

UNIVERSITY OF TWENTE. | TECHMED CENTRE

THE TECHMED EVENT

Dragon's Den: from idea to impact



Dragon's Den

From idea to impact



*Kira Oberschmidt
Innovationmanager Health Valley
MedTech Twente 2030*

Meet our Dragons



Wilbur de Kruijf

*Director Inhalation Technology
United Therapeutics*



Roel Freriks

*Director and Principal,
Real World Solutions
IQVIA Solutions*



**Jan-Frens
van Gissel**

*Partner Venture & Growth
Healthcare
Holland Capital*



Johan Vesseur

*Manager quality and innovation
Ziekenhuisgroep Twente*

Meet our participants

The logo for Flux Robotics, featuring the word "FLUX" in black with a green 'X' and "ROBOTICS" in black below it.

FLUX
ROBOTICS

CHRISTOFF HEUNIS

The logo for Phlecs Light & Health, featuring a cluster of blue dots of varying sizes to the left of the text "Phlecs" in bold blue and "Light & Health" in smaller black text below it.

Phlecs
Light & Health

DAVID AUBERT

The logo for ArthroSave, featuring a stylized yellow and blue icon of a knee joint to the left of the text "ArthroSave" in bold blue and "knee reviving medical devices" in smaller black text below it.

ArthroSave
knee reviving medical devices

KARIANNE
LINDENHOVIUS

The logo for novio sound, featuring the word "novio" in lowercase black and "sound" in lowercase black with a blue circular soundwave icon to its right.

novio **sound**

DAVID BRADFORD

Flux Robotics

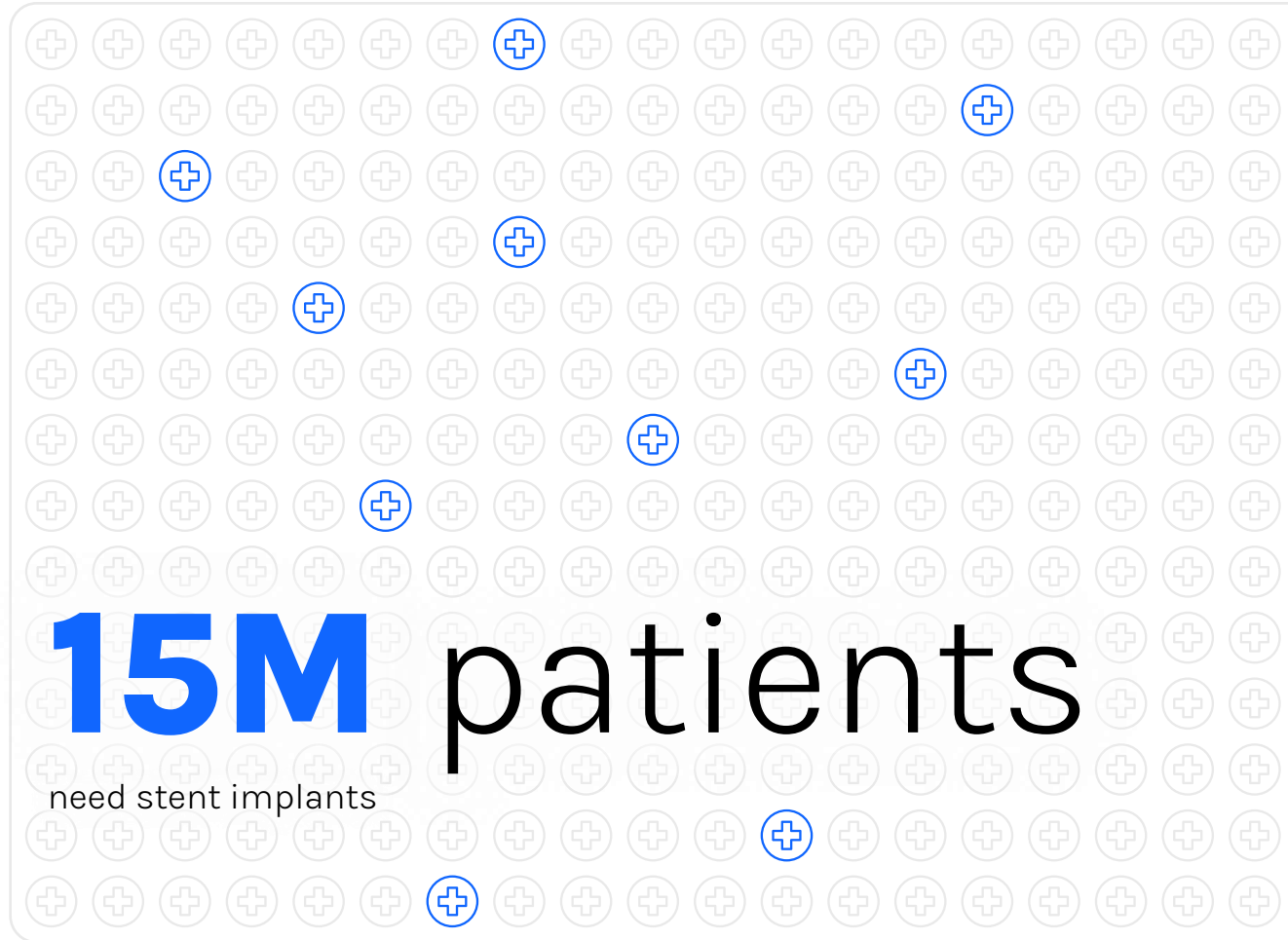
Christoff Heunis

FLUX ROBOTICS

**NEXT GENERATION VASCULAR
SURGERIES**



ISSUE



ISSUE



PROBLEM

5h 
surgeries

2 
patients

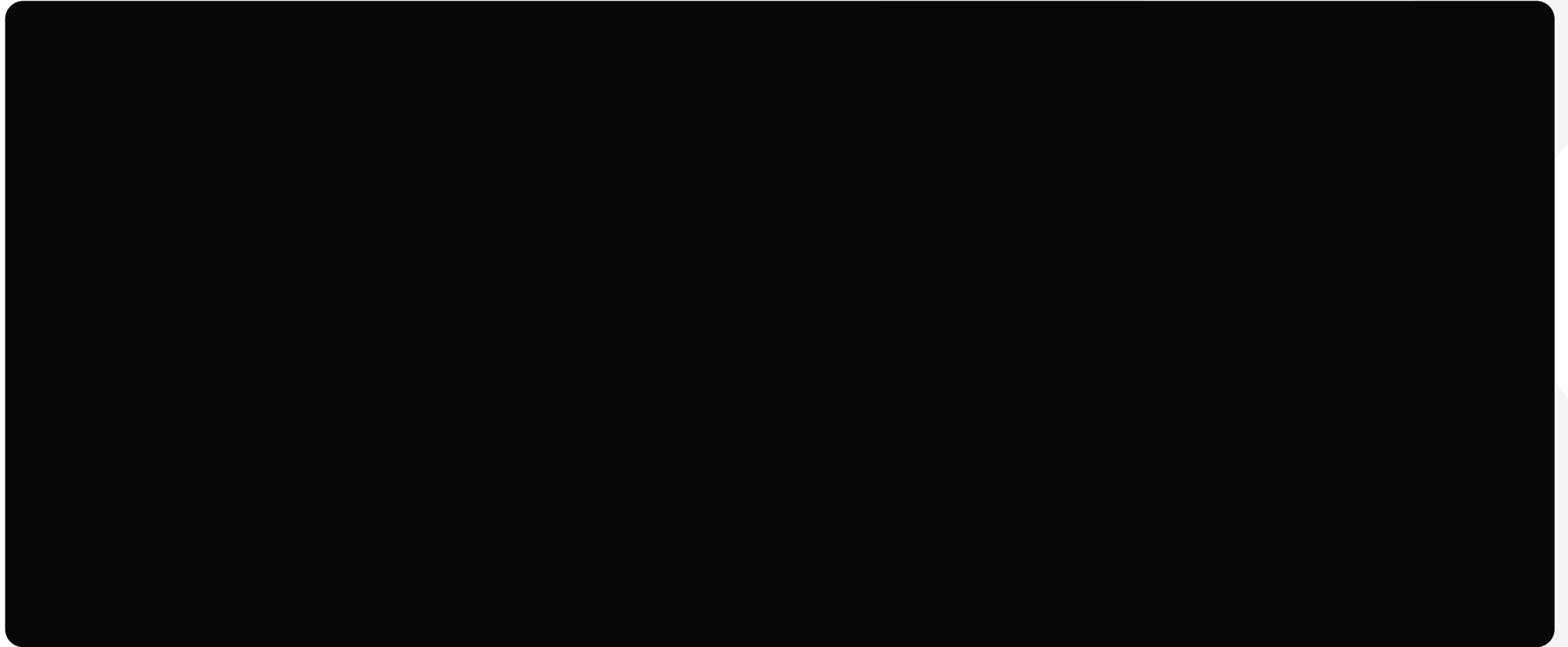
70 
min

€43k 

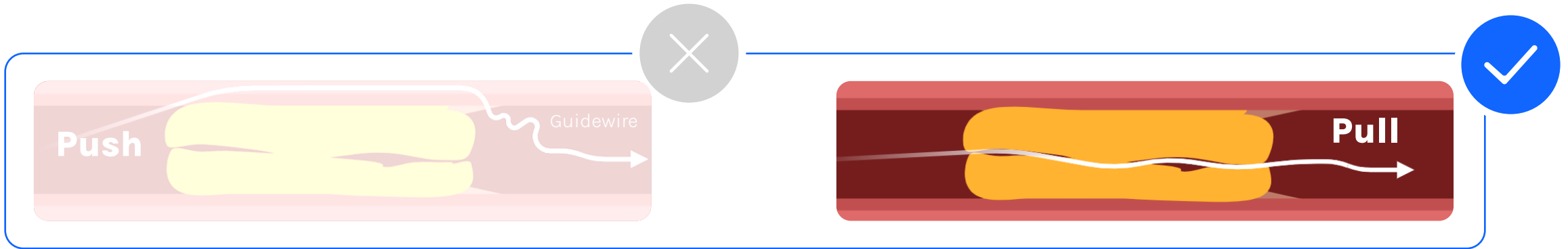
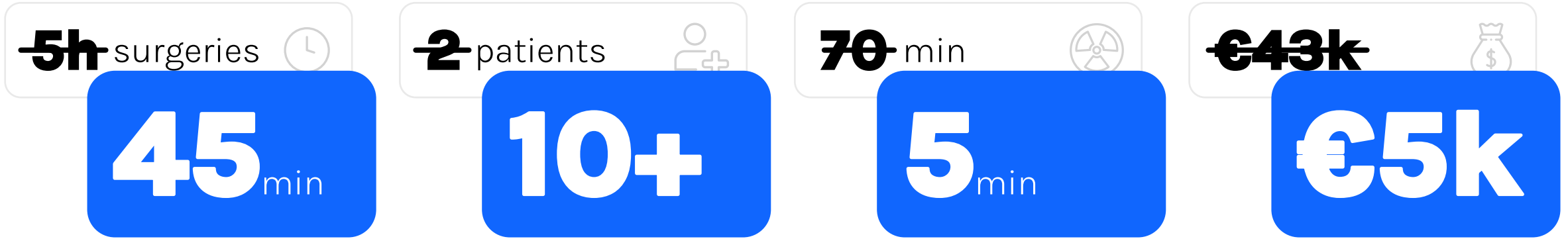


SOLUTION

FLUX2 Magnetic Navigation System

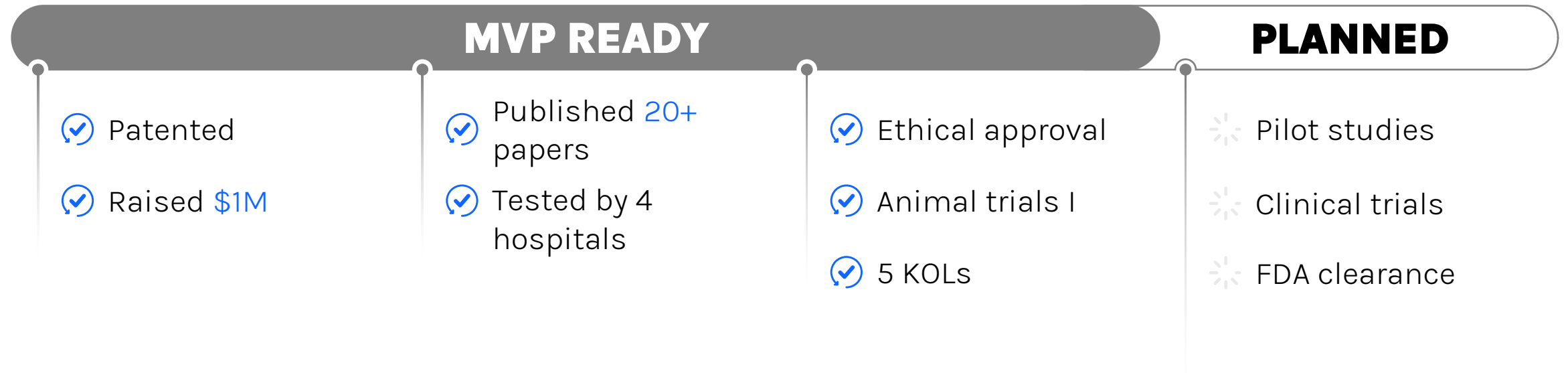


BENEFITS



TRACTION

FLUX2



SUPPORTED BY SURGEONS

“

You can **close your eyes** and still succeed.

Bob Geelkerken

Vascular surgeon



“

Amazing, effortless, and **revolutionary!**

Michel Reijnen

Vascular surgeon



“

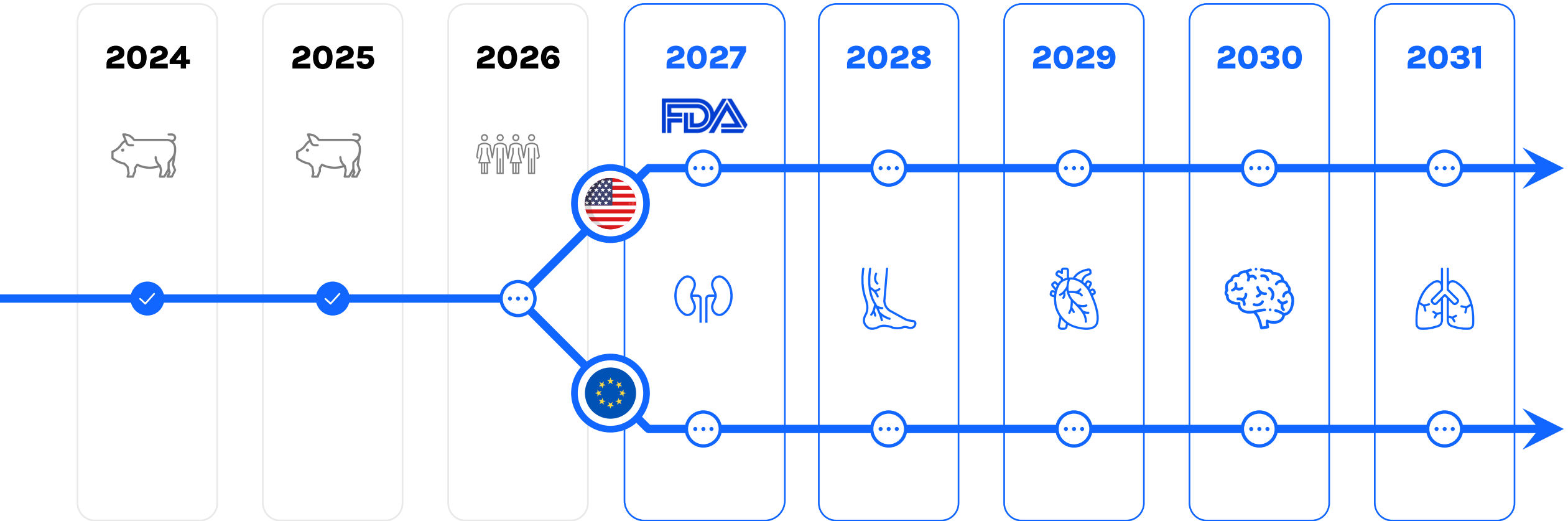
Very exciting and promising, **the future** of vascular surgery.

Jean-Paul de Vries

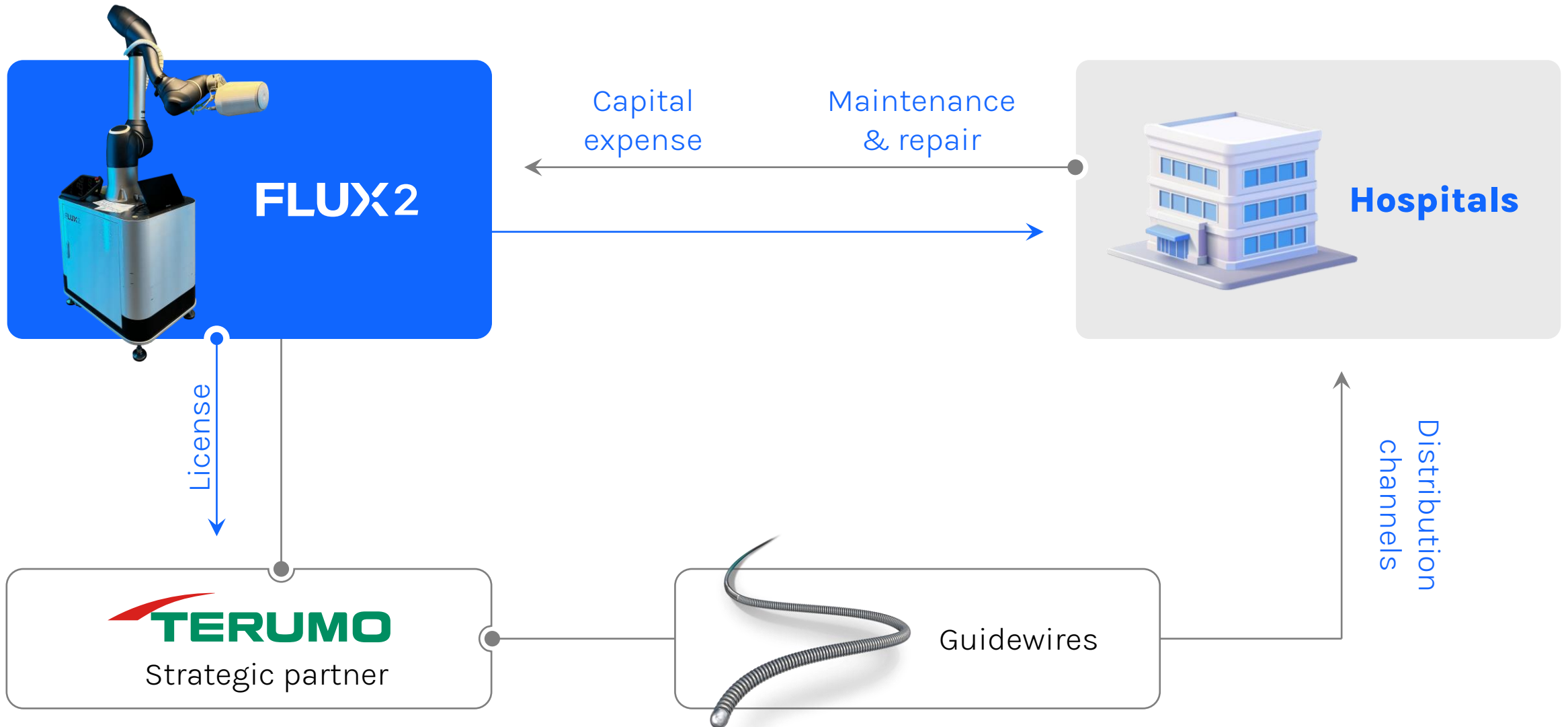
Vascular surgeon



ROADMAP



B2B BUSINESS MODEL

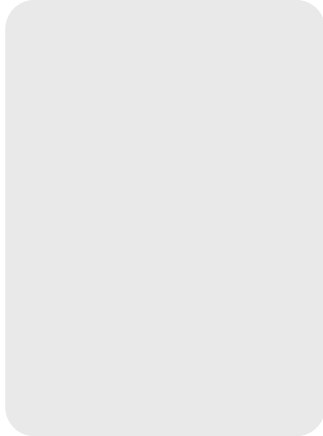


OPPORTUNITY

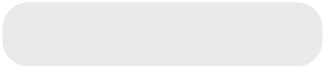
Vascular disease
a GLOBAL KILLER



10M 



1.5M 



680K 



627K 



OPPORTUNITY

TAM

€37b

Global vascular interventions

SAM

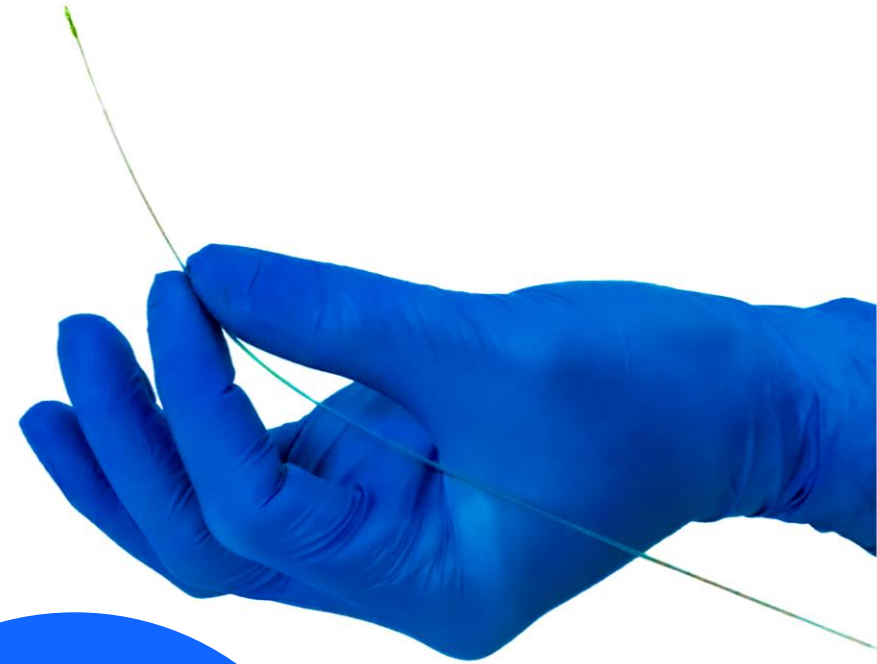
€5b

US hospitals

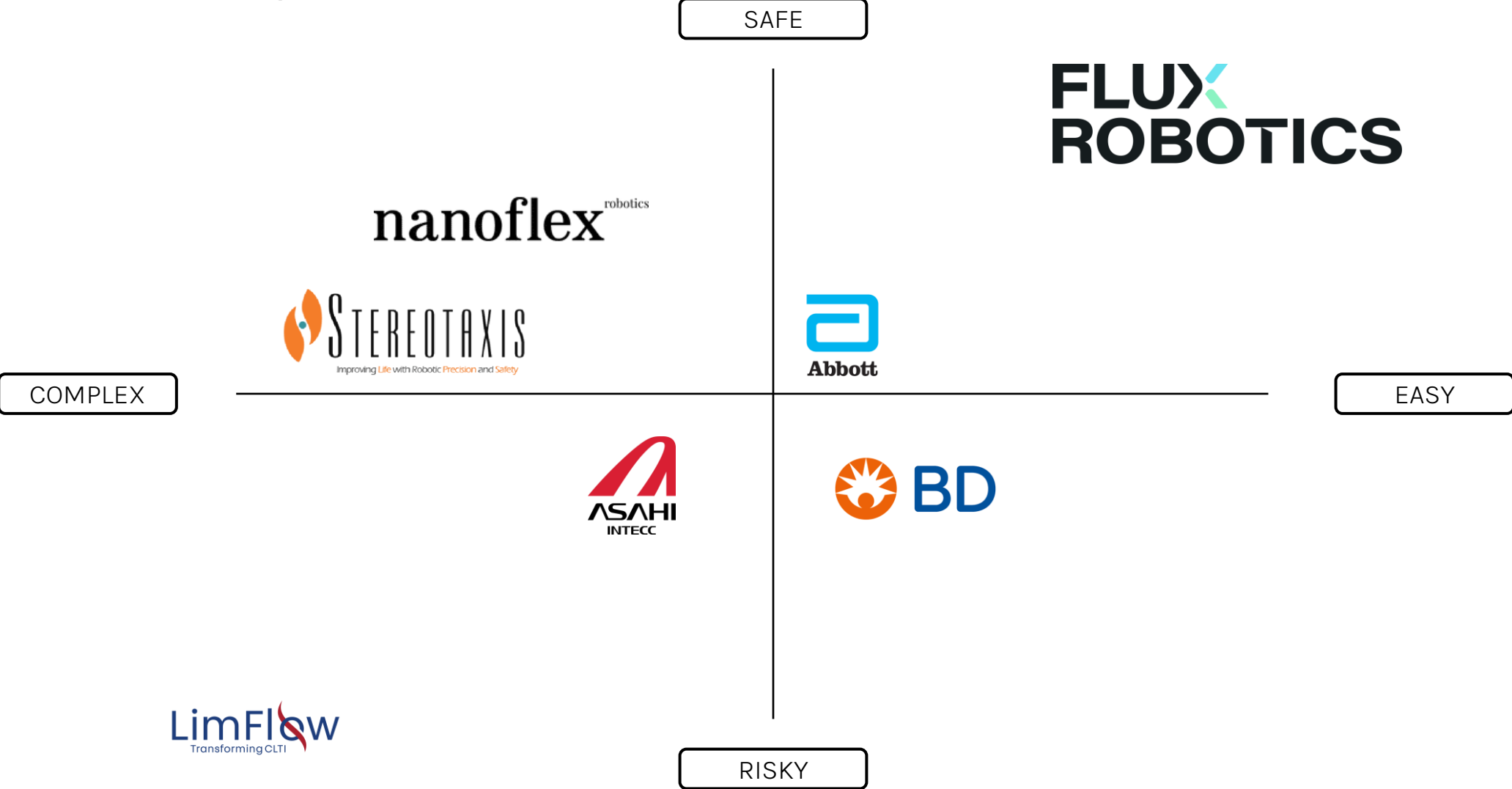
SOM

€1.2b

X



COMPETITION



**FLUX
ROBOTICS**

THE TEAM

Founding Team

CEO



Christoff Heunis

R&D Lead



Sarthak Misra

Engineers



Heleen van Nie



Tim Elderhorst



Steven van Dokkum

Key Advisors



Dean Zikria



George Sauter



Maurizio Liverani

Clinical Advisory Board



Bob Geelkerken



Jean-Paul de Vries



Michel Reijnen



Michael Lichtenberg



RAISING

€2.2M

5 letters
of intent

5 pilot
studies

10 patients



FLUX ROBOTICS



**NEXT GENERATION
VASCULAR SURGERIES**



PHLECS

David Aubert

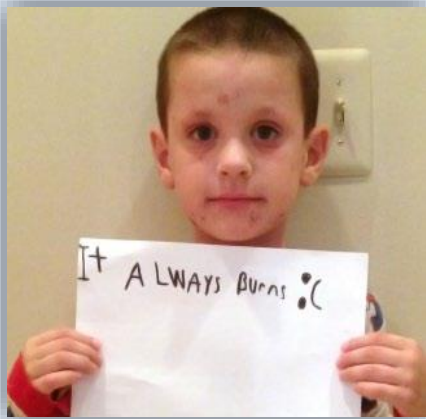


Home blue light therapy for inflammatory skin diseases

David Aubert, 6 Nov 2024



At Phlecs, we believe blue LED light is an effective tool to help physicians and patients control the symptoms of itching and inflammatory skin conditions in a safe, fast and cost-effective manner.



Diverse, Skilled and International Team

Founders



David Aubert
CEO / CFO

MBA

Former General Manager Philips Light & Health



Joost den Hollander
Chief Operations & Officer

MSc, Industrial Engineering & Management Science)

Former Head operations at Philips Light & Health



Rene Wenmekers
Chief Regulatory Officer

MSc, Statistics, MBA

Former Q&R Head at Philips Light & Health



Willeke Wisse
Chief Medical Officer

MD MBA

General Practitioner, expert geriatric care



Joette (Jo) Gibson
Chief Commercial Officer

MBA, BSc

Expert Marketing Sales MedTech/Pharma/Biotech
Former Business developer Philips Light & Health EU/USA

Eczema, prevalence and severity

Nederland: 400.000 patients / EU: 23m / US: 16m



Mild (EASI * < 7)
Small areas of dry skin
that get a bit itchy

60% of patients



Moderate (EASI >7 , < 21)
Large areas of dry skin with
erythema, all patients are itching

30%



Severe (EASI >21)
Large areas of dry skin with
erythema, all patients are itching
skin lesions

10%

* EASI: Eczema Area and Severity Index

Itching has a high impact on patient's quality of life



Quality of Life Impact



Survey responses



96%



of respondents indicated that evening and night-time were the worst times of the day for itching (263/273 patients)



58%



had mood changes, including, but not limited to, anxiety, irritability and feelings of hopelessness (228/392 patients)



22%

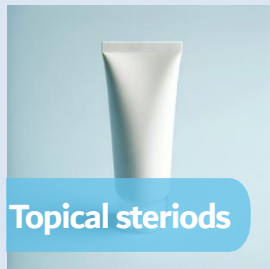


reported missing school or work (88/392 patients)

- Pruritus was associated with a higher degree of reported sleep disturbance, worsening fatigue and mood changes.

High unmet need: 35% to 50% of patients are unsatisfied with their treatments

Sub-optimal treatment options:



- Inconvenient (time consuming)
- Side effects (infections)



- Inconvenient (requires frequent visits to hospitals)
- Side effects (burns, skin cancer)



- Expensive (20k€ per patient per year)
- Side effects (malignancy)



€ 927

Out-of-pocket expenses spent **per year** on average in Europe*

*Zinck et al. "Out-of-pocket Costs for Individuals with Atopic Eczema: A Cross-sectional Study in Nine European Countries" 2019

A new clinical study confirms that blue light is as effective as UV light but offers a safer alternative...

Full-body blue treatment in 20 patients with AD			
	Base line	After 10 treatments	Difference
EASI	13,16	8,65	-34%
SCORAD	44,99	23,73	-47%
DLQI	14,37	7,42	-48%
10-item pruritus severity	13,32	7,05	-47%



Download pdf

[Home](#) > [Dermatology and Therapy](#) > [Article](#)

Prospective Clinical Study: Full-Body Blue Irradiation in the Treatment of Atopic Dermatitis

Brief Report | [Open access](#) | Published: 24 August 2024
Volume 14, pages 2631–2643, (2024) [Cite this article](#)

[Download PDF](#)  You have full access to this [open access](#) article

... and balneo-phototherapy yields significantly better patient outcomes compared to standalone phototherapy.



First results at Bad Bentheim show Blue light is as effective as UV.

It is already covered by statutory health insurance Germany

IQWiG

[ABOUT US](#)

[PROJECTS](#)

[PARTICIPATION](#)

[EVENTS](#)

[PRESS](#) > [PRESS RELEASES](#) > [BALNEO-PHOTOTHERAPY: STUDIES NOW SHOW GREATER BENEFIT ALSO IN ATOPIC ECZEMA](#)

Nov 22, 2018

Balneo-phototherapy: Studies now show greater benefit also in atopic eczema

Skin status better under a combination of bath therapy and UV light therapy than under dry UV light therapy – not only in psoriasis, but also in atopic eczema

Atopic eczema, also called neurodermatitis, is a chronic skin condition usually associated with severe itching, which can cause massive impairment of the quality of life. The German Institute for Quality and Efficiency in Health Care (IQWiG) had already investigated in 2007 whether a combination of bath therapy and UV light therapy (balneo-phototherapy) has better treatment results than UV light therapy alone. In 2007, convincing results were only available for a different skin condition, namely psoriasis. Having included newer study data, IQWiG now sees an indication of an advantage of synchronous balneo-phototherapy, in which a Dead Sea salt bath is used simultaneously with UV light, also for atopic eczema.

Home blue light therapy outperforms competition for moderate to severe conditions.

	Convenience	Efficacy	Safety	Fast Relief	Treatment monitoring	Annual cost
 Topical -steroids	++	++	++	+++	+	<1,000€
 UV-B	+	+++	++	++	++	3,500€
 Biologics / JAK Inhibitors	++++	++++	++	+ / +++	++	20,000€
 Home Blue Light	+++	+++	++++	++++	++++	1,000€
 Home Balneo-Blue Light	+++	++++	++++	++++	++++	1,500€

Because patients show a clear preference for home-based phototherapy...Phlecs Full Body Home



2
Patents

1. Efficacy after 10 treatments (2-3 weeks):

- Up to 85% itching reduction on average
- Up to 80% reduction of erythema
- 50% improvement of quality of life

2. Safety

- No adverse events (clinically proven)
- UV- and drug-free

3. Easy to use and to experience

- 30 min treatment per day
- Easy to carry and to store at home
- Treatment is personalized based on patient's profile

4. A.I. personalized treatments and predictive medicine

- Therapy compliance and biological parameters are monitored.
- Artificial intelligence can be employed to develop models using the gathered data.

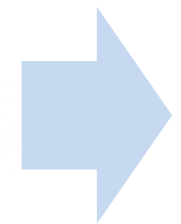


Phlecs Full Body Home Business model

MVP: Full Body Professional (2023)



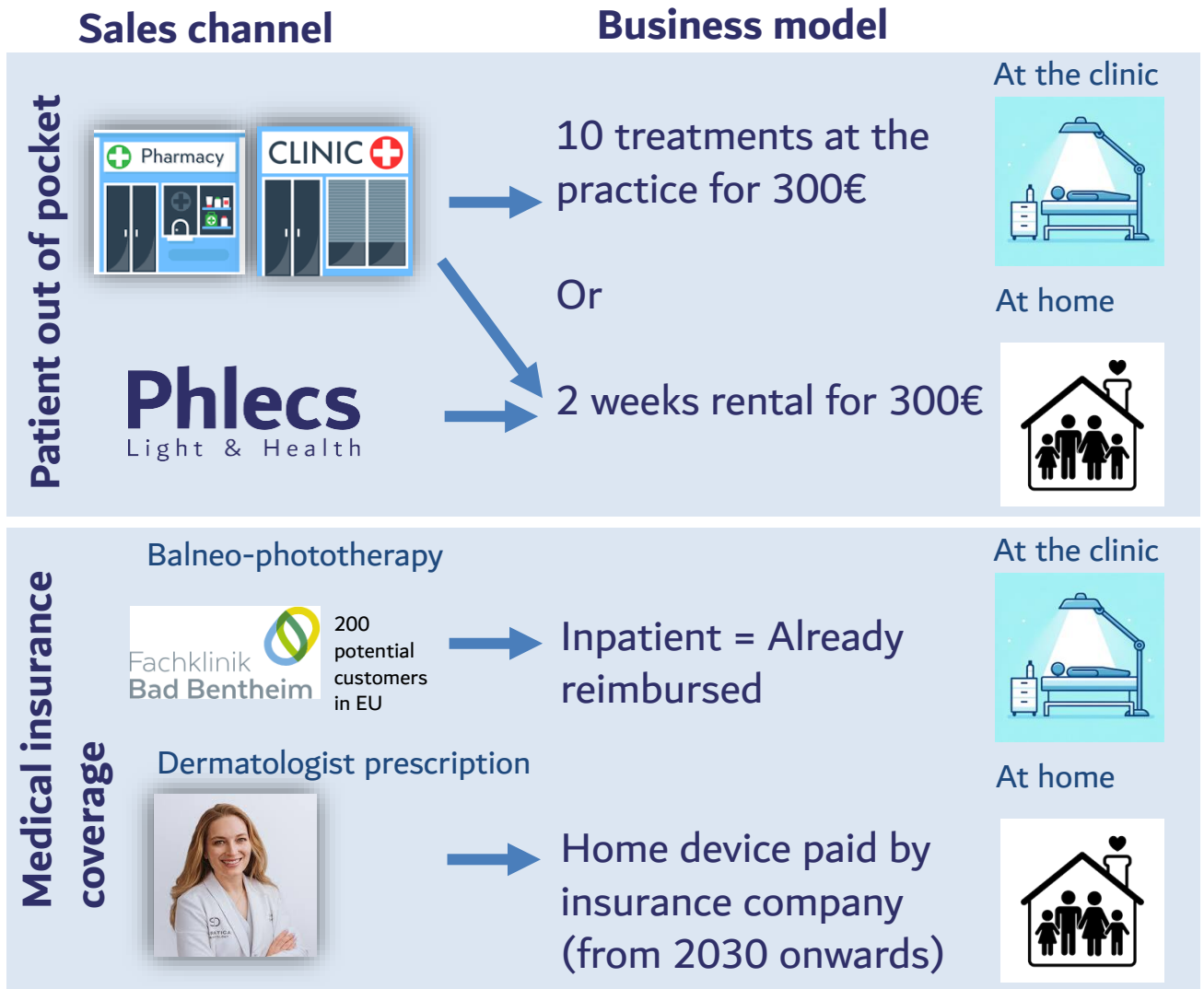
- Blue Light Therapy at the hospital
- CE certified



Full Body Home Connected (2026)



- Personalized therapy at home
- Compliance monitoring
- CE and FDA certified



Focus Markets EU and USA

A large addressable market with a phased go-to-market strategy

2023

MVP

- 250 Academic hospitals
- Private dermatology clinics
- Medical Spa's
- Pharmacies



2026

Out-of-pocket

B2B

- 30,000 Dermatology clinics
- 120,000 Pharmacies

B2C

- Direct sales: online rental to patients



2030

With insurance coverage

B2B

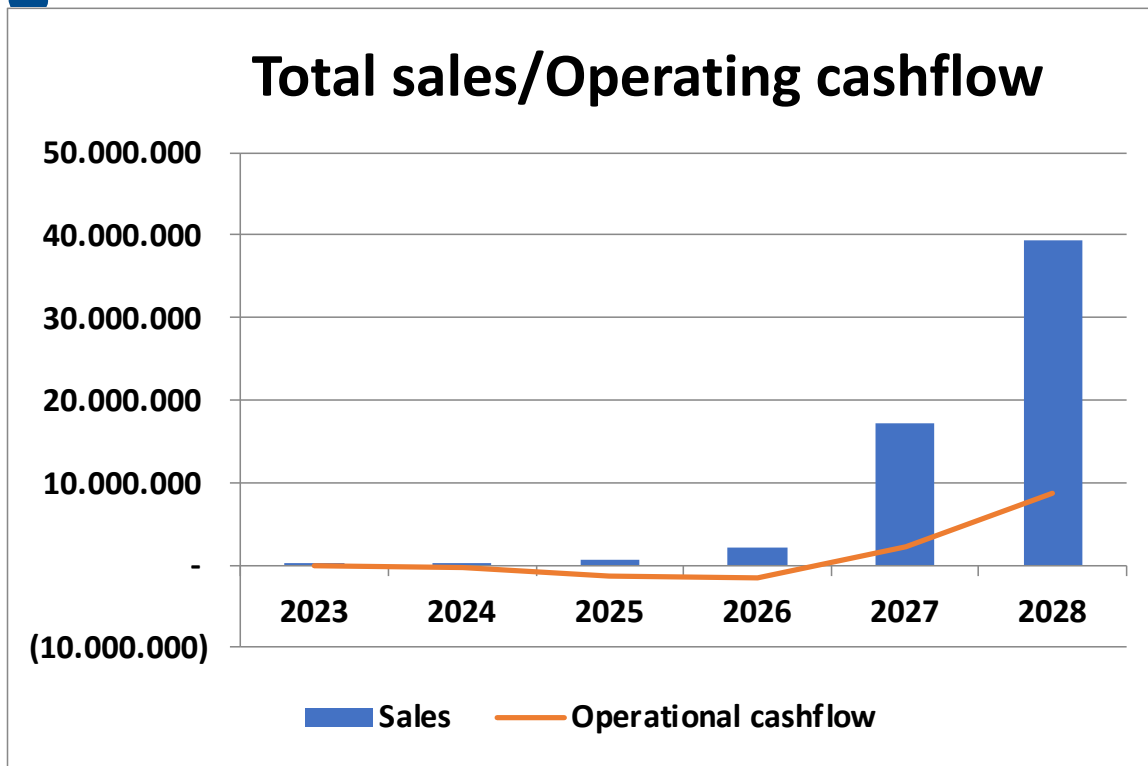
- 30,000 Dermatology clinics
- 120,000 Pharmacies

B2B / B2C

- 15m moderate to severe eczema patients



Cash generation



Full Body Home Connected:

Customer price: 7,000€ to 10,000€
(or 300€ to 500€ per month rental)

Valuation target 2028 : 150 m€ (10x EBIT)

Investment opportunity

4m€ seed funding to develop the home device that will be launched in 2026 in the US and in 2027 in Europe



* Estimation based on the time invested the last 5 years by the management

Application Pipeline

Full Body Blue Light

Current focus

Indications	Prevalence	# of patients EU / US	Clinical validation	FDA	CE	Reimbursement
Moderate to severe Eczema	40% of eczema patients	15m	Yes	2026	2027	2030
Severe Eczema	10% of eczema patients	4m	Yes (balneotherapy)	2026	2027	2030
Elderly itching	Up to 50%	14m	Yes	2026	2027	
Chronic Fatigue	Long Covid, Cancer Survivors	?	preliminary			
Hypertension	Above 65y, >70%	>100m	preliminary			
Depression	Above 65y, > 50%	>70m	preliminary			

Key investment considerations

Large addressable market with significant growth potential

Disruptive (UV and Drug free) and clinically proven technology

A.I. driven patented technology with the potential to disrupt the market

Highly skilled and diverse managerial team with extensive experience in the phototherapy market, deep medical and scientific network



David Aubert

Co-Founder / CEO

+31 (0)6 52 41 68 64

david.aubert@phlecs.com

An advertisement for Phlecs Blue LED Therapy. It features a woman in a white dress standing in a field of purple flowers, looking up at the sky. The text reads: "Blue LED Therapy. A new safe, clinically proven, gentle approach to treat inflammatory skin conditions¹⁻¹¹". The Phlecs logo is in the bottom left, and a QR code is in the bottom right. Below the QR code, it says: "Book a consultation to find out how Phlecs Blue LED Therapy can help you achieve the skin control you deserve."/>

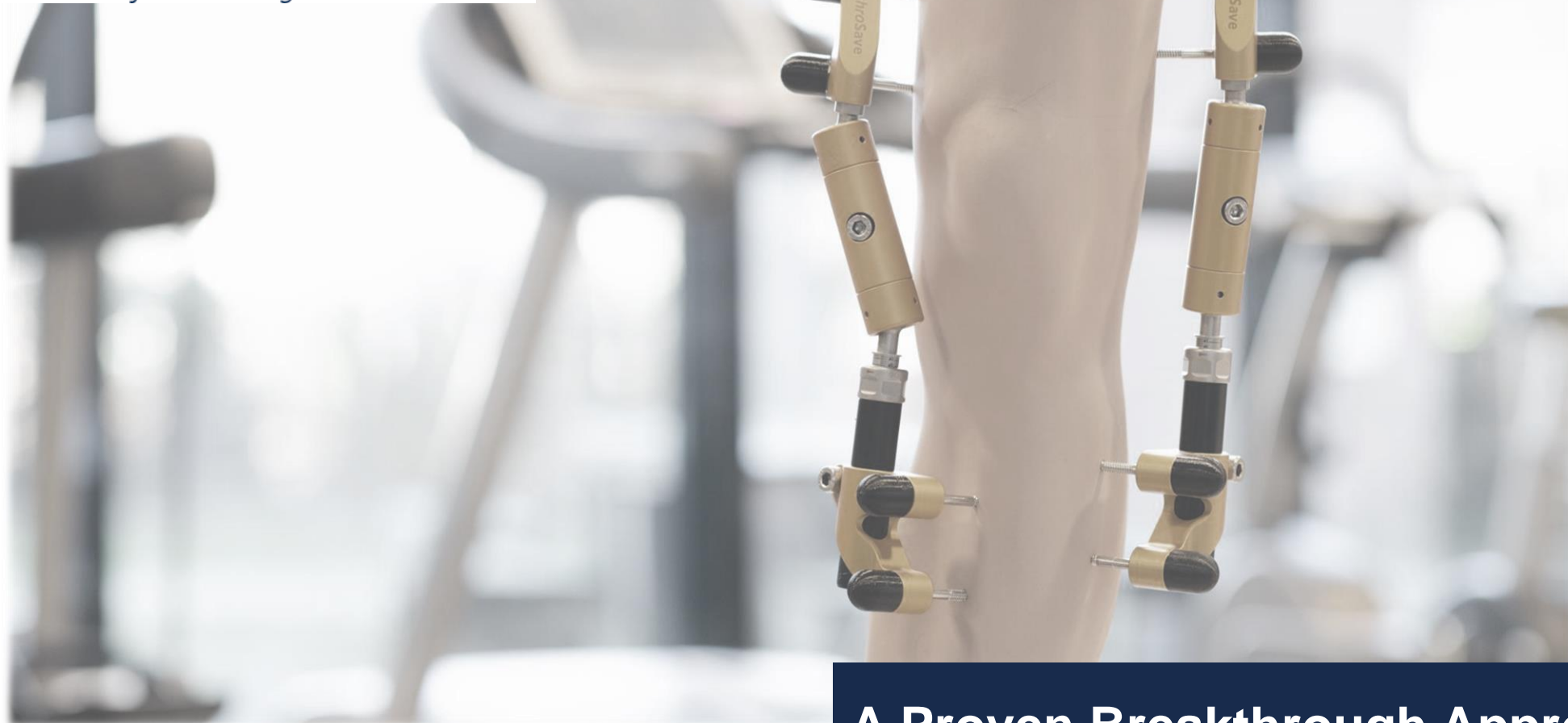
Blue LED Therapy
A new safe, clinically proven, gentle approach to treat inflammatory skin conditions¹⁻¹¹

Phlecs
Light & Health

Book a consultation to find out how Phlecs Blue LED Therapy can help you achieve the skin control you deserve.

Arthrosave

Karianne Lindenhovius



**A Proven Breakthrough Approach in
Joint Preservation**

Karianne Lindenhovius - CEO

Carlo - 54 years has knee osteoarthritis

Married, two children

Healthy and active (twice a week long walks)

Knee Osteoarthritis (KL 3-4)

- Damaged knee joint
- Swelling, stiffness
- Persistent pain
- Limited in daily activities and work
- Narrowing of joint space width

Golden standard = knee replacement



Carlo - 54 years has knee osteoarthritis

Married, two children

Healthy and active (twice a week long walks)

Knee Osteoarthritis (KL 3-4)

- Damaged knee joint
- Swelling, stiffness
- Persistent pain
- Limited in daily activities and work
- Narrowing of joint space width

Carlo is too young for a knee replacement





Knee Joint Distraction

- Temporary unloading treatment
- Short surgical procedure 30-45 minutes
- 5 mm distraction
- 6 weeks treatment

Mechanism of action

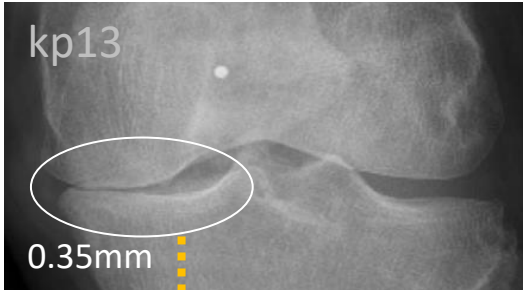
- Intermittent fluid pressure oscillation
- Release of growth factors in bone
- Molecular changes in synovial fluid

Clinically proven treatment

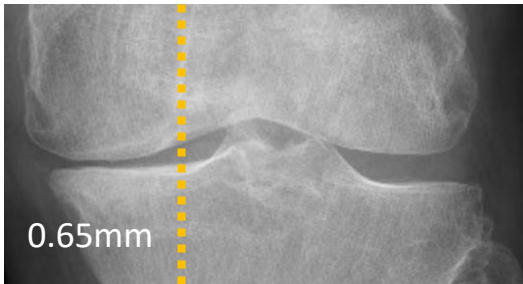
X-Ray

MRI

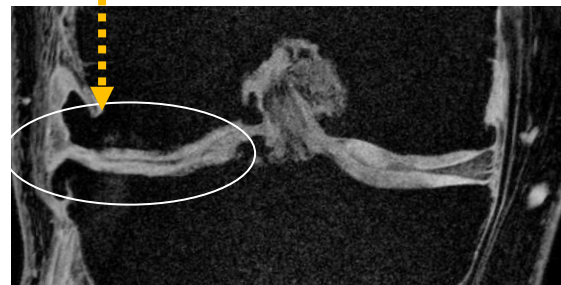
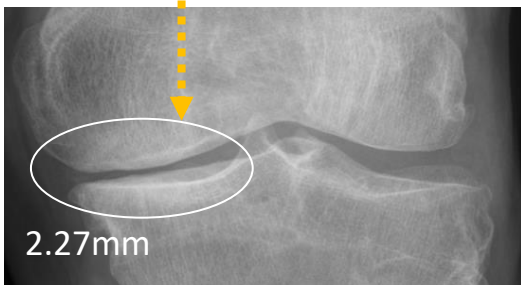
Pre-treatment



2 years post



5 years post



Increased joint space width

Regenerated tissue

250 patients in 7 clinical studies

- **PROMS:** Pain reduction & Function Improvement
- **Imaging:** Increased joint space width
- **Survival:** 81% of patients do not require a prosthesis after 5 years, 48% are prosthesis free even after more than 9 years
- **Cost-effective** solution avoiding revisions

Supported by up to 10 years of follow-up data

Regenerative solutions are needed



1.7M

Patients undergoing
knee replacement



0.9M

Patients surviving
knee replacement

A \$2B Market opportunity



1.7M

Patients undergoing
knee replacement



0.9M

Patients surviving
knee replacement



**Vast Potential for
Regenerative Devices in
Surgical Space**

**Strong Underlying
Fundamentals**

\$ > 5B

Annual Knee
Reconstruction Market
Size



\$2B

Annual Serviceable
Available Market

Patented & validated technology with pre-sales already

Design

Clinically validated

Supply chain organised

Patent owner

- 3 Patent families
- 11 Patents granted
- 5 Patent applications

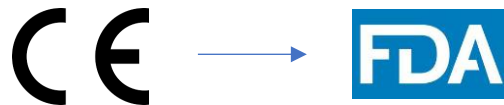


Regulatory

EU CE certified

US clinical pathway:
De Novo

10 yr follow-up data



Market access

250 KneeRevivers pre-sales

Pilot programme Germany

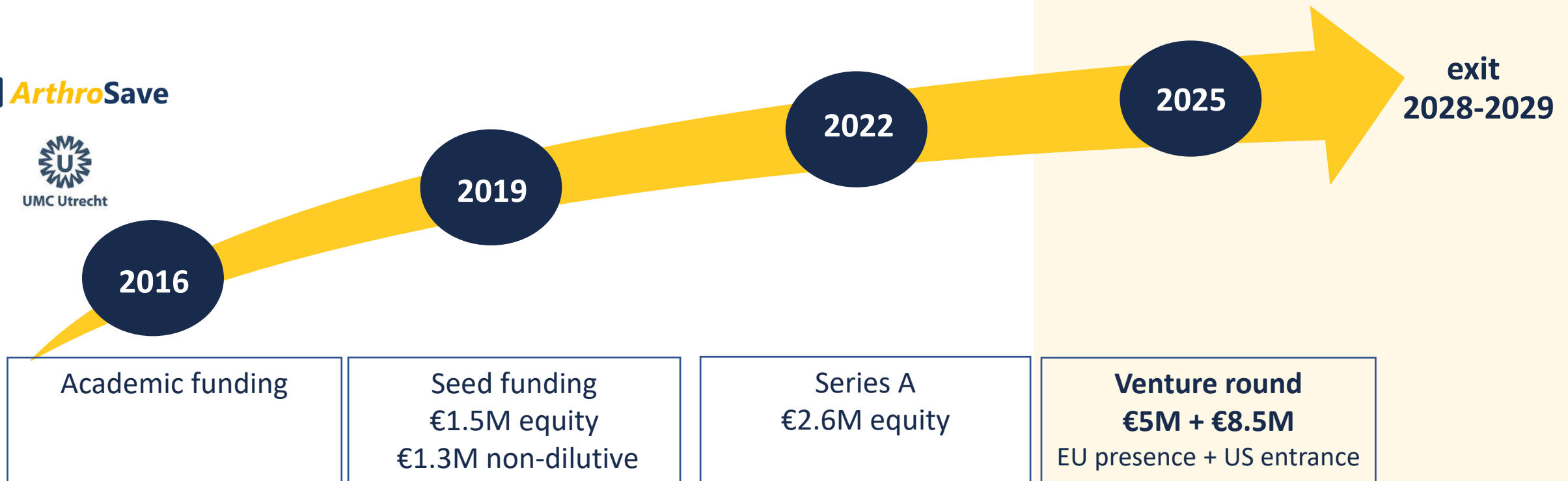
Reimbursement trial
Netherlands > RCT 1.200
patients



Zorginstituut Nederland

Funding pathway

Technical development	Clinical validation	Market Access	Reimbursement
CE Patent Clinical data	Manufacturing KneeReviver trial Pre-sales	Clinical trial Initial sales & traction KneeReviver 2.0	EU market presence FDA clearance US market entrance



Successful orthopedic medtech team



Karianne Lindenhovius MSc
CEO, Co-founder

Experienced in innovation and business development in MedTech



Timo van Dienst
CCO

International sales & market access executive in regenerative orthopedics



Dr. Peter van Roermund
Medical Officer, Co-founder

Orthopedic surgeon, Pioneer and inventor knee distraction



Lars Ottevanger
CFO

Marketing, sales and financial expert in LifeScience start-ups



20+ yrs Medtech



25+ yrs Commercial



30+ yrs Clinical



8+ yrs Financial Life Sciences

Market access team

Scientific & Clinical Affairs manager, Business Developer, Customer service, Product Specialist, Product manager

Sustainable solution for many patients



I am considering knee distraction on my other knee

Mark
50 years, Switzerland



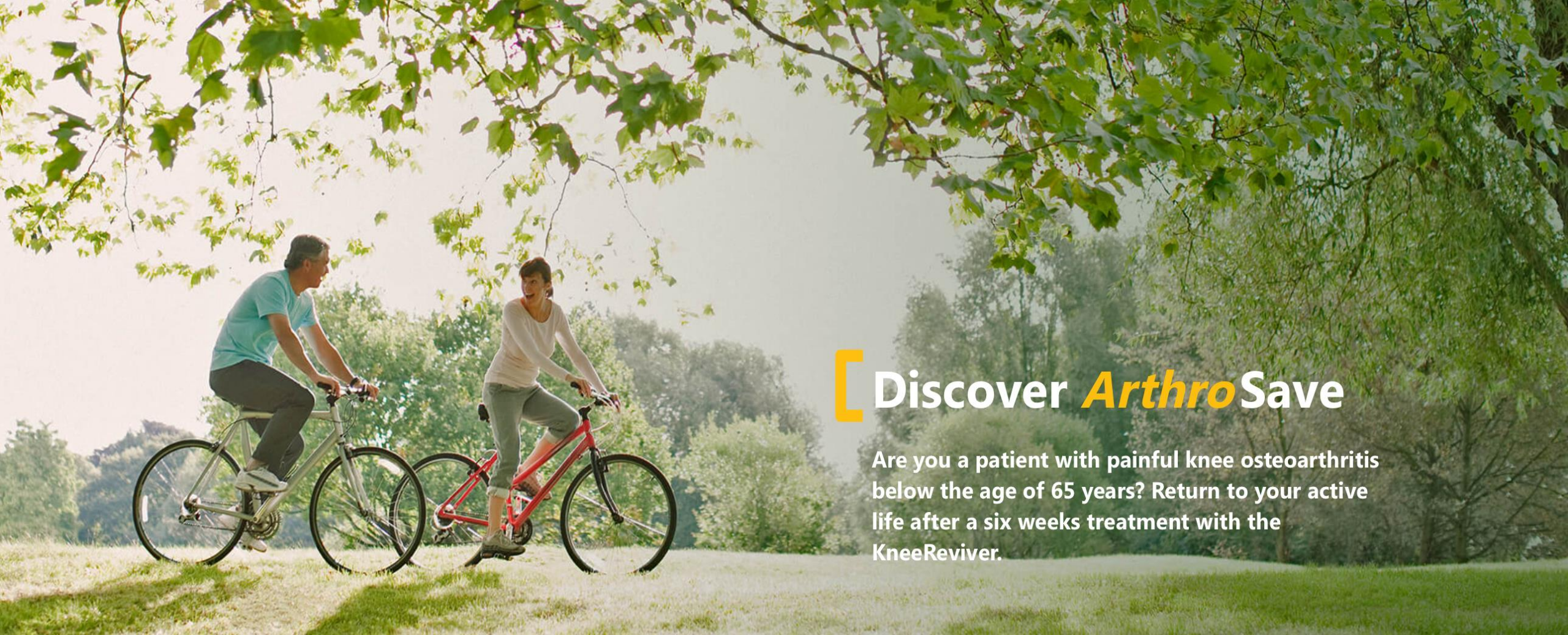
My mobility is so much better. I can do 10.000 steps a day again.

Caroline
52 years, Netherlands



Six months after rehabilitation, I could walk 10 km again

Guy
59 years, Belgium



Discover **ArthroSave**

Are you a patient with painful knee osteoarthritis below the age of 65 years? Return to your active life after a six weeks treatment with the KneeReviver.

Karianne Lindenhovius

CEO ArthroSave

karianne.lindenhovius@arthrosave.com

+31 (0)6 811 51 925

www.arthrosave.com

info@arthrosave.com

Get involved

Please contact us

Noviosound

David Bradford

The background features a large, dark blue, abstract shape that resembles a sound wave or a stylized ear. In the center of this shape, the word "novio sound" is written in white. The "o" in "sound" is replaced by a blue graphic of three concentric circles, suggesting sound waves. The overall aesthetic is clean and modern.

novio sound

Redefining silence through advanced technology.

THE PROBLEM: RISING LEVELS OF NOISE POLLUTION

The widespread impact



Health

Continuous noise can lead to chronic **stress and sleep disruption**.
A regular exposure to 55dB can lead to **hearing damage and ultimately to hearing loss**.



Productivity

Noise pollution causes a general **decrease of 20% in productivity**.



Mutual drowning out

Vicious circles of noise appear.
Birds overtune cars to communicate.
We increase the TV volume to drown out the AC. And so on ...

Overall decreasing of quality of life.

THE SOLUTION

Quiet innovation

novio  sound

Revolutionizing **noise reduction** to enhance productivity
and well-being **with simple, effective technology.**

THE COMPANY

We do rocket science - for your ears

novio 

As an engineering company we tackle a critical problem.

critical problem
company we tackle a
critical problem

Developing cutting-edge technology for noise reduction.

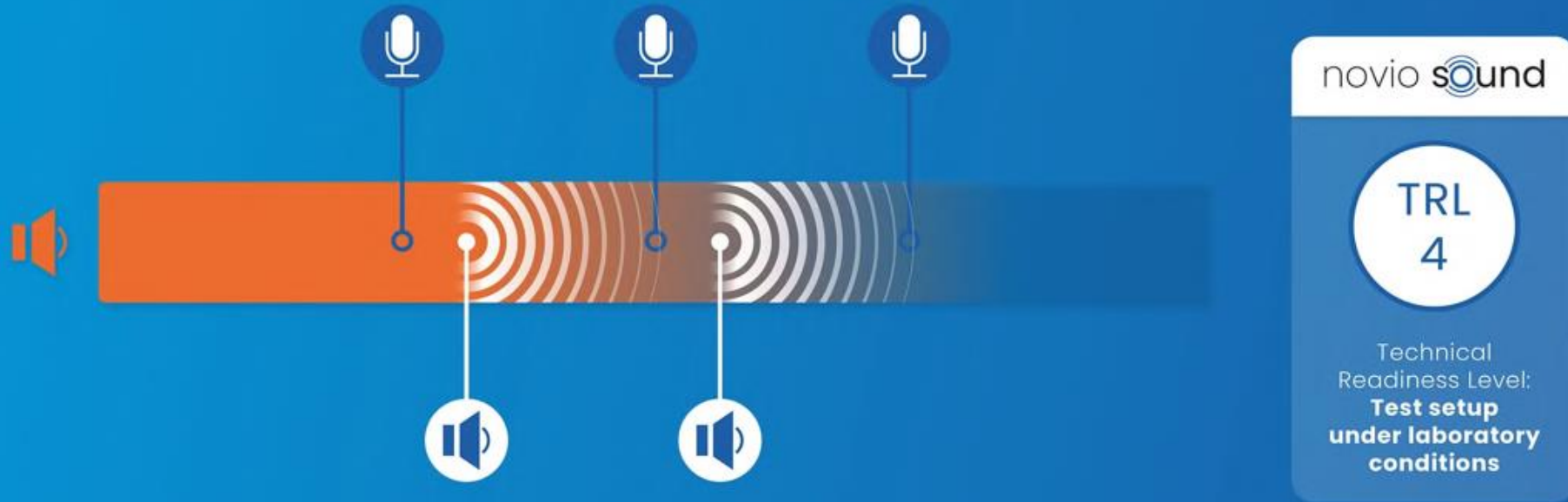
noise reduction
cutting-edge technology for
noise reduction

Integrate our innovations into equipment and pioneer systems.

innovations
integrate our innovations
into equipment and pioneer systems

CORE TECH

Patented & functionally proven Novio Sound technology



Step 1: Detect

Identification and categorization of noise

Step 2: Analyse

Differentiation of noise sources

Step 3: Adapt

Setting adjustment for optimal noise reduction

Step 4: Cancel

Effectively cancellation of unwanted noise

Step 5: Monitor

Ensurance of consistent noise regulation

Step 6: Improve

Continous improvement of user comfort

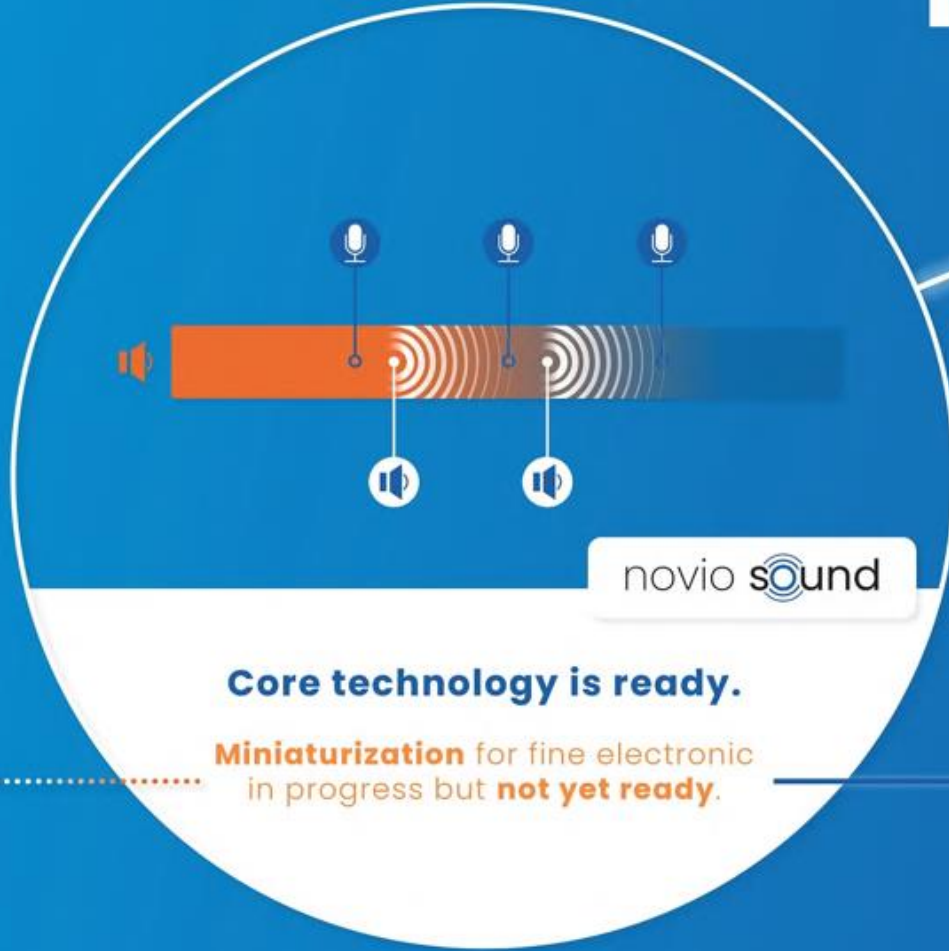
APPLICATION OF TECHNOLOGY

Implementation into a wide range of possible products

Medical



Hearables



1st



Heat Ventilation & Air Conditioning

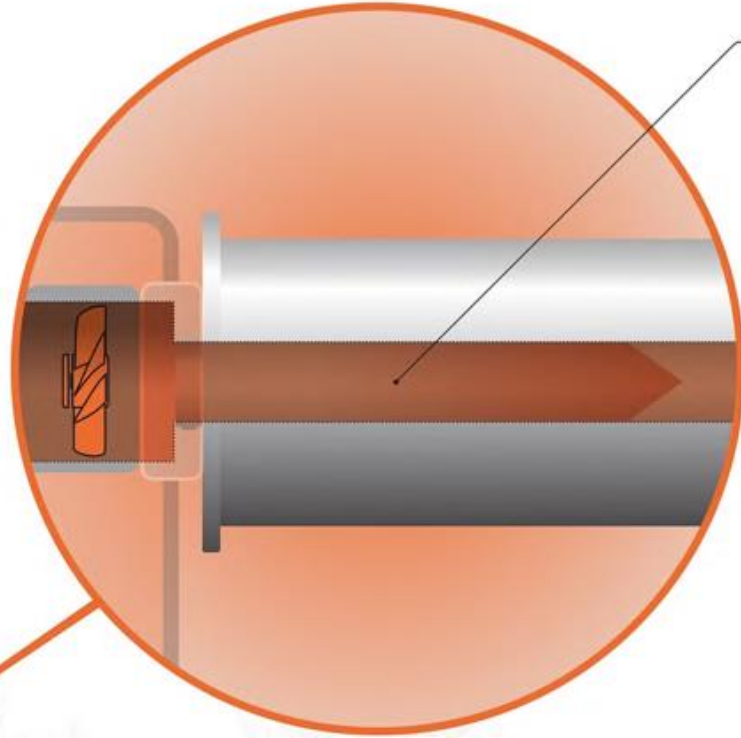
€

Engage via **beach head HVAC market** (Heat Ventilation & Air Conditioning) **for early revenue.**

No miniaturization required.

NOISE POLLUTION FROM HVAC SYSTEMS

Everyday noise exposure



Noise emanating from the fan is amplified in the ducts and reaches different frequencies.



We suffer between 10 - 22 h every day from HVAC noise.

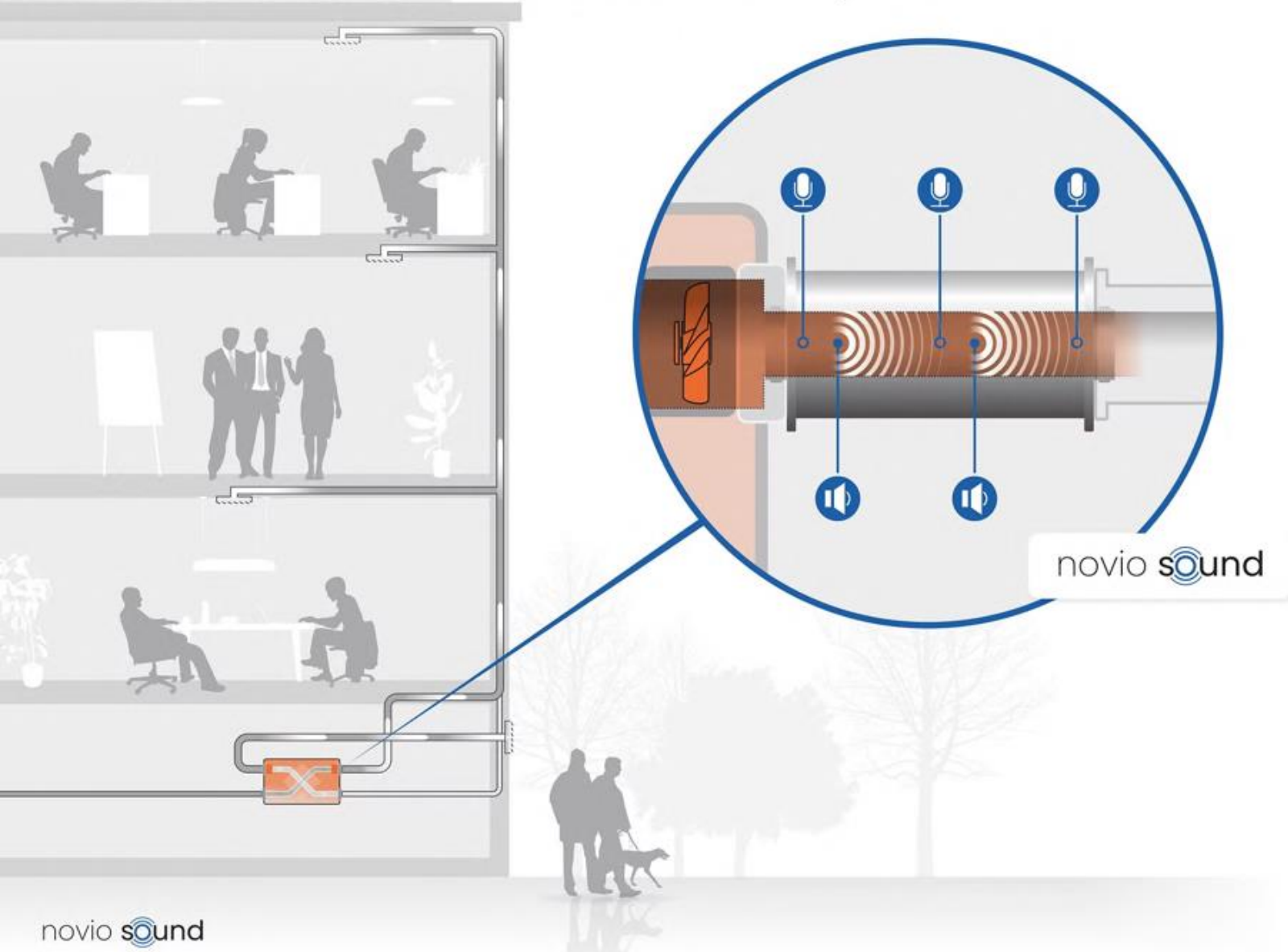
at home

at the office
& inside
production
plants

in public
transport

INTELLIGENT SILENCERS FROM NOVIO SOUND

Advanced active noise cancellation for HVAC systems



~ 30 x noise reduction

Reduces dominant fan noise **effectively at its source.**

~ 90 % less space

Huge passive silencers and insulation occupy a lot of space. Our **compact active silencers** only need a fraction.

Quick replacement

With minimal downtime, it can be **easily installed into all existing systems.**

VALUE PROPORSITION

Current approaches to deal with HVAC noise pollution

BUILDING LEVEL



HVAC UPGRADES

EFFECTIVENESS	●	●	●	●	●
LOW COSTS BY GOOD VALUE	●	●	●	●	●
COMPACT SIZE	●	●	●	●	●
TIME-SAVING INSTALLATION	●	●	●	●	●


ROOM LEVEL



PASSIVE SILENCERS

EFFECTIVENESS	●	●	●	●	●
LOW COSTS BY GOOD VALUE	●	●	●	●	●
COMPACT SIZE	●	●	●	●	●
TIME-SAVING INSTALLATION	●	●	●	●	●

PERSONAL LEVEL



HEARABLES

EFFECTIVENESS	●	●	●	●	●
LOW COSTS BY GOOD VALUE	●	●	●	●	●
COMPACT SIZE	●	●	●	●	●
TIME-SAVING INSTALLATION	●	●	●	●	●

— PLAYING LOUD TO DROWN OUT NOISE RISKS DAMAGING EXPOSURE

— SOCIALLY ISOLATING

VALUE PROPORSTION

Superior noise reduction for a quieter surrounding

ON ANY LEVEL

novio  sound



EFFECTIVENESS



LOW COSTS BY
GOOD VALUE



COMPACT SIZE



TIME-SAVING
INSTALLATION

The one innovative solution that can be implemented **in various products on all levels** and makes them better.

REVENUE MODEL

PRODUCT SALES as primary source of income
Initial sales in year 2

LICENSING FEES
Product licensing in year 3

CONSULTING
Custom solution developed from
year 3

GO-TO-MARKET STRATEGY



OUR TEAM



Arno Baltussen

CFO

Arno Baltussen worked most of his career in BP in general management functions. After early retirement he supported small to medium sized companies in redefining their strategies.



David Bradford

CEO

David Bradford brings over 20 years of experience in engineering, operations and deep knowledge of sound & noise. Skilled in team leadership and project management.



Twan Voss

CIO

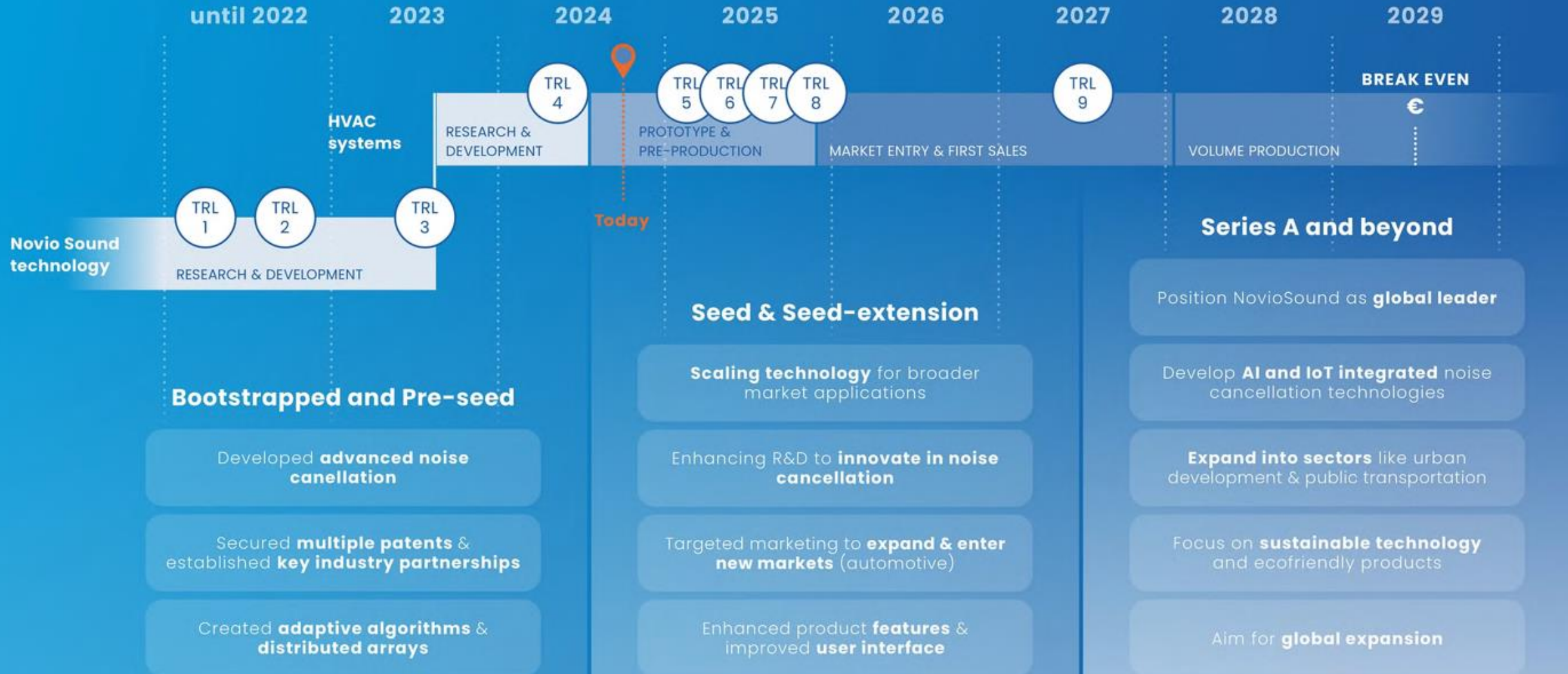
Twan Voss built and sold himself a couple of companies. Helps with strategy and investments. Focussing mostly on impact companies.

PARTNERSHIPS



ROADMAP OF TRACTION

What we achieved so far



MARKET OPPORTUNITY

What we achieved so far

Total Addressable Market **TAM**

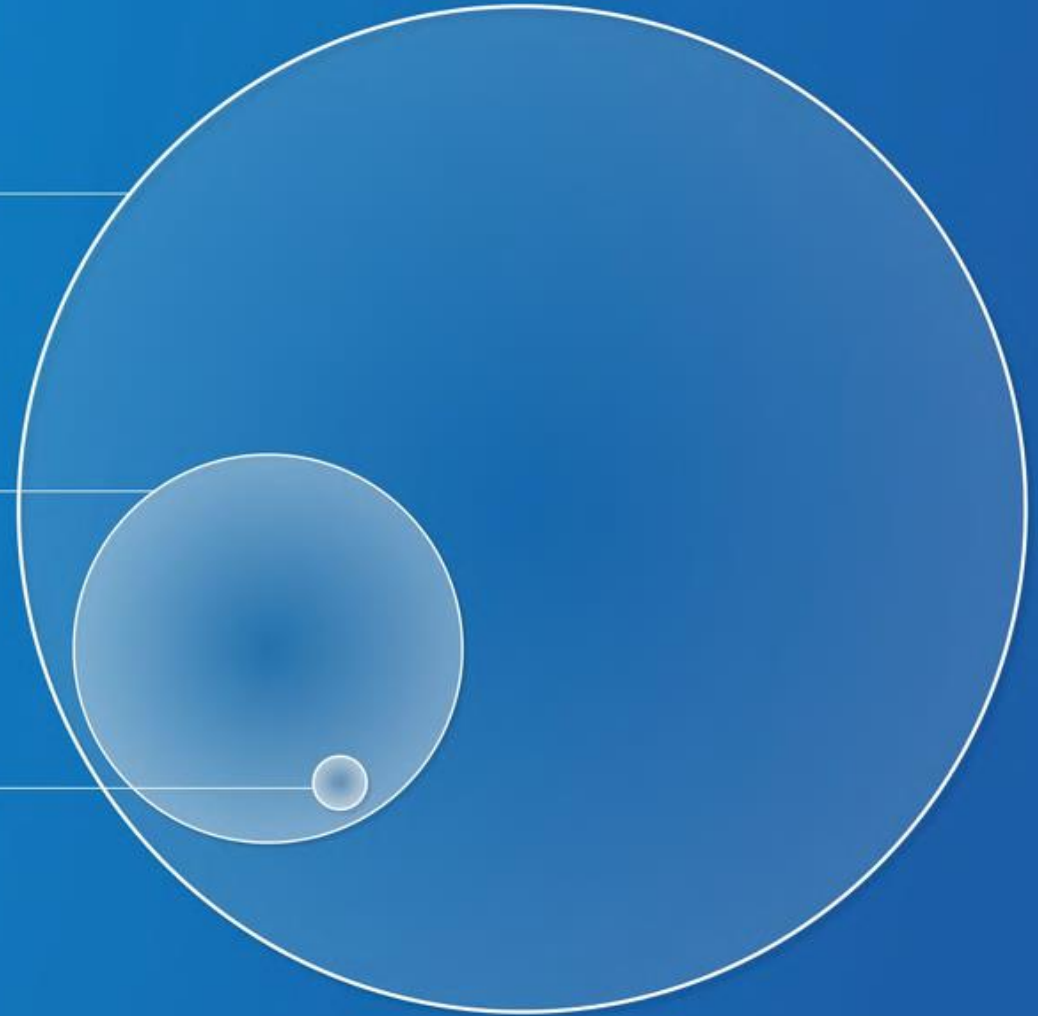
The global noise control market size was valued at **€ 11.5 billion**

Serviceable Addressable Market **SAM**

The global HVAC noise control equipment market is valued at **€ 1.7 billion**

Serviceable Obtainable Market **SOM**

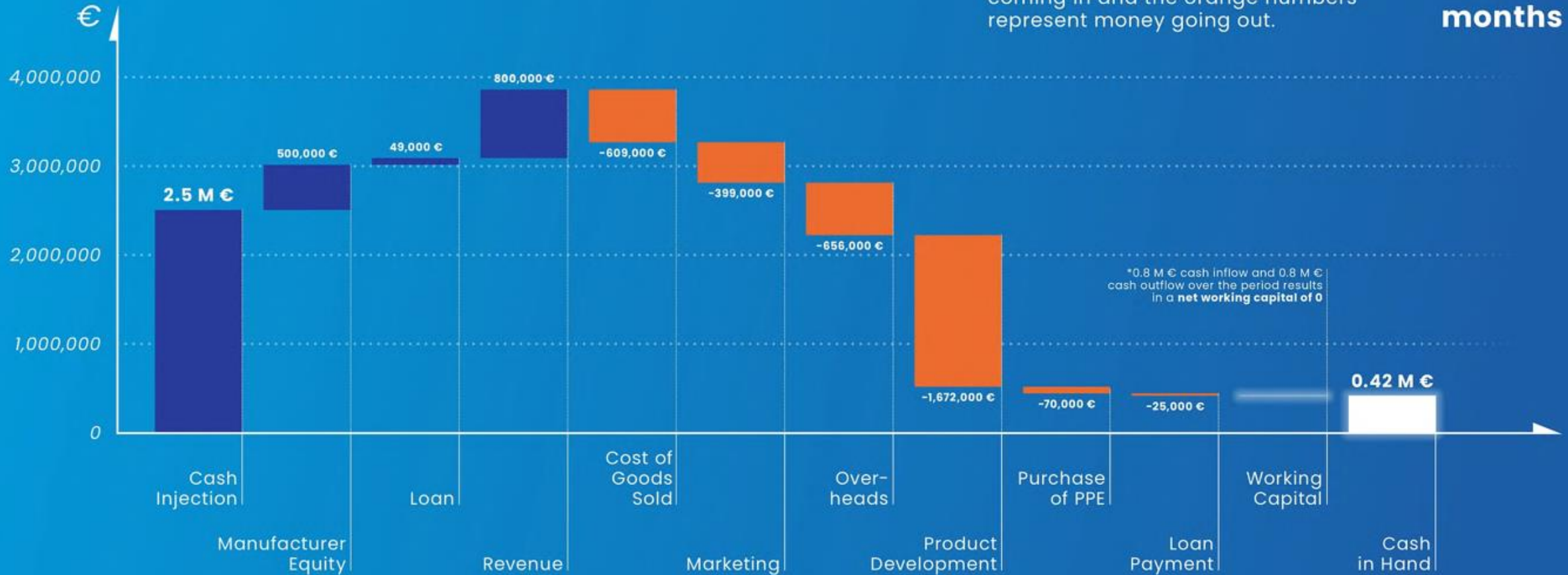
€ 31 million



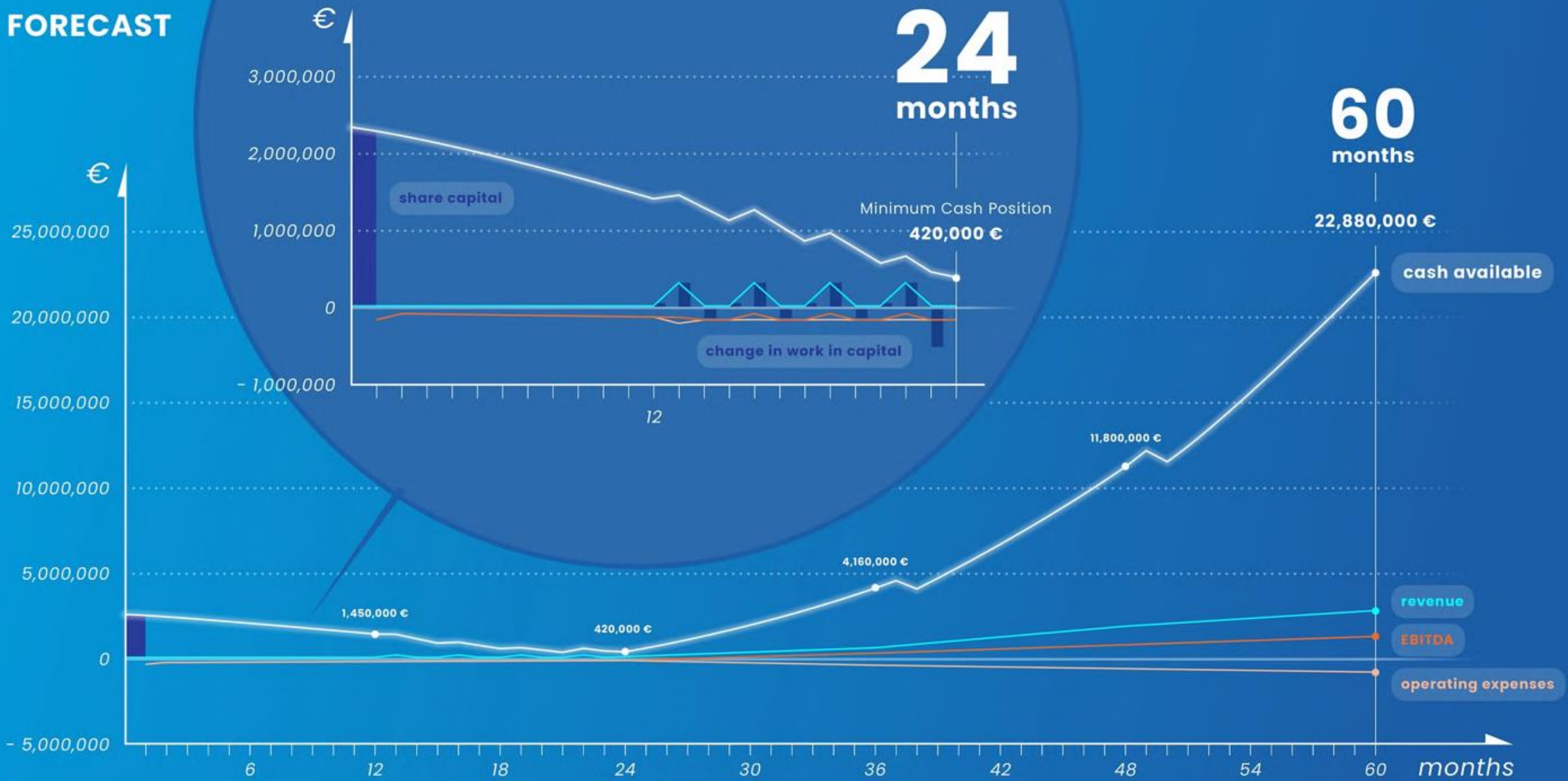
USE OF FUNDS CASH FLOW

Below is a waterfall graph showing the use of funds over a 24 month period. The blue numbers represent money coming in and the orange numbers represent money going out.

24
months



FORECAST



CONTACT US

novio  sound



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Thank you for joining us!

Enjoy the rest of the event