTech Hour

To see the **future**, it can be helpful to look back at the technology revolution that has happened since the year 2000.

- **From no connectivity to constant connectivity**
- **From content absorbers to content creators**
- **From fragmented technology to an integrated near seamless technology ecosystem**
- **Exponentially decreasing hardware and software costs**
- **Transformation of key industries like banking, communication, media and retail**

To learn where the digital personalized health landscape is today, we spoke to experts in their area and in the market.

This group brings a diverse set of viewpoints from different layers of the patient experience within the health system.

While digital has started to drive change in many areas of health, there is a recognition that this is the start of the journey. The personalized health landscape is currently immature, in the same way the technology landscape was at the start of the 2000s.

**The state of personalized health today:**

- **Fragmented landscape of technology and digital solutions**
- **An ecosystem which is not mature enough to bring together multiple stakeholders**
- **A data landscape where information is not being used for the benefit of the patient**
- **An in-person and synchronous healthcare system based on availability**
- **An open loop between the patient and the health system**

Between 2000 and 2020, we saw rapid growth and sustained behavior change across all areas which were enabled by technology innovation.

It must be acknowledged that health is a significantly more complex challenge on multiple levels.

However, there are five significant shifts that the diverse view of our contributors coalesced around. These shifts are not independent of each other and will each mature at their own pace.

However each of these shifts represent a significant improvement in the ability to provide a truly personalized digital health experience.

This experience can be summarized when viewing the growth of consumption among different digital media/devices such as:

**Internet Connections**

**Mobile devices**

**Global eCommerce sales**

**Facebook users**

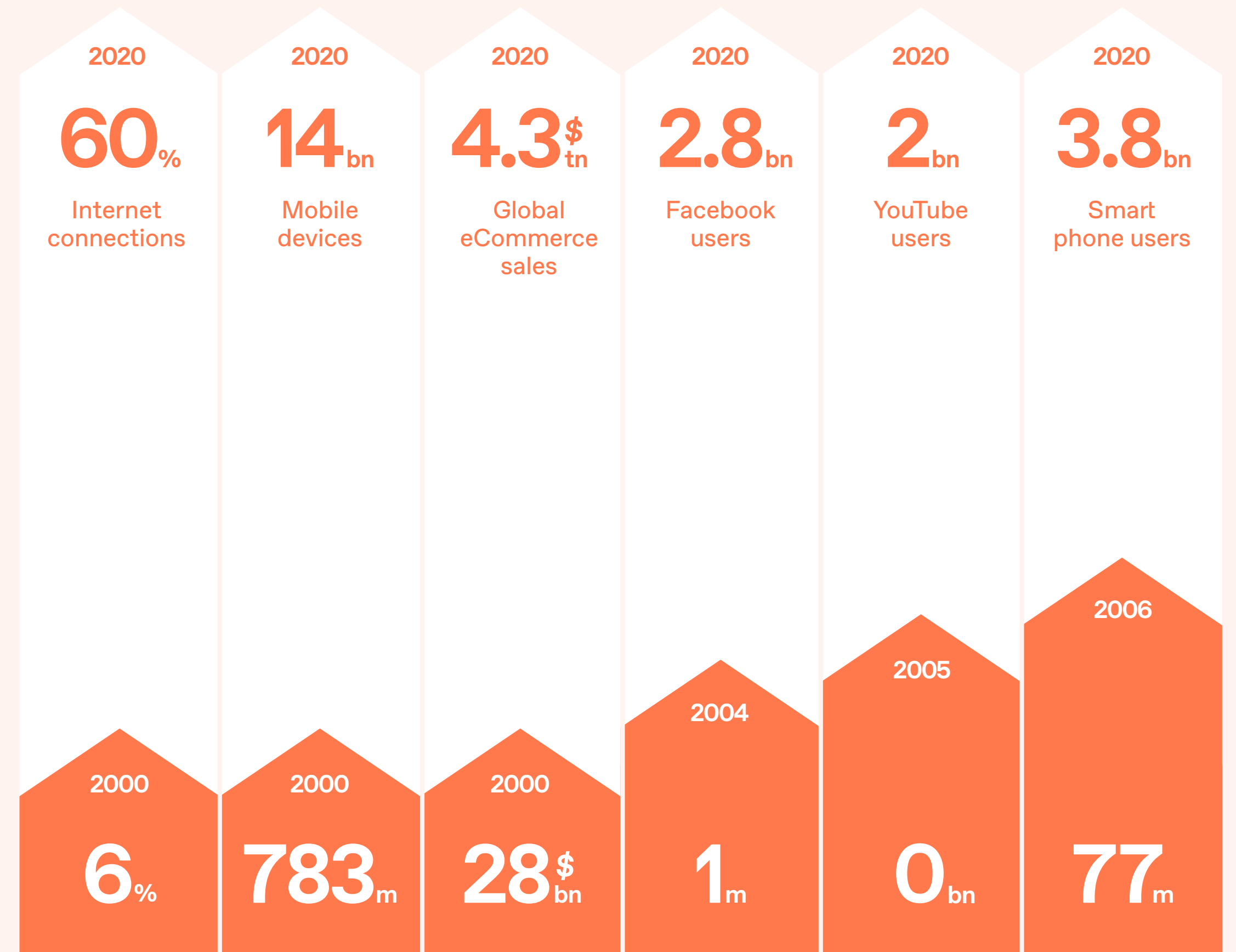
**YouTube users**

**Smart phone users**

The graph to the right represents these examples **respectively**, illustrating the shifts over a two-decade period from 2000-2020.

In the next chapter we will start exploring these shifts more deeply by discussing the drivers, benefits, and empowering technology to discover how this transformation can shape the future of healthcare.

Between 2000 and 2020, there have been shifts in how consumers engage, create content and interact across key areas of their life.



01

From

**Silent Patient**

To

**Smart Patient**



“Given Amazon’s recent healthcare acquisitions, expansive platform, and deep consumer expertise, it is well positioned to provide a highly compelling, vertically integrated service that offers a convenient, holistic healthcare experience for patients vs the fractured one we all feel today.”

— Mia Jung, Talent Partner at  
Welsh, Carson, Anderson & Stowe

Much like the consumer revolution, digital and technology will create a ‘Smart Patient’. The opportunity for a patient to create data, provide feedback and to interact with their own health in a different way will allow a new level of patient centricity and personalized treatments.

Digging deeper, a smart patient would be defined by the model on the right.

Where previously an individual would only be seen as a patient at the point of clinical intervention, the new relationship manages health continually. To make this move, care also needs to be thought of as asynchronous rather than only appointment based.

The biggest enabler for this is the global penetration of mobile and smart phone usage which in 2020 stood at 68% and 49% respectively, according to a report by GMSA Intelligence.

#### Attributes of a Smart Patient:

When we ‘define’ a smart patient, these are attributes we give that patient

- **Personalized medicine based on known details of the patient**
- **Managing their own wellness rather than managing sickness only**
- **Accurately collected consumer biomarkers of both mental and physical health**
- **Understanding the full picture of any treatment or illness, well ‘beyond the pill’**
- **Rich and accurate data fed back into the healthcare system and to the care provider for the individual and retail**
- **Portable, understandable data which can be passed between systems in a secure way and controlled by the patient**

This shift happened in the consumer world when the internet went from Web 1.0, with few content producers and the majority of users as readers of content, to Web 2.0 where users created and interacted with content. We are at a point now where the technology exists to allow patient 1.0 to become patient 2.0 – a smart patient.

A smart patient requires very good data. The final point made in the Attributes of a Smart Patient – is an important one. Patients will be willing to share their data if they know that the only outcome of doing so is a more personalized, more affordable, and accessible care service for themselves.

However if, like other centrally collected data, that information is used for other decisions which are not known or understood by the patient, this can carry huge risks. This drives the need for modular, easily understood data transactions that a smart patient makes knowingly, in exchange for an improved health experience.

Expert perspectives from our contributors:

“ The success of a treatment and the efficacy of all drugs will be improved by the autonomous ownership of health data by the patient. The difference between a patient and a consumer is informed choice based on generally good data. Being a consumer means you can advocate for yourself with advice from a clinician. **Caoimhe Vallely-Gilroy, Global Head of Digital Health & Therapeutics at Merck**

“ We have seen the big topics play out in the 2000s. The 2000s were all about information. The 2010s were about health platforms and 2020s is the production of health data at home. **Edouard Gasser, CEO and Co-founder at Tilak Healthcare**

Smart Watches

1%



Smart Phones

49%



Mobile Phones

68%



These figures represent the percentage of the global population who own each device.

02

From

Open Loop

To

Closed Loop



“If you are going to use software to treat a disease, it has to be done in the right way and with the right rigor. Our goal is to ensure a robust industry foundation.”

— Megan Coder, Chief Policy Officer  
at Digital Therapeutics Alliance

In the 2000s the term ‘big data’ was coined for the tidal wave of data that people began to generate as internet penetration swept the planet. Personal data, location data, browsing data, purchasing data, and social data all came together to create an ultra-personalized online experience.

The main challenges for ‘big data’ at that time were the three V’s: volume, velocity and variety. People were unable to make sense of this at scale. As compute power and connectivity accelerated, these were overcome to deliver us to where we are today.

Healthcare adds another **V** to the equation – **validity**.

Closing the loop between the patient and the health system has the potential to transform the patient experience and move from a reactive and generic health experience to a proactive and engaged one.

The majority of pharmaceutical drugs are dispensed with a titration which is based on the whole population. “Take one pill three times a day before meal time”.

This is indicative of the open loop between the patient and the health system and provider.

If we look at the world of retail, or any service environment, the idea that you would never seek feedback from your customers based on their experience would lead most businesses to fail in the very short term.

Basing your product on a set of data captured from one group of customers, dating back to when you first released your product, is not an accurate reflection of the current experience customers have of your product and services. This should be accounted for when applying the same feedback and guidance to every other patient.

Taking the “5 rights” of medication administration in the UK;

Right patient, Right drug, Right dose, Right route, and Right time, all of these can be improved by a closed loop between the patient and healthcare system.

**What our expert contributors had to say:**

“ I am convinced that in the future, when my daughters are grown up, they will be amazed to know there was a time when medicine was not tailored by dose to the individual, just in the same way that the current generation could not imagine a world without the internet. **Hakim Yadi, PH.D.OBE, CEO & Co-founder at Closed Loop Medicine**

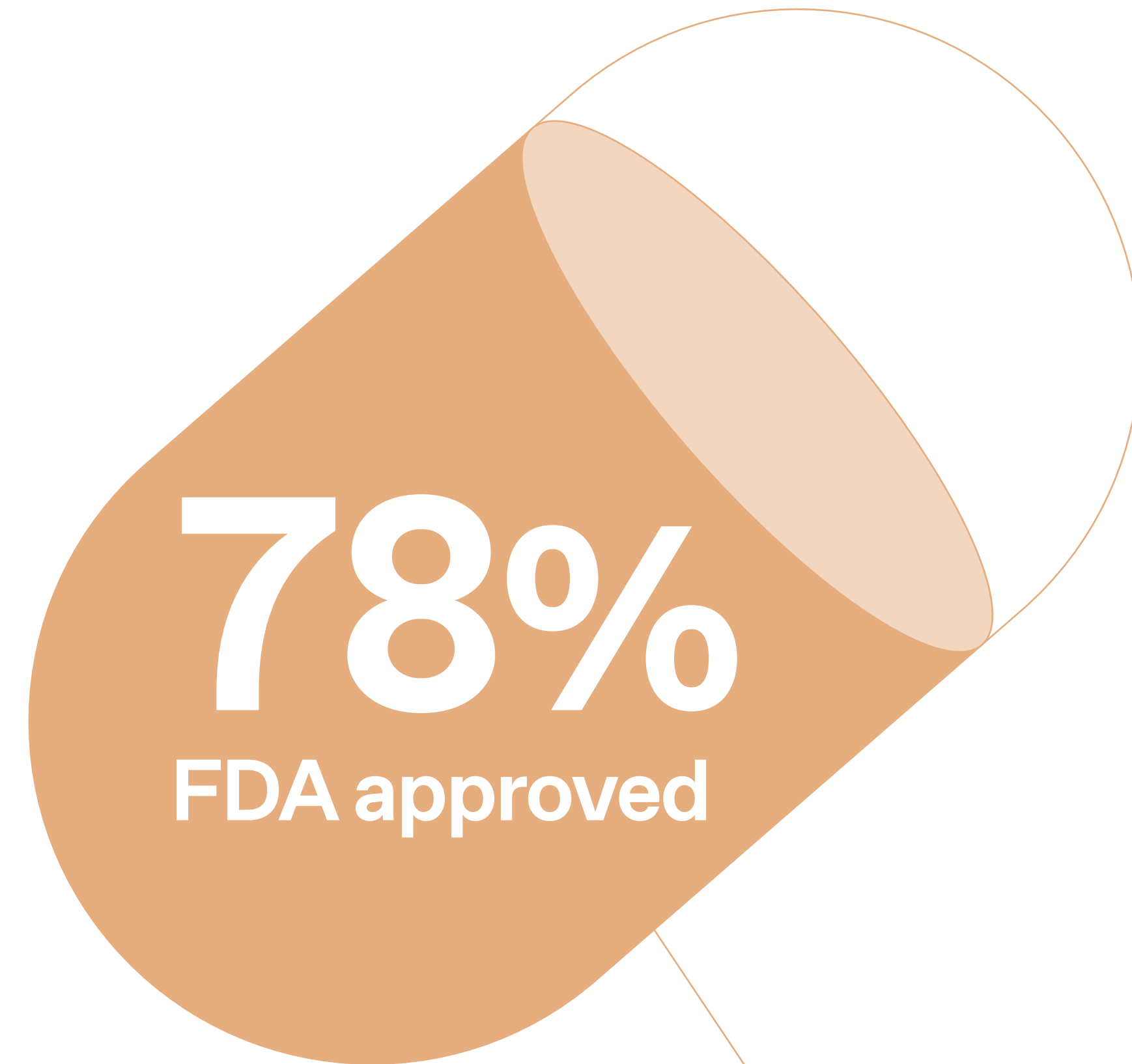
If we look across the main stakeholders within the ecosystem, everyone benefits from a closed loop between the patient and the health system.

For the clinician, there is an asynchronous and reliable way to understand the progress of a patient who has been prescribed a treatment.

For the health system as a whole, the data gathered on individual patients can help drive richer patient insights which may vary vastly by attributes that seem in no way medically linked; like geography or financial situation.

A study that looked into a drug dosing regimen showed that from 2013 to 2017, 78% of drugs approved by the FDA had a single or one-size-fits-all dosing regimen. This was regardless of individual patient characteristics such as age, gender and weight.

For the provider, whether that is pharma, diagnostic or medtech, there is an opportunity to not only gather real world data, but enhance that real world data. The majority of digital therapeutics will gain input from the patient on areas like mental health, sleep and other consumer biomarkers that can bring a data set which reflects the real **real** world.



From 2013 to 2017, 78% of the drugs the FDA approved had only 1 dosing regimen.

From

**Sick Care**

To

**Health Care**

03

**“The challenge of prioritizing preventative care is that it requires the health system to take a bit of a leap of faith and follow a test and learn approach. Moving to this requires changes in culture, communication, and engagement, but also regulation. From a purely financial perspective, shifting from cure/management to prevention is an imperative.”**

— Kate Newhouse, COO and Board Member at Kooth Plc

Over half of older adults suffer from hypertension. A condition that is both preventable and in many cases reversible without the need for any clinical or drug intervention.

Further to this, the cost of dealing with a chronic disease, from a health system perspective, increases exponentially with each multiple chronic condition.

The NCOA shared that 58% of older adults suffer from Hypertension (High Blood Pressure) and that the five ways to prevent or reduce this are all entirely drug free and are related to a persons lifestyle.

These are reducing weight, regulating stress levels, limiting salt and alcohol consumption, exercising daily and checking blood pressure regularly.

Digital healthcare can play an instrumental role moving people from engaging with health services at a point of critical need to engaging with their health on a daily basis.

Call it what you will: Wellness.  
Preventative Care. Healthy living.

Patients today want to know where they are on their health journey and most would improve their health if they had the information and opportunity.

Wearable devices provide what are often known as consumer biomarkers including – weight, activity, steps, heart rate, blood oxygen, heart rate recovery, fertility and menstrual cycles.

More and more research is showing that these biomarkers, combined with regular patient interactions which show cognitive ability can predict the onset of neurodegenerative diseases. In the area of preventable chronic conditions, the opportunity is even higher.



Patients can be engaged in their own health.

If we step into the tech world, the average social media user spends 35 minutes per day on Facebook and a further 53 minutes on Instagram.

Nearly half of all Gen Z and Millennials are using social media to research new products – higher than any other platform.

Over 1.5 hours per day is dedicated to social media usage. On top of that, a 2022 survey showed that the average US consumer spent over \$200 per month on media subscriptions, none of which related to their health.

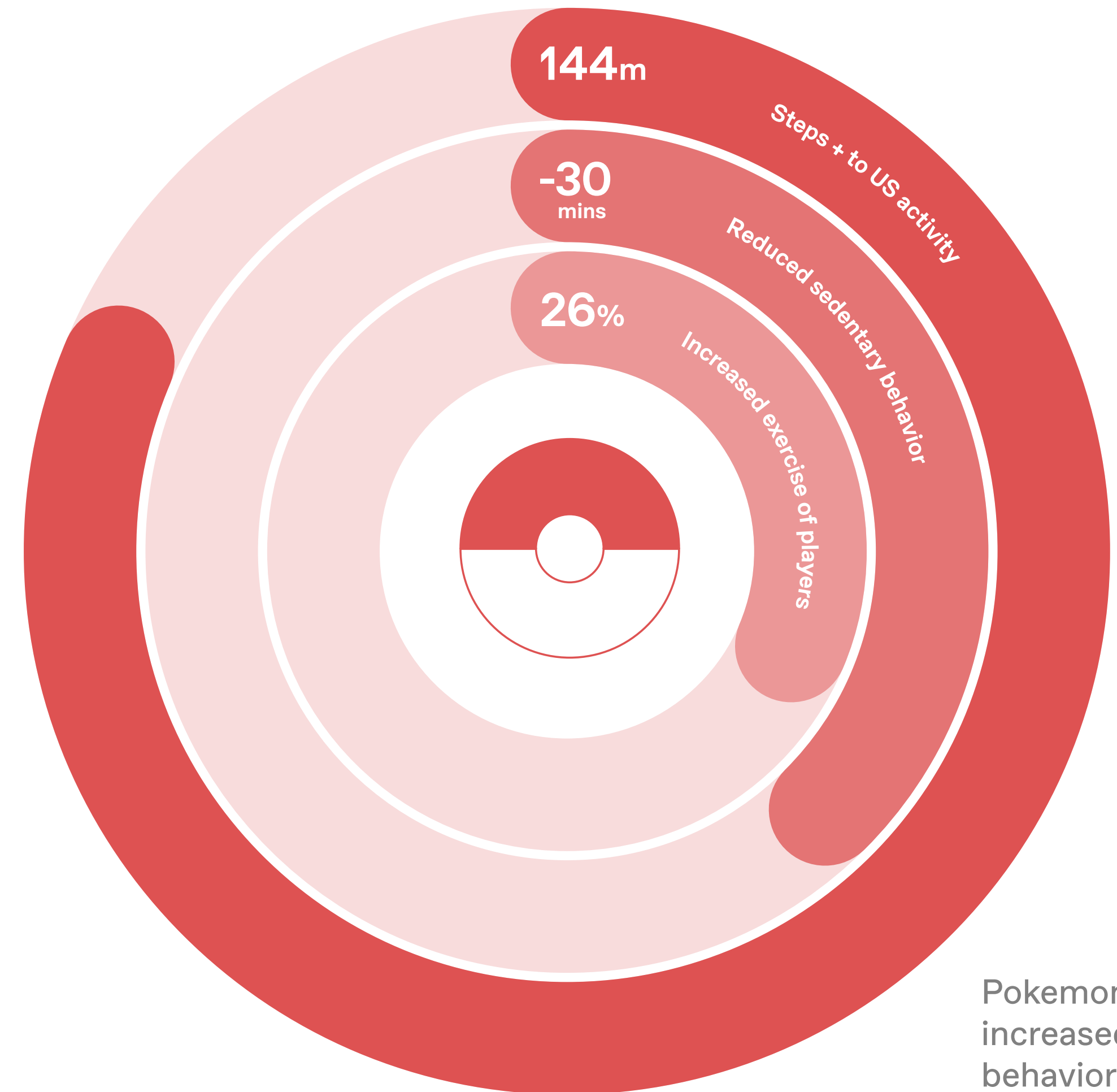
While it is recognized that social media is not universally a good thing, particularly in relation to mental health, these platforms are able to get users to engage, discover and interact with content and people.

**Pokemon Go:  
A successful digital therapeutic?**

While no longitudinal studies exist for the health benefits of Pokemon Go, which was released in 2016, its success fully drove healthy behaviors of millions of individuals.

**Specific studies showed that the VR game:**

- **Added 144,000,000 steps to US activity in the summer of 2016**
- **Reduced sedentary behavior by 30 mins per day**
- **Increased exercise of dedicated players by 26%**
- **Reduced psychological distress in adults**
- **Improved social connectedness**
- **Improved intelligence in cognitive performance in teenagers**



Pokemon Go increased healthy behaviors of millions of individuals.



From **Fragmented Platforms**  
To **Personal Platforms**

04

There are 2 stages of tech ecosystem evolution. First there is a period of fermentation where different technologies compete for dominance. Then the dominant design emerges as a combination of technologies that people say “this is a standard we want to adhere to”.

— Andrew Shipilov, Professor of Strategy and Area Chair, Strategic Management at INSEAD

Today, interoperability across the internet is a given and happens pretty much seamlessly. There are standards and platforms for key basic interactions like connectivity, messaging, internet browsing, payments and authentication.

The maturity of interconnectivity within the healthcare system lags far behind where the internet is today. There is a huge amount of fragmentation and very little standardization, even within well controlled ecosystems like country health systems, health insurers or hospital groups.

Meanwhile Apple, Amazon and Google continue to make inroads into health, health data and patient experience. These are driven by standards and APIs into their technology and platforms.

While parallels can be drawn between the growth of data and interoperability across the internet, there are specific differences when it comes to patient and health data to traditional consumer data.

### Complexity

Health data is an order of magnitude more complicated than consumer data. This is particularly true in areas of data which are self-reported, like pain levels and mental health.

### Sensitivity and Privacy

While some decisions in relation to individuals are made based on health data (for example, pricing of life insurance) they tend to be based on generalized data limited to either demographics or age and reported wellness.

### Specificity

A vast amount of the ‘big data’ surrounding individuals lends itself well to consumer generalizations and personas. If incorrect, the information carries a fairly low risk rate. If one was to advertise men’s shoes to a female audience, this would not impact the long term health, or quality of life, of an individual.

Expert perspectives from our contributors:

“ Combining health data with consumer data presents a very powerful data set. However, health data is overarchingly more sensitive in subject matter than other forms of data; such as Internet, consumer or even financial data. **Kiran Roest, Co-founder and Chief Strategy Officer at PocDoc**

“ Are you person centric or disease centric when you look at the data **Pin Chin Kwok, Former CEO at Savonix**

When using Google Maps, if you try to navigate to the grocery store, Google helpfully will tell you when that store is open, and if there is a risk that it will close before you arrive based on your travel time.

This wasn't something that was asked of Google maps, but Google inferred that we are driving to a shop, to enter that shop and purchase something, and to know if that is possible would be helpful.

When we asked participants if Google Maps should offer wellness and health advice in the same form, the answer from our contributors was universal:

**Making it real – Should Google maps provide health advice?**

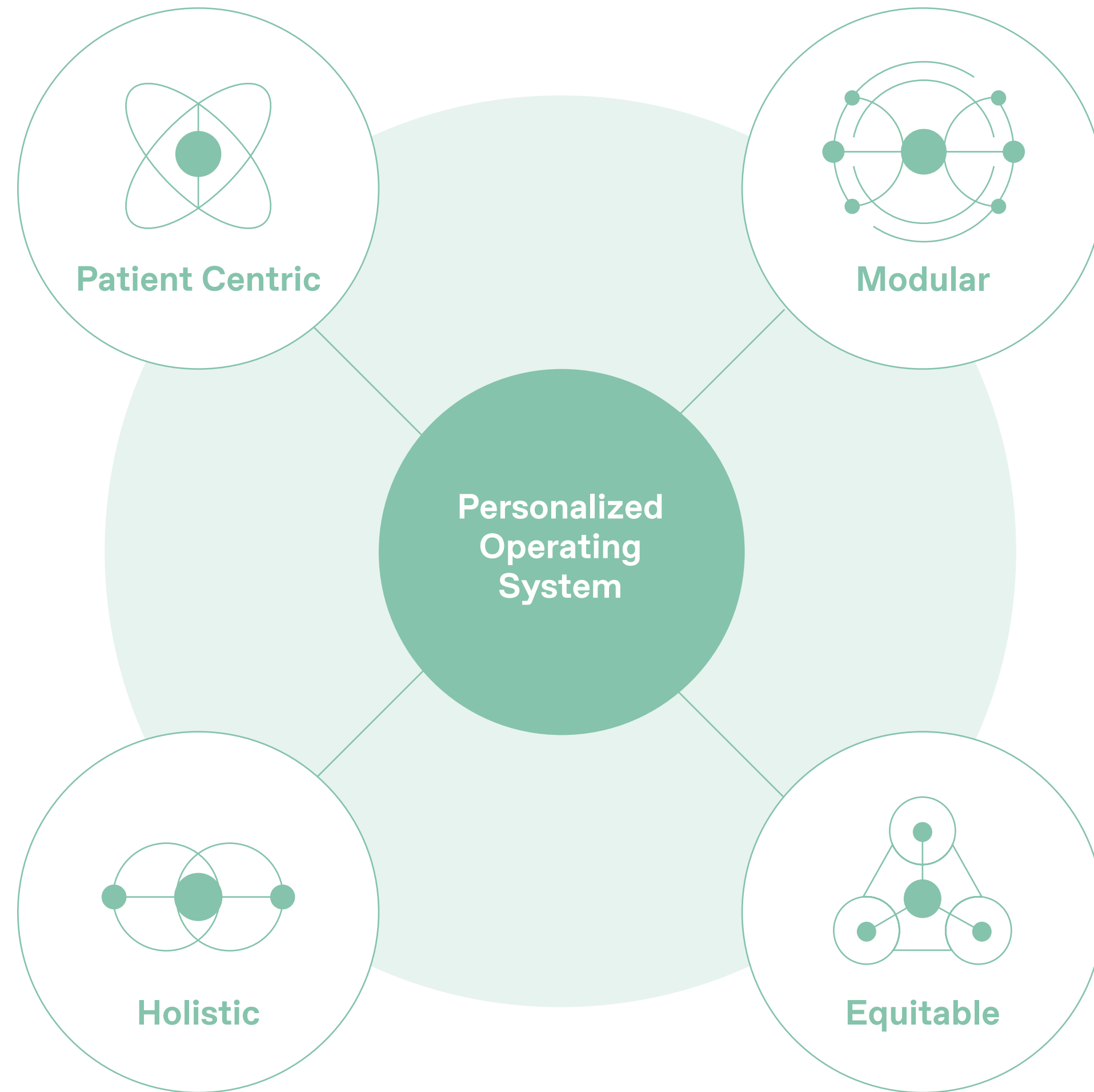
To bring this to life, we posed a theoretical question to our contributors regarding integrating health data into personalized Google Maps



**If Google knew I had high blood pressure and was 20-30lbs overweight, and used maps to navigate to a fast food outlet at 10pm, would it also be helpful to challenge the user on that decision based on their health?**



**The overriding answer was ‘yes but only if I chose what I share’**



**Designing a personalized operating system:**

**Patient Centric**

Much of the health and pharmaceutical world is disease centric, not patient centric. The consumer world has still not solved the challenge of multiple user profiles despite decades of work. The first step to a personalized platform is the ability to view data and disease from a patient centric point of view, without silos.

**Holistic**

Most forward looking digital patient apps today recognize the need to go beyond compliance and adherence. Most medical conditions come with wellness, lifestyle and mental health implications which can also be managed and improved via digital engagement.

**Modular**

Patients will need to build trust in the sharing of health data over time. While that journey happens, patients should be able to decide what data they share with whom, and for how long.

**Equitable**

While smart watch sales continue to grow at around 10-15% per year, these devices are largely inaccessible for the population, even more so when you look at the link between financial security and health. Therefore, any connected patient ecosystem must be as accessible as current health systems. In fact, digital solutions have the opportunity to make these systems more accessible and affordable for all.



05

From

Centralized Healthcare

To

Decentralized Healthcare



**“We are building medical treatments delivered through a mobile app to the patient. But this isn’t the end game – it is about meeting the patient where they are today. It just so happens mobile phones are the most popular and distributed personal channel.”**

— Olafur Viggosson,  
CPTO at Sidekick Health

The Covid 19 pandemic forced a decentralization of healthcare that most of our interviewees think would have taken 10 years to happen otherwise.

In 2019, if you asked most of the general public if they would feel comfortable and confident in administering their own lateral flow tests and trusting the results, the answer would have been a resounding ‘no’.

Companies like Babylon and DoctorLib had been trying to move patients to taking online care as a serious way of connecting with health professionals for half a decade, and overnight it became the only solution for many people to access healthcare.

However, while the access point changed, the system underneath it did not change significantly. The delivery of healthcare is still a primarily centralized, appointment based and clinically administered model. This is where digital health companies can disrupt and rewrite clinical pathways.

There are several underlying technologies and shifts that are driving this move from a centralized, appointment based care model to a continuous, asynchronous and decentralized model.

**Digital Therapeutics** show significant promise in increasing patient adherence, lifestyle choices and mental health; while also providing significantly better data back to the clinician and healthcare system, closing the loop back to provide better and more personalized care.

**Asynchronous healthcare** uses technology that has been in existence since the 1990s. The idea that healthcare can now be asynchronous, as opposed to in person, and in a sequential clinical pathway will mean care can be provided in different places and at different times. One space that has shown this promise is mental health. These applications have already shown that clinically validated outcomes can be delivered without the need for the patient and clinician to be available at the same time and same place.

**The Miniaturization of MedTech** is moving more and more diagnostics and devices out of centralized clinics and into the home – much like mobile phones and computers continued to become cheaper, smaller and more powerful, the same will happen with medical devices and diagnostic ability that will allow more, and more frequent monitoring and treatment from the home.

**Internet of (medical) things** is transforming the capability of decentralized health care and improving the experience for the patient, which is key in all of these drivers. Deloitte predict that by 2027, close to 70% of all medical devices will be connected to the internet.

**Shifts to a decentralized model**  
While fully digital and decentralized healthcare is beyond the horizon, there are five levers which will enable this shift.

Expert perspectives from our contributors:

“ There will always be a physical or clinical interaction, but technology is removing the friction in the system, creating capacity, and improving access. **Steve Roest, CEO & Founder at PocDoc and Host of HealthTech Hour**

Highlighted to the right are the **shifts underpinning centralized to decentralized care:**

**From**

**To**

**In Clinic**



**At Home**

**Physical First**



**Digital First**

**Synchronous Care**



**Asynchronous Care**

**Critical & Extreme Intervention**





**Constant Intervention**

**Availability Based**



**On Demand**

<h1>Big Shift</h1> 	<h1>Micro-From</h1> 	<h1>Micro-To</h1>
<p><b>From Silent Patient To Smart Patient</b></p>	<p>Physical First Disease Centric Patient</p>	<p>Digital First Patient Centric Consumer</p>
<p><b>From Open Loop To Closed Loop</b></p>	<p>Drugs Only Drugs Only Exclusive Technology</p>	<p>Drugs Plus Digital Treatment Via Digital Accessible Technology</p>
<p><b>From Sick Care To Health Care</b></p>	<p>Occasional intervention Opaquely Adherent Exclusive Technology</p>	<p>Constant intervention Actively Compliant Accessible Technology</p>
<p><b>From Fragmented Platforms To Personal Platforms</b></p>	<p>Patient Data Aware Siloed Data</p>	<p>Consumer Data Rich Integrated Data</p>
<p><b>From Centralized Healthcare To Decentralized Healthcare</b></p>	<p>In Clinic Siloed Data Synchronous care</p>	<p>At Home Accessible Data Asynchronous care</p>

**Each of our contributors** brought deep knowledge to one or more of these big shifts. They also highlighted the micro shifts that underpin these which are highlighted to the left.

There is momentum behind, and innovation happening for all of these shifts. Therefore the move to a personalized health system is a case of when, not if this innovation happens. While health cannot move at the same pace as the consumer world, the lessons from the 2000-2020 period show that innovation and sustained behavior change can happen.

This health system has the possibility to be more accessible, more equitable, more connected and more efficient than the current system.

Thank you again to our contributors for their time and work towards a brighter future.



Thanks to our contributors whose knowledge and insight made this report possible.

**Who we are:**

We are executive search and leadership development specialists working to build a better future. As advisors and consultants to companies at the cutting edge of Life Sciences, Health and Technology, we are united by our mission to build teams that change the world.



Andrew Shipilov  
Professor of Strategy and  
Area Chair – Strategic  
Management @ INSEAD



Caoimhe Vallely-Gilroy  
Global Head of Digital Health &  
Therapeutics @ Merck



Edouard Gasser  
CEO and Co-founder @  
Tilak Healthcare



Hakim Yadi Ph.D. OBE  
CEO and Co-founder @  
Closed Loop Medicine



Kate Newhouse  
COO and Board Member  
@ Kooth Plc



Kiran Roest  
Co-founder and Chief  
Strategy Officer @ PocDoc



Megan Coder  
Vice President of Global Policy  
@ Digital Therapeutics Alliance



Mia Jung  
Talent Partner @ Welsh,  
Carson, Anderson & Stowe



Olafur Viggoisson  
CPTO @ Sidekick Health



Pin Chin Kwok  
Former CEO @ Savonix



Steve Roest  
CEO & Founder @ PocDoc and  
Host of HealthTech Hour



Ian Coyne  
Consulting Partner @  
Coulter Partners

# Building teams that change the world



Anne-Monika Durk  
Client Partner



Hannah Musisi  
Executive Director



Ian Coyne  
Consulting Partner



Jason Turner  
Director



Martin Grindrod  
Executive Director



Nanna Soni  
Executive Director



Nico Leray  
Executive Director

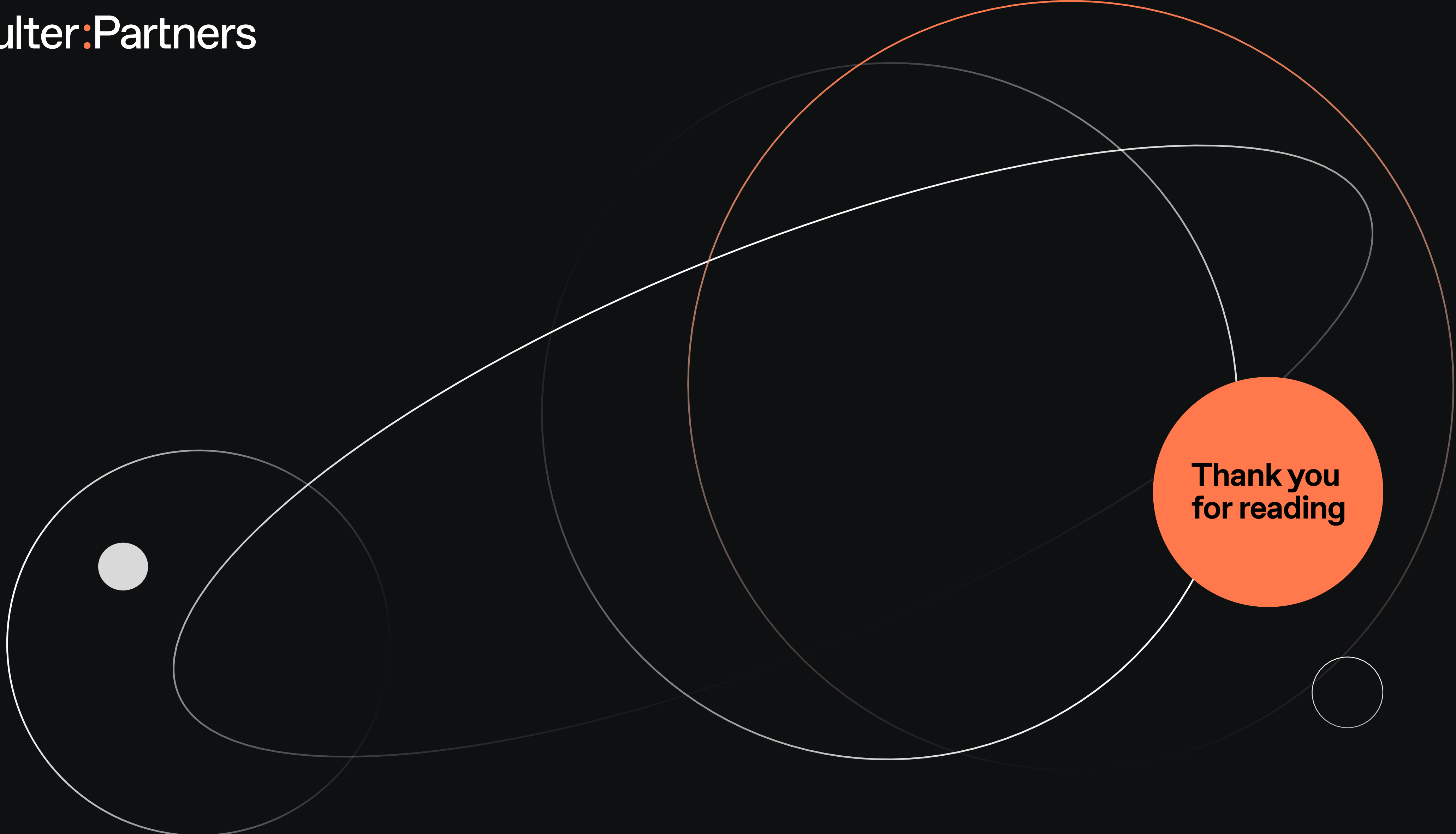


Nona Footz  
Client Partner



Zdenka Vitkova  
Director





**Thank you  
for reading**