inkef capital





# Digital healthcare: patient-first?

Proactive, decentralized, personalized, value-based.



# inkef capital

# European early-stage venture capital firm investing in healthcare and tech.

INKEF Capital is a venture capital firm based in Amsterdam, backing promising early stage companies in Europe. INKEF takes pride in being a patient, long-term investor with the ability to support companies through several rounds of funding. From the early stages of being a technology or life science venture, INKEF Capital supports entrepreneurs building their ideas into successful international businesses.

The combination of tech and healthcare, makes Healthtech at the intersection of INKEF's investment thesis – we have the ambition to bring our experience in developing new drugs & devices and our experience in building software companies to transform healthcare

# Healthcare investments Other notable investments iOnctura Gitlab Occupant GurAlis Vicentra NMD SHAPPING Occlecticia happeo Achannelscore VarmX Occlection Salvia Achannelscore Biotecton Oppolarsteps Silverflow



# Pan-European growth investor focused on the HealthTech sector.

MTIP is a Swiss-based growth investor that specializes in scaling up healthtech companies in rapidly expanding global markets. MTIP invests in digitally-connected, decentralized and patient-centric medical technology leaders, based primarily in Europe, with offerings that provide clear health-related economic benefits. MTIP's entrepreneurial investment team, which has complementary private equity skills and exceptional deal-making capabilities, actively works with their portfolio companies to boost growth. MTIP efficiently deploys capital to unlock value and generate attractive returns for their investors.

Although MTIP is generally "stage agnostic", MTIP prefers to invest in firms that are in a growth (later-stage, expansionary) phase, with a proven technology that can be effectively scaled to successful and sustainable global enterprises.

QUANTA	<b>@tyto</b> care"	rnweou	Reactive	NITINOTES
• trialbee	OVIVAY	Cynerio	oramaze technologies	& Koa Health

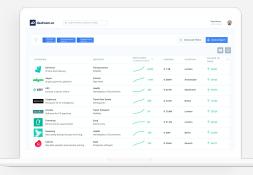


# Global startup & venture capital intelligence platform.

Dealroom.co is the foremost data provider on startup, early-stage and growth company ecosystems in Europe and around the globe.

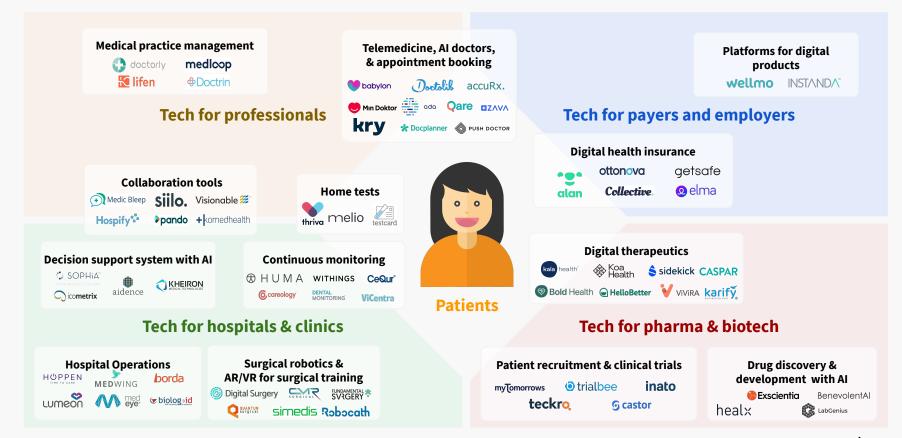
Founded in Amsterdam in 2013, we now work with many of the world's most prominent investors, entrepreneurs and government organizations to provide transparency, analysis and insights on venture capital activity.

Visit health.dealroom.co for more info





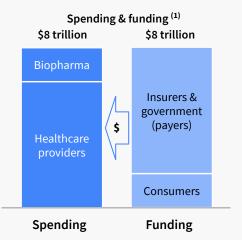
# This report covers tech for patients, professionals, hospitals and biopharma.



# Healthcare is a global \$8 trillion ecosystem changing course; an opportunity for tech companies.

The cost of healthcare keeps rising. Yet, that does not always means better access.

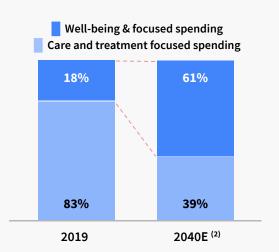
Ageing populations, served by a complex, slow-adapting market mean huge savings to be made in the largest consumer category - the next big digital frontier.



# Covid-19 accelerated innovation at patient interface level, but transformation just started.

Digital Health is a \$350B market (McKinsey), set to nearly double in the next five years.

Political and regulatory innovation, combined with technological advances can enable improved outcomes and cost-efficiency in healthcare, well beyond the pandemic.

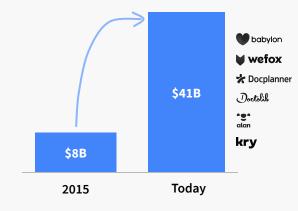


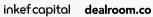
# Healthtech is a likely candidate for the next \$50B+ tech company in Europe.

Europe is starting to see big Healthtech companies emerge in telehealth (Babylon, Kry), operations software (Doctolib, Docplanner) and insurance (wefox).

The scale of the market means Healthcare could support Europe's next multi-decacorn(s).









<sup>1.</sup> Dealroom analysis of data from OECD, WHO.

<sup>2.</sup> Based on Deloitte

# Why this Healthtech report.

It's been often repeated that the Covid-19 crisis response has brought "10 years of market evolution in 10 weeks". So far, this has been mostly about the engagement layer (e.g. telehealth). Is a more profound industry-wide shift happening underneath? And if so, what will that change look like and what role will tech companies play?

One thing is sure: the growth of healthcare expenditure is unsustainable. Structural trends continue to drive healthcare costs upwards: ageing population, chronic diseases (incl obesity), and the rising costs of drug development. Digitalization has helped many other industries improve customer experience while reducing costs. Why is healthcare slow to catch on?

Payers (governments and insurers) and consumers have been tolerating slow change until now, but not anymore. Healthcare will see big macro-changes in the coming two years. This report explores the next big things in health innovation and what the future of healthcare might look like.

# **Contributions and insights from:**



Danchen Zhao Investment Manager MTIP



Jessica Di Palo Head of Marketing & Communications MTIP



Thiis Cohen Tervaert Junior Partner INKEF Capital



Ali Parsa Founder & CEO Babylon



Julian Teicke Founder & CEO wefox



Mark-Jan Harte Co-Founder & CEO Aidence



Lars-Olof Eriksson CSO Trialbee



Robbie Hughes Founder & CEO Lumeon



Klaus Mitterer CFO Oviva



**Derk Arts** Founder Castor

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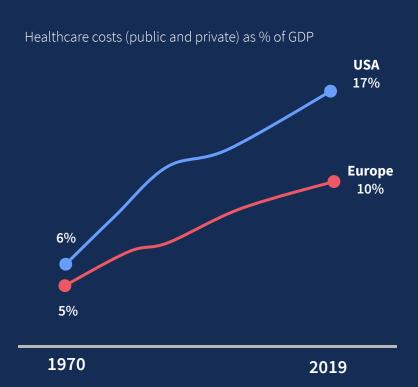
1 Healthcare: an \$8 trillion industry changing course

The future: decentralized, personalized, proactive, value-based

The next big thing: tech for patients, professionals, hospitals and biopharma

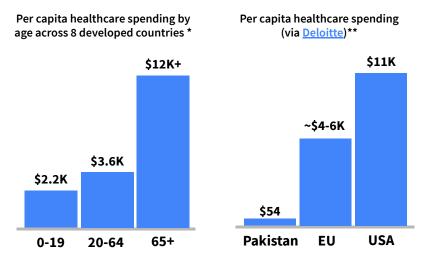
# An \$8 trillion industry changing course

# The cost of healthcare and its burden on economies keep rising.



Global healthcare expenditure is now around \$8 trillion (\$2 tn in Europe and \$3.5 tn in the US). It is projected to grow by 5%+ per year (faster than the overall economy) to \$10 trillion in 2022.

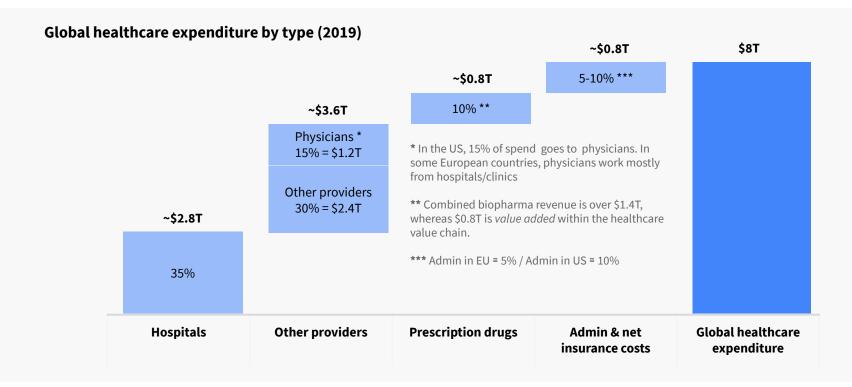
Structural trends continue to drive healthcare costs upwards: ageing population, chronic diseases (incl obesity), and the rising costs of drug development. As standards of living rise, healthcare expenditures also rise. Yet, that does not mean better access. In the US, some households are driven into poverty by healthcare costs.



<sup>\*</sup> Data by American Century Investments, based on study on US, Australia, Canada, Germany, Netherlands, Japan, Switzerland, UK. \*\* Pakistan included for illustrative purposes.

inkefcapital dealroom.co †

Spending goes to pharma, hospitals, physicians, and other providers. These are beholden to legacy reimbursement systems and complex regulations, which can make them slow to adopt change.



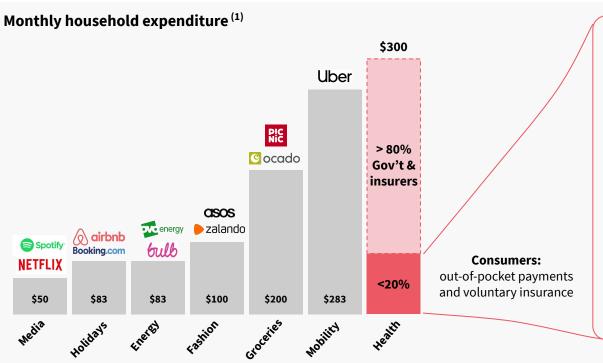
"Healthcare is broken - despite spending trillions of dollars each year, half the world's population has no access to healthcare, whilst 100 million people are driven into poverty from the fees.

"Almost 70% of healthcare money goes into predictable preventable diseases. Seeing a problem early on could mean a \$10 solution rather than \$4,000 by seeing it too late."

**Ali Parsa** Founder & CEO **Babylon** 



# Healthcare is one of the largest spending categories for households. But almost all spending is indirect (insurance & tax). Therefore, consumers have limited influence.

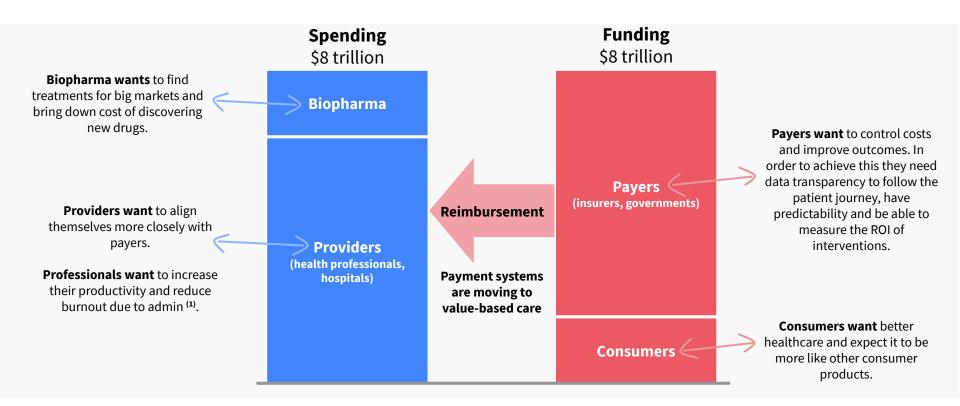


Out-of-pocket payments and voluntary insurance account for less than 20% of healthcare expenditure in most large developed countries – 10% in the US, 15-20% in most of Europe (but growing).

The remainder is paid via by government schemes and compulsory health insurance. As a result, consumers have limited incentives and influence.

However, consumers have already gone digital in many aspects of managing their lives. Expectations have been lifted. Consumers expect technology to follow the same path in healthcare to improve access and outcomes.

# However, "payers" (mostly insurers and governments) do have major influence, want to control costs, improve outcomes and get value for money.



# **Huge opportunity for tech to** eliminate inefficiencies and wasteful spending while improving outcomes.

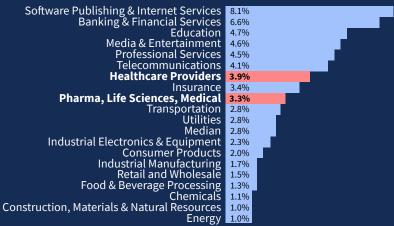
In the US alone, wasteful spending has been estimated to be around 25-30%\* with the biggest waste category being unnecessary care and excessive admin. McKinsey reckons that healthcare digitization lags most other sectors. According to The Economist 70% of American hospitals still fax and post patient records.



# Healthcare industry is spending \$200-300 billion per year on IT.

IT spending is roughly \$200-300 billion globally if we take Gartner's estimate 3.9% of sales in healthcare and 3.3% of sales in pharma & medical. Another report estimates \$208 billion in 2019, growing to \$280 billion by 2021\*. This includes spending on legacy IT systems (and some fax machines).

#### IT spending as % of turnover, by sector \*\*



\*Report by Markets And Markets, also used by Deloitte.

<sup>\*\*</sup> Sources: Morgan Stanley, Bain, LocalGlobe analysis of Gartner and Fortune data.

In Europe, government and private providers of compulsory insurance, have the power. In the USA, employers play an important role and they can adopt innovation earlier before clinical evidence is demonstrated.

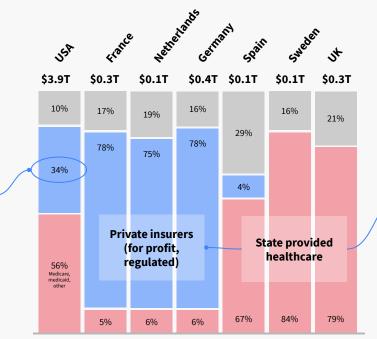
Consumers (out-of-pocket) and other

Compulsory insurance

Government schemes



In the US, employers play a big role in private insurance. Those employers want to control their healthcare premiums. This means startups can go to market by striking deals with corporates; even with a product that does not yet have clinical evidence to qualify for reimbursement. An example is Livongo.





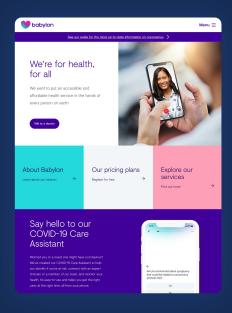
## **Europe**

In Europe, governments, private insurers and regulators have the power together. They want to control costs, but coordination is required to get things done. This means significant time between when a technology is accepted by regulators, when it is adapted in the healthcare system and when innovators are able to generate revenue.



Helps patients and professionals to proceed diagnosis and treatment sooner. Allows patients access to remote consultations, manage chronic conditions, and access health history.

(visit on health.dealroom.co)



"A doctor behind their mobile phone costs the same as a doctor in an office and is just as busy, so this does not help to reduce the strain on our healthcare professionals.

"Being able to see a patient via video doesn't mean clinicians can see more patients. In 2016, the WHO reported that we were short of 5 million healthcare professionals, and predicted that number would rise to a shortage of 18 million healthcare professionals by 2030. And that was before COVID-19. We need to use technology to care for far, far more people than we do at the moment.

Developing this technology isn't easy, it requires a combination of medical knowledge, huge amounts of data and relevance to each person in their country and for their demographic. That is why we are leveraging the power of AI to increase access, put more information in the hands of people, ensure earlier opportunities for intervention and as a result improve treatment outcomes and help to reduce costs."

Ali Parsa Founder & CEO



# Governments and regulators are increasingly putting incentives in place to improve outcomes and reduce costs - a huge opportunity for tech companies.

#### Germany



Digital Healthcare Act adopted in 2019 to support digital health innovation

€500 incentive for startup video consultations

First country to cover prescribed apps: Kalmeda (tinnitus), Velibra (anxiety)

#### Sweden



Integrated electronic health record solutions (EHRs) and e-prescriptions in Sweden's 21 regions since 2018

Teleconsultation reimbursed since 2016, enabling startups (KRY, Min Doktor, Doktor.se)

#### UK



NHSX Innovation Accelerator and \$330M AI in health investment pledged

Central digital records locator and booking app

Video consultation available through every doctor's surgery

#### **France**

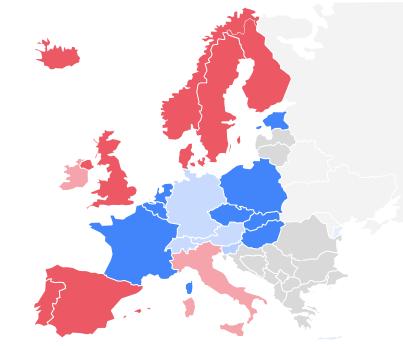


Online diagnosis & treatment since 2018

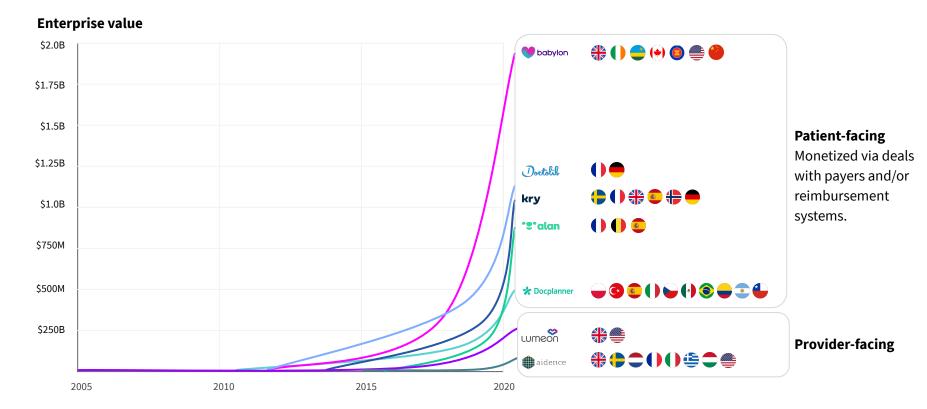
Cross-border treatment: EU doctors teleconsulting patients in France

KRY (Livi) and Doctolib market leaders in French telemedicine

# More state influence Less state influence State is provider of healthcare Private for-profit providers State financed Private for-profit providers Compulsory insurance and providers



# As a result, bigger Healthtech companies are already emerging. B2C has been scaling faster. B2B takes longer to unlock, but is at least as big an opportunity.



"The biggest challenge for digital health insurance is from the regulatory side because of the complexity and time it takes to obtain a licence from the regulatory bodies."



Julian Teicke Founder & CEO wefox

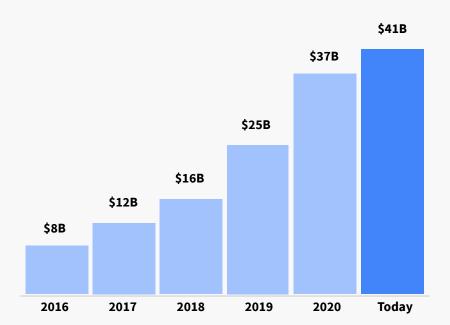
Mark-Jan Harte
Co-Founder & CEO
Aidence



"The biggest scaling challenge I have seen is selling a completely new type of product in a heavily regulated and conservative market. There are many questions around who benefits from the use of AI, who pays for it and whether it can yet be trusted."

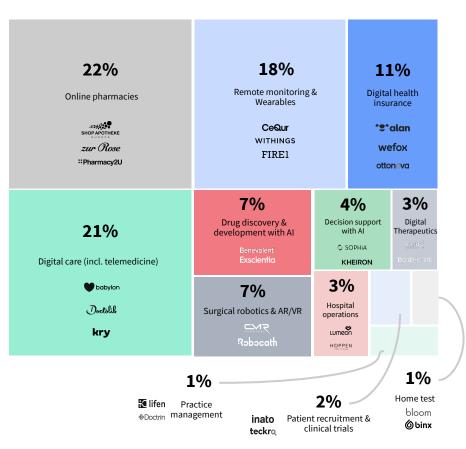
# European Healthtech companies are now worth \$41 billion.

Combined enterprise value of European healthtech startups (1)



#### Source: Dealroom.co and Google Finance.

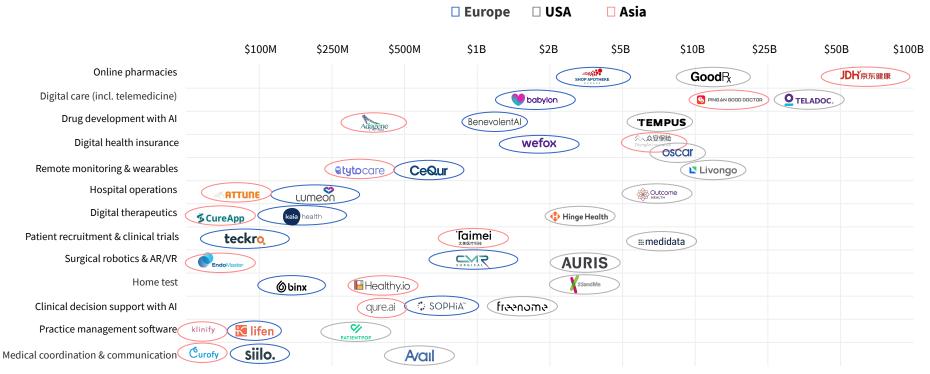
## **Combined enterprise value of European healthtech startups**



Healthtech excludes biotechnology and pharmaceutical companies. Using estimated valuations based on most recent VC rounds, public markets and publicly disclosed valuations as of Feb 10, 2021.

# And European Healthtech is just getting started.

## Most valuable companies by segment (founded after 2000)



# Covid-19 is often said to have triggered "ten years of market evolution in ten weeks". But a more meaningful shift will occur in the next two years, and beyond.

# Healthtech impact



# Covid-19 and its second-order effects

### Leading up to 2020

Payers pushing for value-based care

Growing number of connected devices/IoHT

Accelerations in AI, NLP, DNA sequencing, editing, digital therapeutics

Digitally native population

Regulations around virtual care loosened

Due to increased adoption, trust in virtual care increased

The US finalized new rules around data interoperability

Large amounts of late-stage venture capital funding for digital health

# Industry-wide shifts

Some new regulations are made permanent

Providers need to align with payers more than ever: more focus on value-based care

Consumers expecting increased virtual care

VC and big tech continue to invest heavily in healthtech

Time

"The pandemic has increased acceptance of digital health solutions. This momentum should be maintained; such solutions are vital in making healthcare more accessible, in rural settings or for the elderly or sick."



Kurt Höller
Director of Business
Creation
EIT Health

"Every sector has its own challenges and health is no different. However, the risks and sensitivities in health are greater than in other sectors. Broadly speaking, the main challenges facing startups are regulation, reimbursement and system inertia.

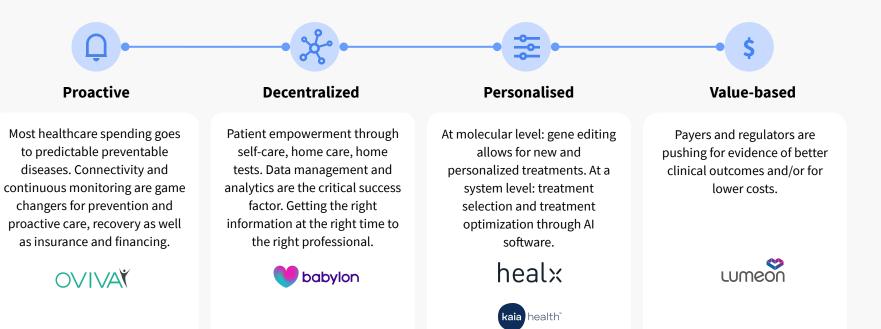
"High regulatory standards understandably exist in the health sector, companies in this space need to do more to get to market and to remain compliant throughout the life cycle of their product or service. This requires knowledge, experience, expertise, resources, and budget – all of which are sometimes sparse for younger companies.

Reimbursement requirements for health often vary across countries, which provides further challenges when expanding to new markets, or trading across borders. Such requirements in health can be challenging even for well established companies but are incredibly cumbersome for startups."

2

# The future: decentralized, proactive, personalized, value-based

# So far, we've seen a glimpse of what digital healthcare might look like.

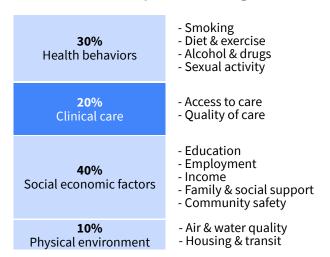


# Healthcare ≠ better health.

Studies point to healthcare being only a 10-20% contributing factor to health outcomes (quality and length of life). Social determinants (employment, social care, education, neighborhood) are known to have a greater impact on health outcomes than healthcare itself.

#### **Health determinants**

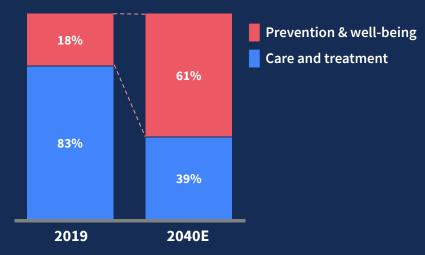
Source: County Health Rankings



# Shifting to prevention & well-being.

Prevention is key to lower healthcare spending. A <u>Deloitte</u> report projects a vision for healthcare shifting from care and treatments dominated (83%) to health and well-being dominated (63%). On top of prevention, another part is faster diagnosis and treatment with the help of AI (e.g. Babylon). New forms of enablement, data, platforms and delivery will drive 85% of revenue, Deloitte says.

#### Spending: shifting focus to prevention (via Deloitte)



# "The next two years will see big macro changes in the entire healthcare value chain, that would have taken 20 years."



Robbie Hughes
Founder & CEO
Lumeon

# "The illusion in healthcare is that the consumer has a choice, but actually that choice is a decision which involves the entire value chain.

"Consumers have long wanted to be able to interact with healthcare like any other consumer product. As healthcare providers were forced to shut their doors due to Covid-19, care shifted online overnight, with talk of 10 years of market evolution happening in the course of 10 weeks.

"The crushing reimbursement problem (especially a factor in the US), has also reached a critical moment in 2020/21. The cost of care has been going up for a long time, and it's more or less been tolerated. But the pandemic largely forced the closure of the two biggest margin generators in health systems - elective surgery and the emergency room. This means a profit centre of the health sector ceasing to exist. And that's a catalyst for innovation.

"Payers, who have not been spending, are sitting on a lot of capital. I believe they will start investing in things that allow them to control their patient journey and gain predictability in how their care is delivered. That is going to drive a big macro change. Meanwhile, providers will more closely align with payers.

"Change that would have taken 20 years, is going to take two."

# Digital health is already a \$350 billion market, according to McKinsey.

In addition to \$200-300B healthcare IT spending mentioned earlier, there is also digital health: providing healthcare digitally. McKinsey estimates this digital healthcare market to be \$350 billion in 2019 and growing to \$600 billion by 2024 (shown on the right). There is probably some overlap between IT spending and digital health but they are two separate things.

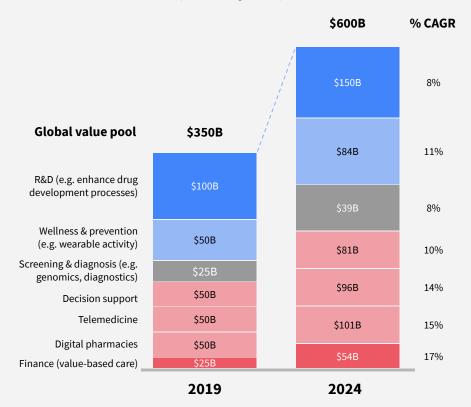
Replacing IT systems and digital health together have a huge opportunity to eliminate wasteful spending and improve outcomes. Another <u>McKinsey report</u> frames this opportunity through three innovation layers:

- 1. Engagement layer (user experiences and payment models)
- 2. Infrastructure layer (health records, data sharing & interoperability)
- 3. Intelligence layer (AI and analytics)

We use this framing in the following slides, adding the R&D layer as a fourth.

## **Global Digital Health Market**

(McKinsey data)



# So far, most VC investment activity and value creation has been in the engagement layer: building new user experiences.

Combined enterprise value of companies founded since 2000 by segment and innovation layer **R&D** layer Intelligence layer Infrastructure layer **Engagement layer** \$90B Digital care incl telemedicine **Professionals** PING AN GOOD DOCTOR O TELADOC. **babylon** PATIENTPOP \$5B Doctrin Practice management Livongo \$25B WITHINGS AURIS <\$10B **Providers** Surgical robots Continuous remote monitoring **₹10B** CO|Or freenome <\$10B Olive rnweou Al decision support Hospital operations \$90B Digital pharmacies Good<sub>R</sub> \$45B **Biopharma** Al-first drug discovery kaia healthi AKILI \$10B JDH、京东健康 patientslikeme \$10B antidote Digital therapeutics Benevolent\* TEMPUS SHOP APOTHEKE Software for clinical trials **Payers** ottonova Clover \$40B Digital health insurance oscar

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# Tech giants are building full-stack capabilities. For them, healthcare's huge market is an opportunity to sustain growth.

Notable investments. acquisitions and home-grown products



R&D laver



Intelligence laver





Infrastructure laver

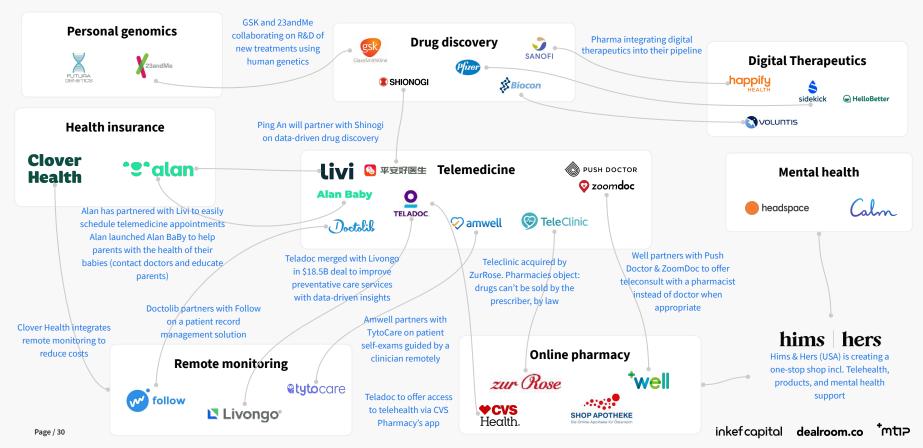




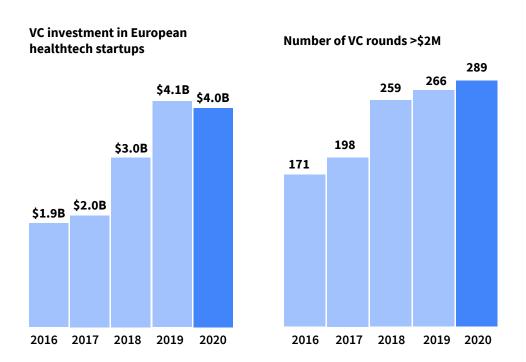
**Engagement laver** 

	K&D tayer	intettigence tayer	illiastructure tayer	Liigagement tayer
Google	verily Life sciences  Project Baseline Data clinical research	DeepMind © coefficient Neural research Insurance	© Google Cloud Google Cloud for healthcare and life sciences	
amazon			AWS, Amazon Comprehend Medical, Amazon HealthLake	halo amazon alexa PillPack Digital care Digital care Pharmacy
É			Open source software	beddit  Sleep sensors  Digital care  Devoted  HEALTH PLANS  Digital care
facebook				Preventive Health Fitness tracking  Digital care
Microsoft	Research Microsoft Immunomics, Project InnerEye, Project Talia	voiceith Speech recognition  Voiceith Speech recognition  Voiceith Health data	Azure Azure for the healthcare industry	ANDOR RapidSOS
Tencent 腾讯	XtalPi Al-based drug discovery	Tencent Al Lab Congenica Medical Al labs Genomics		
Roche	flatiron.  Cancer research data platform  Al-based drug discovery	▼ VIEWICS Sensyne Health	h	NOLUNTIS Wellthy  PatchAi  Digital Therapeutics  Digital care
ر <sup>ااا</sup> Bristol Myers Squibb ّ	<b>⊚ MYO</b> KARDIA  Cardiovascular diseases			VOLUNTIS Digital Therapeutics

# Digital healthcare platforms are seeking to integrate and create one-stop-shop solutions. This will drive more M&A activity.

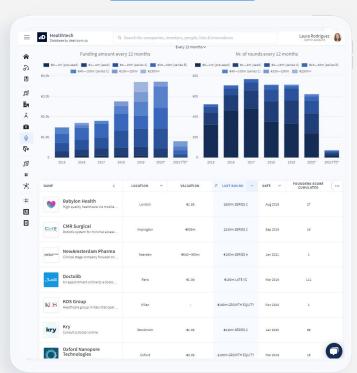


# Investor appetite for Healthtech has been growing significantly.



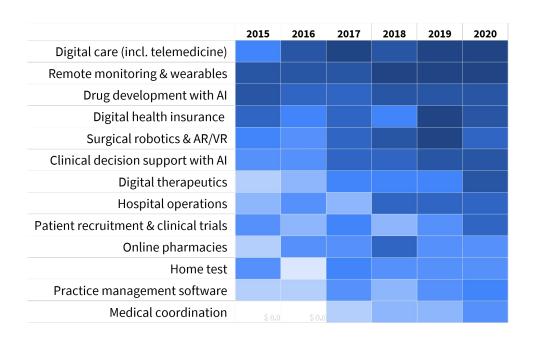
## **Explore European Healthtech rounds**

Visit health.dealroom.co



# Venture capital investment activity has moved beyond telehealth, to remote monitoring, AI-first products, digital therapeutics and more.

#### VC investment in European healthtech startups





Surgical robotics \$240M Series C



Decision support \$110M Series F

#### **Benevolent**

Drug discovery with AI \$90M Late VC



Psilocybin therapy \$80M Series B



Diagnosis of epilepsy \$72M Series B



Health insurance \$66M Series D



Drug discovery with AI



Remote monitoring \$58M Series B



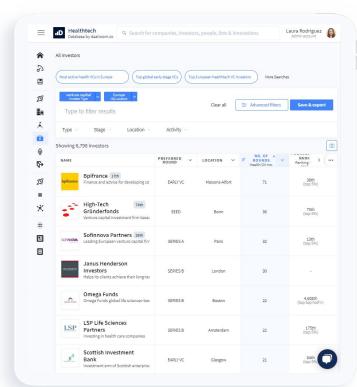
Drug discovery with AI \$56M Series B

# Notable investors in European Healthtech.

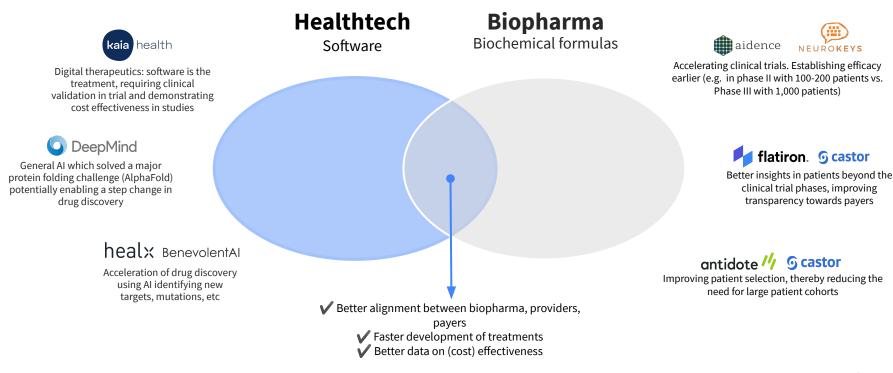


## **Explore European Health investors**

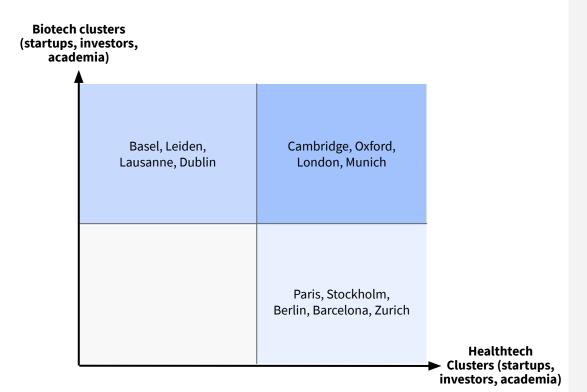
#### Visit health.dealroom.co



# Exciting things are happening at the intersection of Biopharma & Healthtech. Traditionally two different silos, now increasingly overlapping domains.



# Convergence of Biopharma & Healthtech bodes well for tech hubs that are strong in both.



#### What makes biotech and healthtech so different

Healthtech sells software at zero marginal costs. Biotech sells a physical biochemical formulation. They also have different buyers, regulatory paths, and therefore two very different investor groups -traditionally at least.

#### Why they are converging

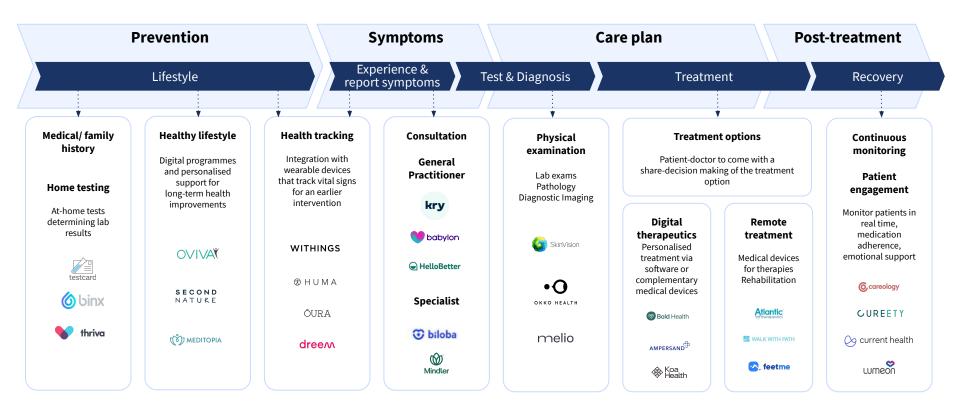
Increasingly, many Healthtech companies have shared characteristics with Biotech. For instance, Digital Therapeutics is getting clinical validation in a randomized controlled trial demonstrating efficacy in a rigourous way that is accepted by the ecosystem.

#### Why it matters

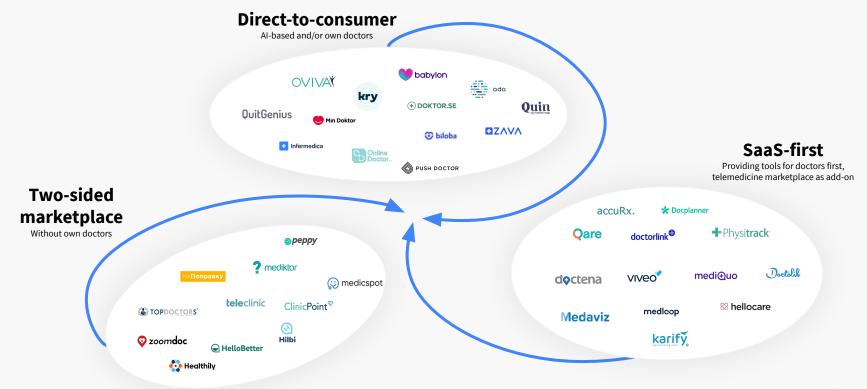
Convergence will play a major role in the shift to value-based care and reducing costs. Predicting, say, the chemical effects of compounds in cells / humans can accelerate experiments that would otherwise cost years to execute (animal models, safety testing, etc).

# The next big things: tech for patients, professionals, hospitals and biopharma

## Startups are developing digital tools to improve and change the pain points in the patient's journey, providing personalised and engageable self-care solutions.



## Digital health platforms have started with three different approaches, but are adopting many strategies from other business models as they mature.



## Tech for patients: what's next after telemedicine.

**Connectivity and continuous monitoring** are game changers for prevention and proactive care, recovery as well as insurance and financing

WITHINGS

ourrent health

**Combining diagnostics with treatment** 

⊘maaind ŌURA

**In Femtech there are many more opportunities** for innovative players to tackle stigmatized conditions, for example around fertility and pregnancy

**Make the patient the point of care**, shifting it from hospitals to where the patient is

CUREETY

Accessible wide range of at-home tests determining lab results with efficiency and ease

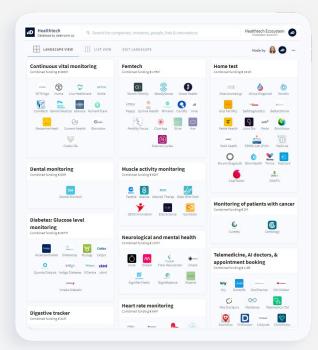


#### **Discover the companies**



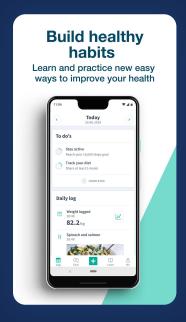
Femtech | Home test | Muscle activity monitoring | telemedicine & AI | Digital therapeutics | Continuous vital signs | Heart rate monitoring | Cancer patient care | Neurological and mental health | Personalised programmes

#### **165+ Digital health solutions for patients**»





Digital therapeutics platform providing medical nutritional therapy for patients with conditions such as obesity, diabetes and food allergies.



"As healthcare costs increase to less sustainable levels, digital can 'bend the cost curve', making healthcare affordable to more.

"The pandemic has moved adoption of digital and remote care forward by many years. Healthcare systems are right to demand significant evidence that new approaches are beneficial for patients and cost-effective. Covid-19 shifted our services fully remote. Initially, fewer patients were referred, as primary care doctors saw fewer patients, but volumes quickly recovered, and we could capture a higher share.

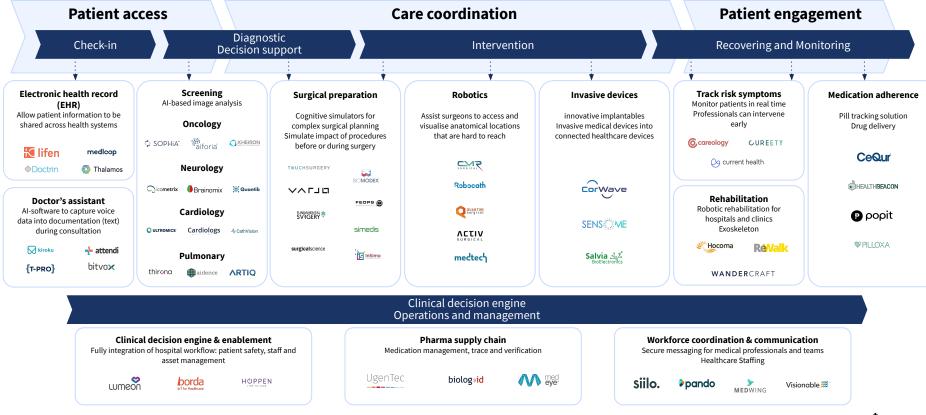
Oviva's remote service in Switzerland, Germany, UK and France became a safe and broadly accepted treatment, while face-to-face care, especially with groups of patients, is currently less safe. In addition, we developed a new, reimbursed D2C channel. We expect this channel to be a major driver of growth, more scalable and higher gross margin compared to our B2B2C channel."

Klaus Mitterer CFO



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## Software-enabled solutions transforming and streamlining healthcare providers' tech stack.



# B2B tech for hospitals and medical professionals: from replacing the fax machines to surgical robots, what's happening.

**Streamlining the hospital tech stack** with different medical software for secure documentation, record of patient history, e-prescription and billing

Improve care team capacity and efficiency through better care team coordination

**Improving outcomes**: reduce wait times. Enhance patients' service, comfort and safety

**Surgical & medical intervention robotics** for better precision and cognitive simulators for surgical training (AI, 3D, AR/VR) for planning and education

**Clinical decision support with AI**: pathology and radiology with AI-based analysis





Lumeon







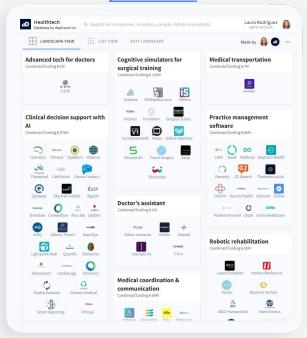


#### **Discover the companies**



Voice to text assistants | decision support: neurology | surgical training | document management | decision support: pulmonary | hospital BI | staff communication | decision support: oncology | decision support: cardiology | surgical robotics

#### 100+ B2B solutions for hospitals and medical professionals »





Al for radiologists. Enables radiologists to detect, quantify and report diagnosis based on data.



"We decided to focus on the early detection and measurement of lung cancer, as this is a time-consuming and error-prone task for radiologists and it has great benefit for patients as their survival chances are much higher when an abnormality is found earlier.

"Imaging diagnostics is a data-driven business, and AI is very well suited to contribute to improving the quality and efficiency. The human experts are in short supply, and their workload is ever-increasing in volume and complexity. AI will become an indispensable tool for detecting, diagnosing disease and tracking treatments."

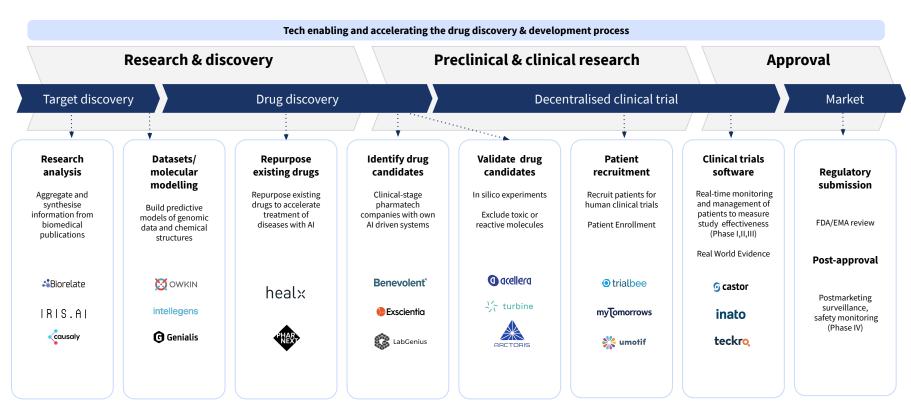
Aidence has founded a consortium (ICOVAI) to create an AI model for the automated detection of Covid-19 on chest CT. This will be offered to any interested hospital on a non-profit basis, courtesy of a Horizon2020 grant from the EU. We hope to release this new product before the end of 2020 after proper clinical validation in cooperation with one of the participating academic sites."

Mark-Jan Harte
Co-Founder & CEO



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## All is making drug discovery faster and more effective by increasing the likelihood of success and shortening the time-to-market of new drugs.



#### Many startups are helping biotech and pharma companies to reduce research costs with Al-based solutions.

**Drug discovery and development with AI** to reduce time-to-market

Benevolent\*

Exscientia

**Digital therapeutics** enables a direct and personalised delivery of medical intervention kaia health



Clinical trials are the most expensive part of developing drugs (1), patient recruitment & clinical trial software simplify and accelerate the process.

myTomorrows

inato

Innovation happening on biological level with increased use of technology

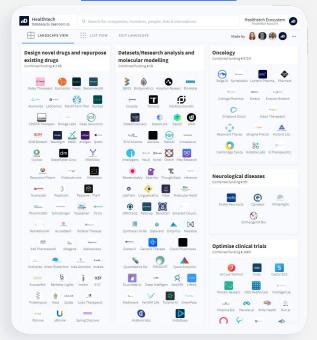


#### **Discover the companies**



Research analysis | datasets analysis | imaging and diagnostics | design novel drugs | optimise clinical trials

#### 100+ AI-based solutions making drug discovery faster and more effective »



## **6** castor

Al and cloud-based platform to simplify the clinical trial process, enabling researchers to capture and integrate data from any source and decentralise clinical trials.



"AI is a safe and useful tool, but in my opinion, the scariest part of AI is data protection. We shouldn't be exposing individual patient-level data, we should be generating a digital copy that has all the same properties but doesn't contain actual patients, ensuring that individual identities cannot be revealed.

"The vast majority of research, including for Covid-19, is not decentralized. Everything is hospital based because people were used to doing it that way, and this is not an industry that likes innovating. Almost all trials require patients to go to the hospital for enrolment, for consenting, for any measurements, etc.

Now, of course, with Covid-19 happening, none of that was possible, everyone started looking for solutions to continue finding and enrolling patients, and conducting research measurements while they were at home. Most of the decentralized trials (or remote trials) that have happened, don't happen at the hospital. This has really become super popular, at least for exploration."

**Derk Arts** Founder



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#### trialbee

Patient matching and engagement provider of a range of services for clinical research applications, designed to support the clinical trial process.



Match · Enroll · Engage

"Ideally technology should always aim to extend and improve on available capabilities. Replacing human interaction (or any manual process) with an automated option often results in lesser quality customer satisfaction. Therefore, a thoughtful balance between applied technology and service appear to be the best solution in healthcare.

"Covid-19 has disrupted the clinical trial operations with studies initially being cancelled, put on hold or at least significantly delayed. We have since seen a return of activities as the market is catching back up concurrent with the increased demand for support on Covid-19 related research on vaccines and therapeutics. From an operational standpoint, protocols are now increasingly calling for the use of remote consent (eConsent), telehealth and decentralized (virtual) monitoring and data collection. Many protocols are being amended to meet the new standards. We expect this trend to prevail with demand increasing for decentralized and virtual trials."

Lars-Olof Eriksson CSO

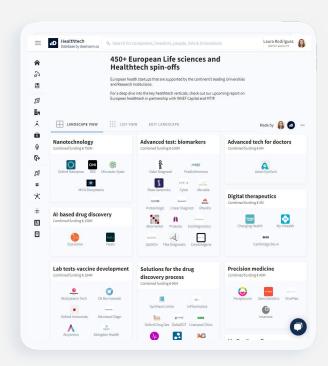


## European healthtech companies that are supported by the continent's leading Universities and Research Institutions.

Company	Category	University Research Inst.	VC funding
NANOPORE	Nanopore DNA sequencer	Oxford	\$796M
Exscientia	AI-based drug discovery	Dundee	\$106M
Congenica	Genomic interpretation	Sanger Inst.	\$82M
healx	AI-based drug discovery	Cambridge	\$68M
GENOMICS plc	Genome analysis	Oxford	\$60M
Synthace■	Laboratory automation	UCL	\$42M
bit.bio	Cell coding	Cambridge	\$42M
Fluidic	Protein analysis	Cambridge	\$39M
endomag <sup>f</sup> y	Breast cancer care	UCL	\$38M
Perspectum	Medical imaging	Oxford	\$36M
ONI	Super resolution microscopes	Oxford	\$30M
oxfordvr	VR therapy for mental health	Oxford	\$17M

### **Europe's Universities and Research Institutions spinouts**

400+ Life sciences and Healthtech spinouts »



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