



THE 2022
TECHMED
EVENT

Accelerate Innovation

Experiences of the TechMed Innovation Hub



Welcome & introductions

1. Welcome & Introduction
2. Presentations of experiences in the Innovation Hub
3. Moderated panel discussion
4. Closing remarks



THE 2022
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How we work

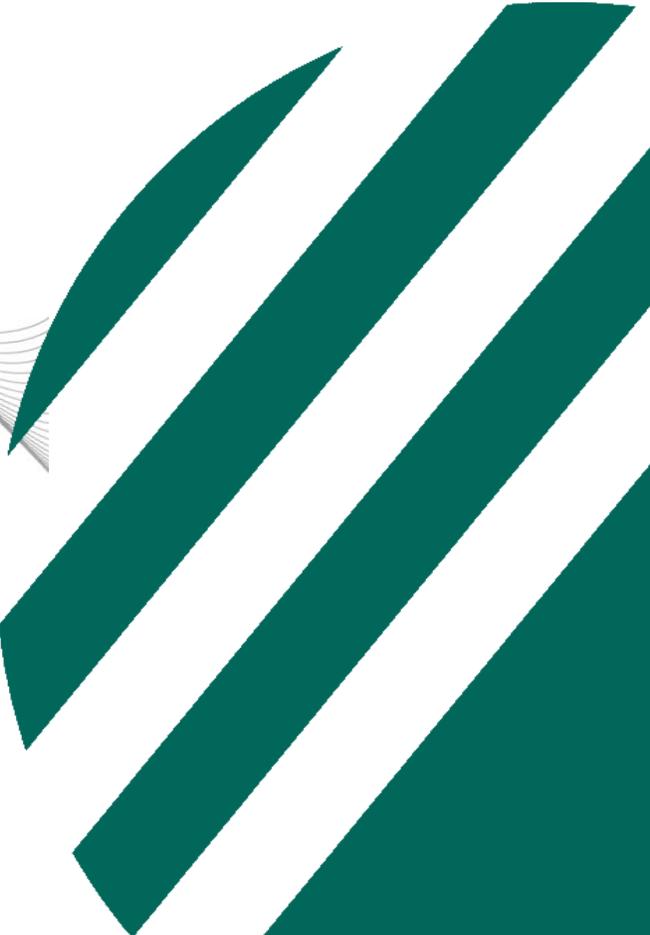
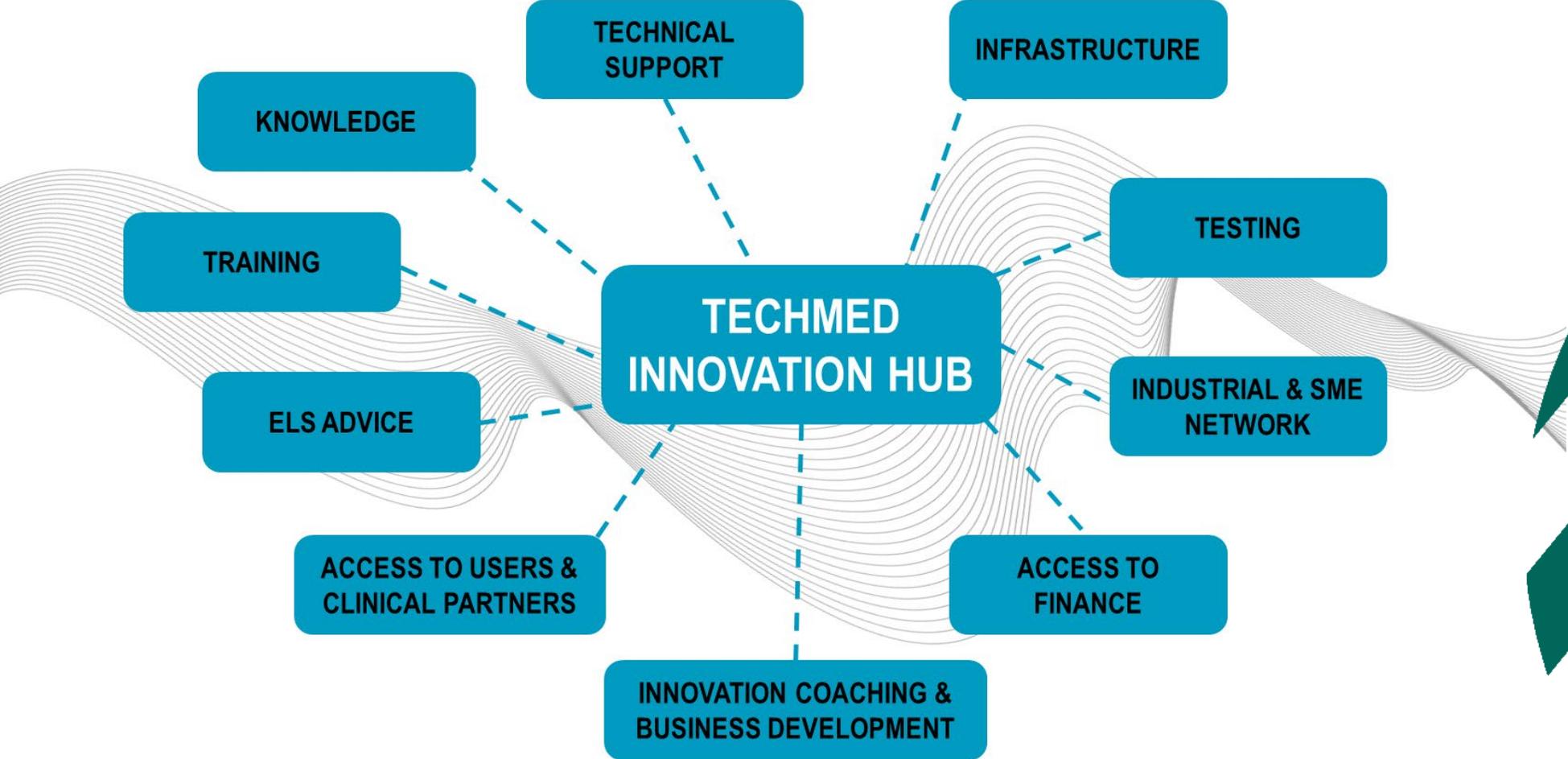
TECHMED INNOVATION APPROACH

- Collaboration with SME and industry whereas the TechMed Centre can be a **knowledge** partner or **shared (research) facility** location
- Strategic partnerships with key accounts (i.e. Siemens Healthineers, Medtronic, Ancora Health)
- Building public-private partnerships with many others

TECHMED INNOVATION APPROACH

- Ensure challenge based, needs driven R&D collaborations
- Building a strong innovation funnel with partners
- Optimize our innovation ecosystem with diverse partnerships
- Solving innovation barriers
- Investing in innovation and acceleration infrastructure

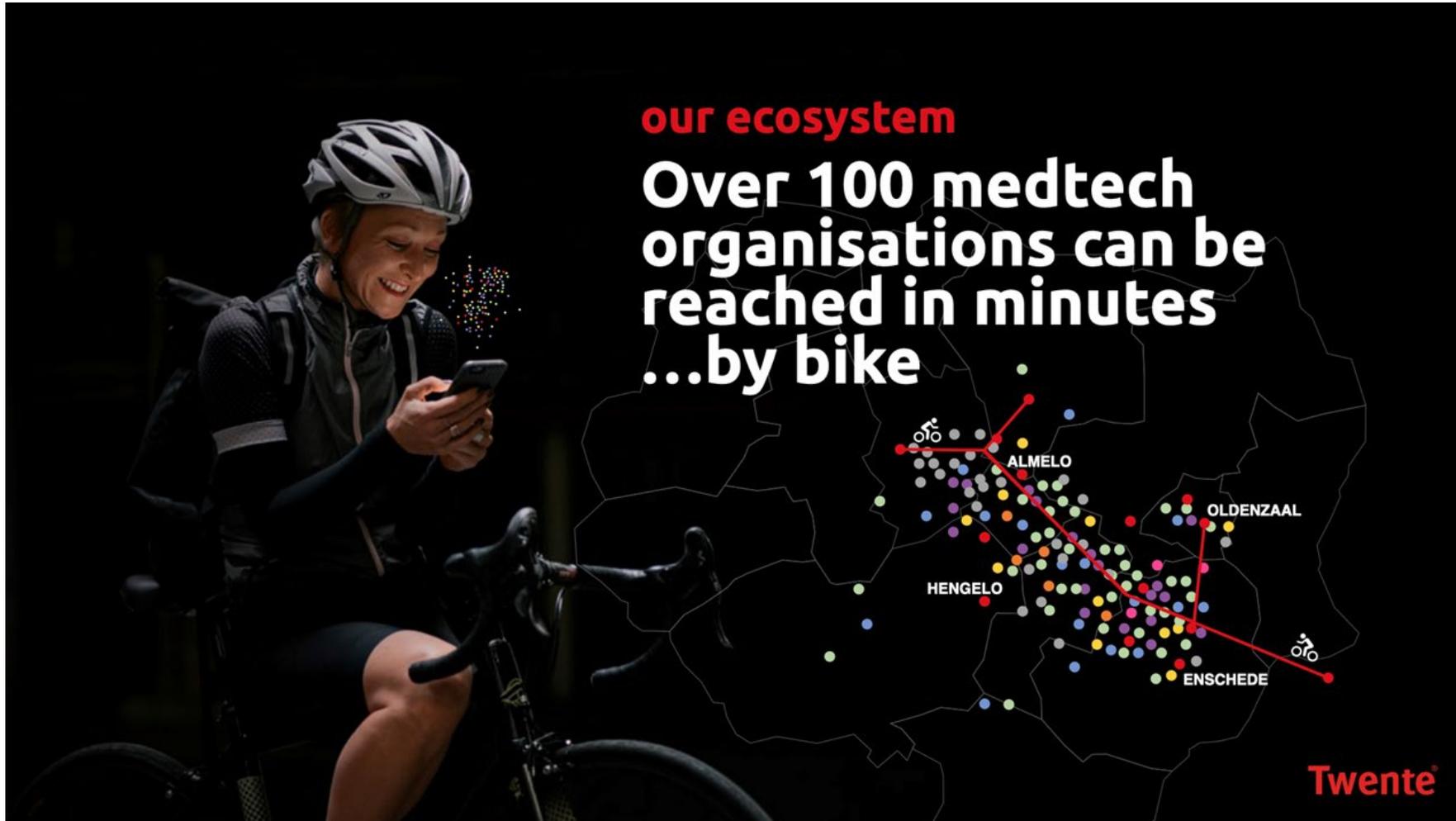
INNOVATION HUB SERVICES



TECHMED INNOVATION APPROACH

- Boost innovation by connecting stakeholders in & beyond the regional ecosystem
- Offering wide diversity of services
- Offering access to state-of-the art research facilities
- Stimulating new innovation with funds & voucher programs
- Supporting Technology & Knowledge Transfer

TECHMED INNOVATION ECOSYSTEM



our ecosystem

Over 100 medtech organisations can be reached in minutes ...by bike

ALMELO
HENGELO
OLDENZAAL
ENSCHEDÉ

Twente

The image features a woman in cycling gear on a road bike, looking at her smartphone. To her right is a map of the Twente region in the Netherlands, showing a dense cluster of colorful dots representing medtech organizations. Red lines with bicycle icons connect these dots to the cities of Almelo, Hengelo, Oldenzaal, and Enschede. The Twente logo is in the bottom right corner of the map area.

FUTURE ACCELERATION DEVELOPMENTS

Accelerate knowledge from the **Sustainable Healthcare Technology** impulse programme

- Quicksan
- Roundtables
- MDR support



PRESENTATIONS

THE **ADDED-VALUE** OF COLLABORATION IN THE TECHMED INNOVATION HUB

- > Roderik Erens – IHB Skytron
- > David Fernandez Rivas – BubClean Flowbeams
- > Sridhar Kumaraswamy – Ancora Health

RODERIK ERENS, PhD

COO IHB Skytron





Innovating medical pendants



November 2022



Roderik Erens

Benefit in use of medical supply Pendants

- Safe medical equipment placing
- Flexible ducts protecting cables / wires / hoses to essential equipment
- Ergonomics of operating equipment and viewing of displayed information



Innovation hurdles



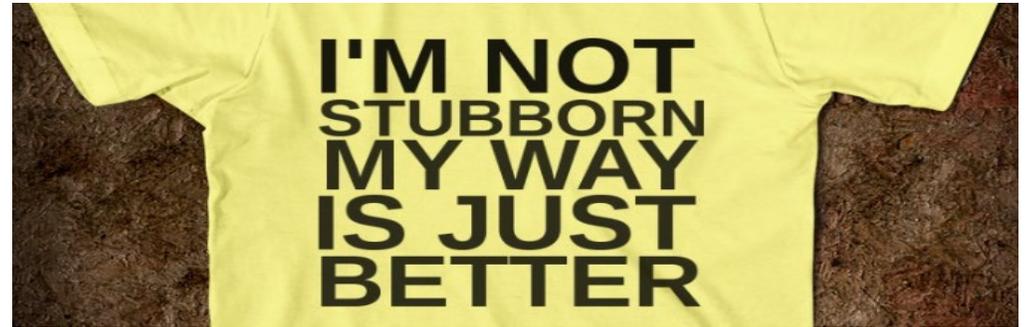
Legacy



Access



Habits



Culture



Time



Regulation

Innovation starts by the user



User needs all over the place

- Flexible OR's with more equipment
- More information to be viewed
- Hygiene and infection control
- Long demanding surgical procedures

Medical Pendants problems:

- Clean floor leads to crowded air space
- Equipment obstruction
- Pendants are difficult to move
- Collisions of arms and equipment

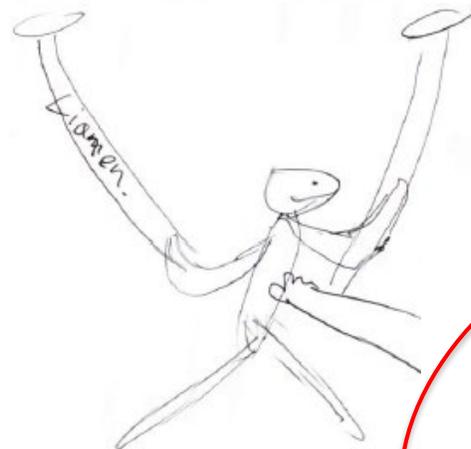
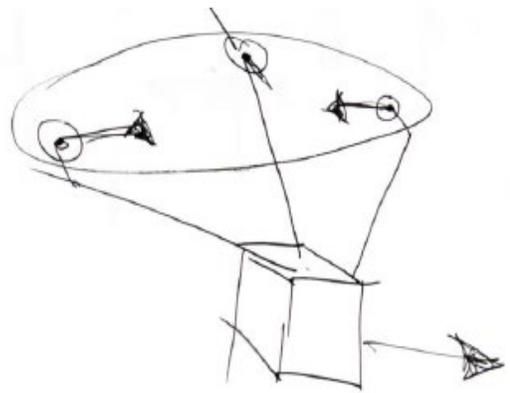
MCL Leeuwarden: 2015 Hybrid Operating Room

Creating idea's and learn from others

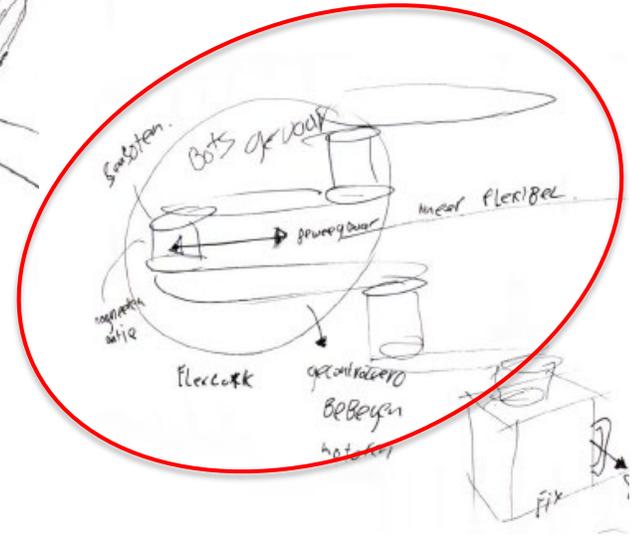
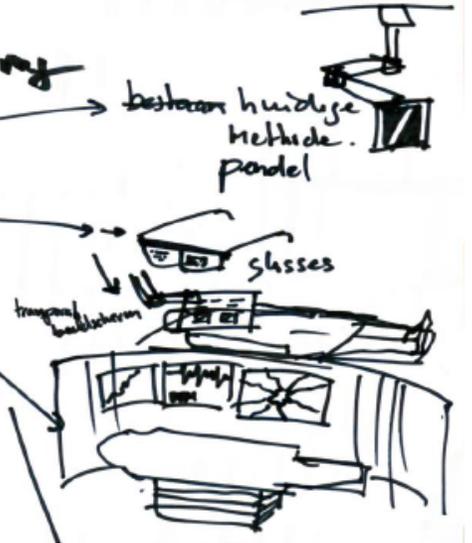
Knelpunten ^{muur?}
 Ruimte (beperkt, andere apparaten)
 Ergonomie ^{intuïtief} _{langdurig} _{visuele drukte / overzicht}
 Bewegen - Hoe?
 Stugge artsen _{kleine veranderingen}
 Beeldverwerking
 Bereik - net niet

Hybride = meer handelingen
 ↳ meer pendels _{Botsen}
 ↳ omvangrijker operaties
 ↳ tussentijds wisselen van opstelling
 ↳ langduriger interactie

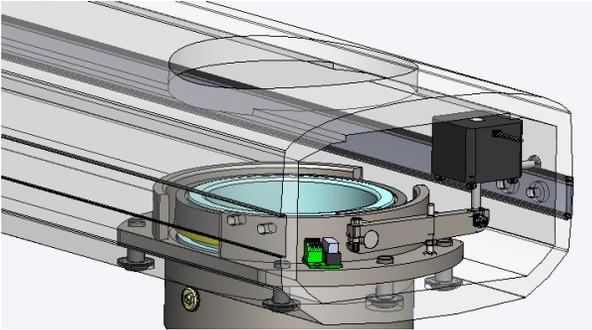
beeldschermen
 lampen
 tafel
 endoscopische module
 landschap



- Informatie voorziening Chirurg
- beeldscherm
 - Hud (heads-up-display)
 - projectie (muur)
 - Hologram (holografisch)



The innovation – Easy move & less collisions



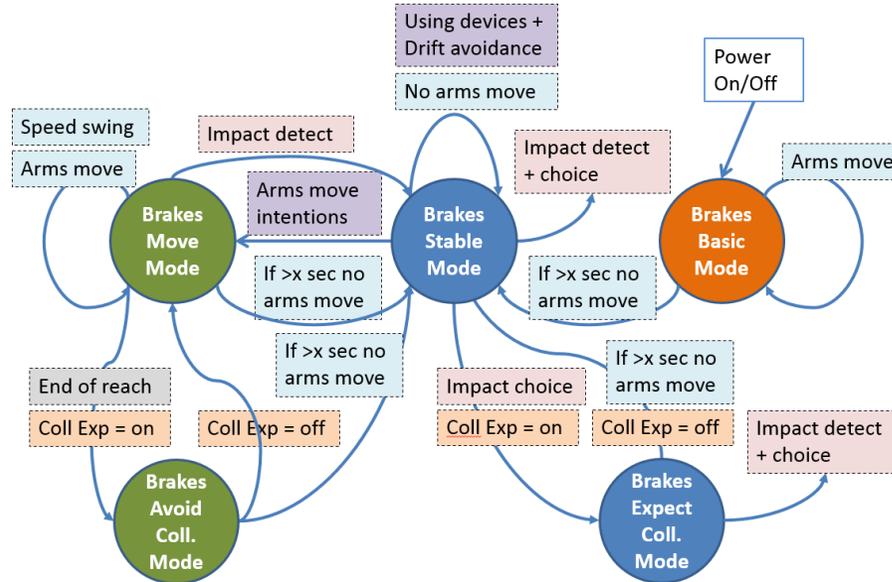
Dynamic controlled friction

Accelero sensor

Lock – unlock when movement is detected

Angular decoder

- Prevent arm lockups (e.g. stretched arms)
- Programmable soft end stop
- Controlled speed of movement
- Prevent self collision of arms



Less is more: replace 3 arms by 1



TechMED – Usability evaluation



Operator – clinical use
Details matter
e.g. Handle on the back does not work

Cleaner
Identified areas of difficult cleaning

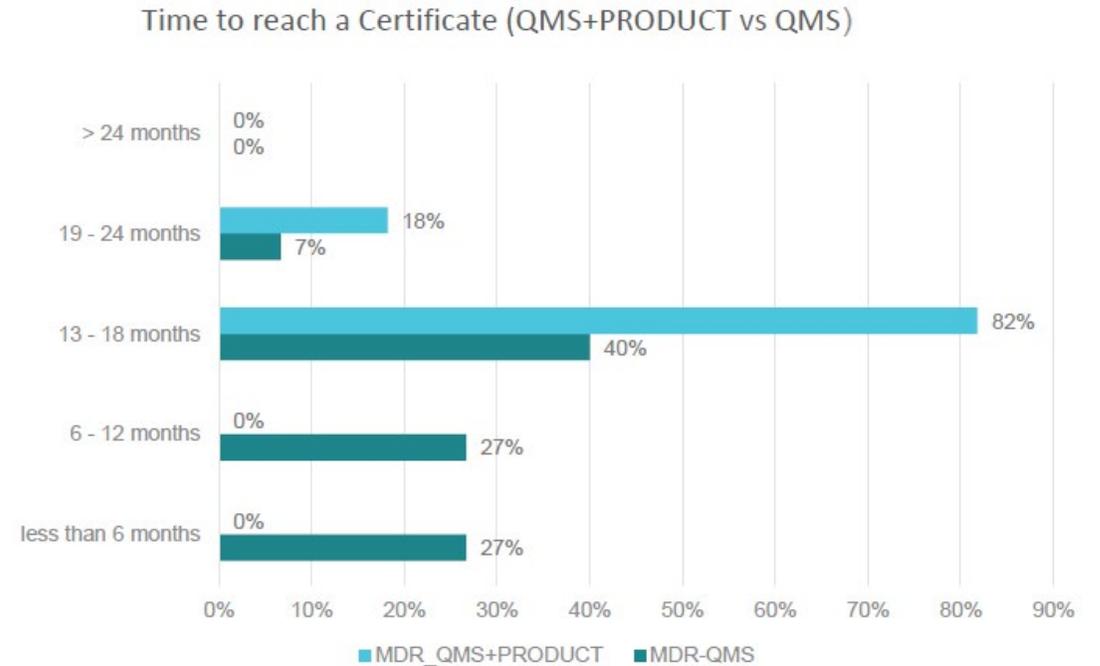
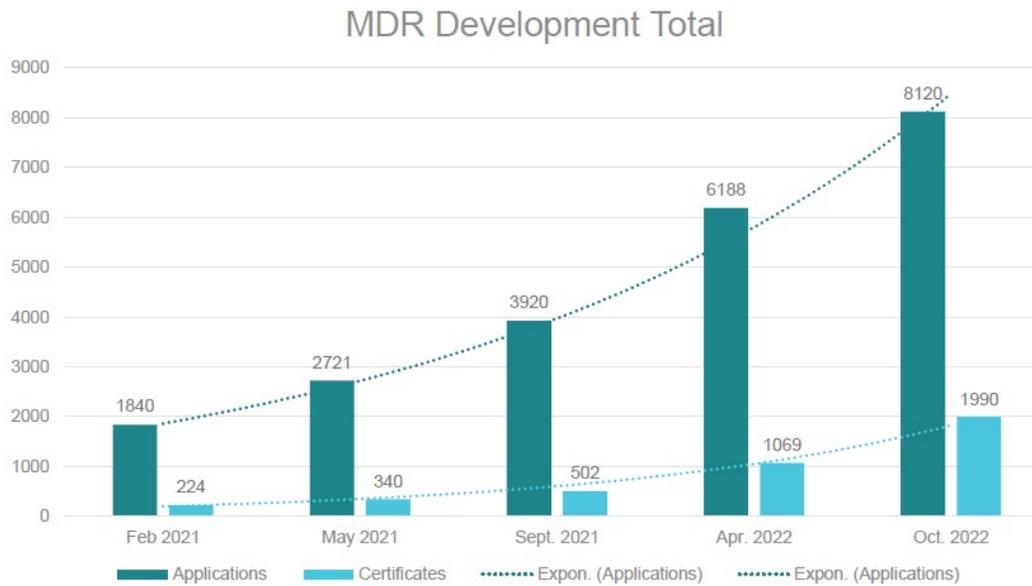


Operator – Foreseeable misuse
Response needed improvement

Hospital technician
Confirmed with minimal instruction



CE certificates: *24.073 in April 2022*



Skytron Freedom time line: start 2016 – development completed 2019 – FDA market approval 2020 – MDR certified 2021

TechMED - work shops series – accelerating CE



THANK YOU!



Questions?



Roderik Erens

PROF. DAVID FERNANDEZ RIVAS, PhD

CEO BubClean & CEO FlowBeams



**Main Ingredients to Innovate:
Persuasiveness and Empathy**

Acknowledgements



European Research Council



Dutch Research Council



UNIVERSITY
OF TWENTE.

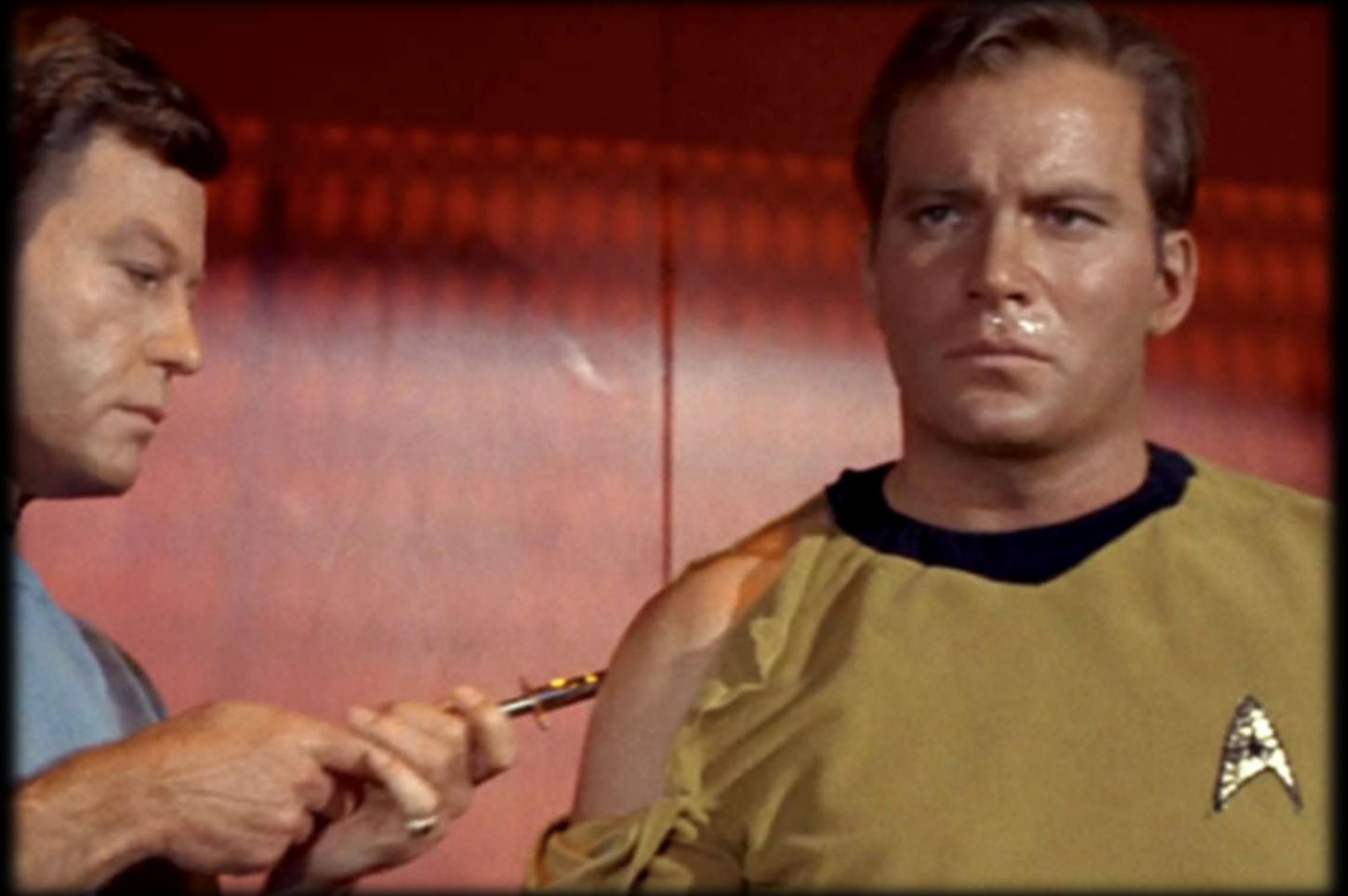


www.david-fernandez-rivas.com

FlowBeams

STAR TREK

To boldly go where no man has gone before



The Innovator

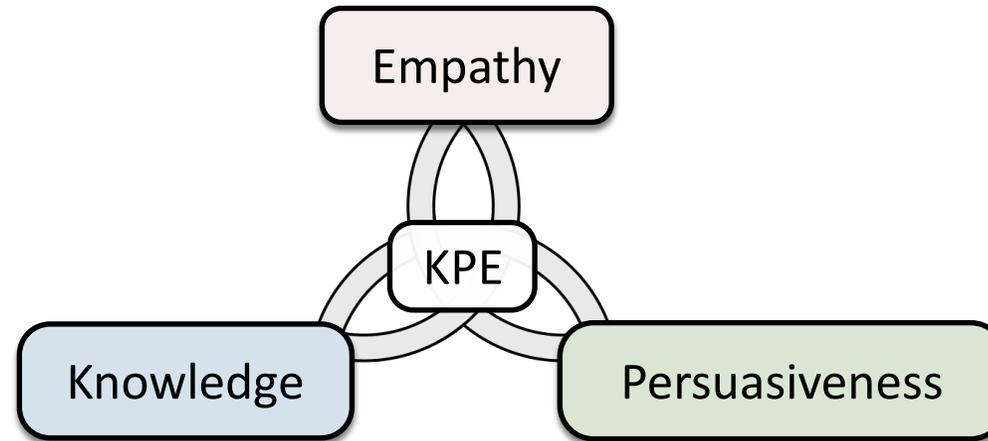
is an active **connector** between
Science, Technology and Society

matches knowledge and
ingenuity to practical challenges,

and never stops learning
and **teaching** others

The Innovator needs

is an active **connector** between Science, Technology and Society



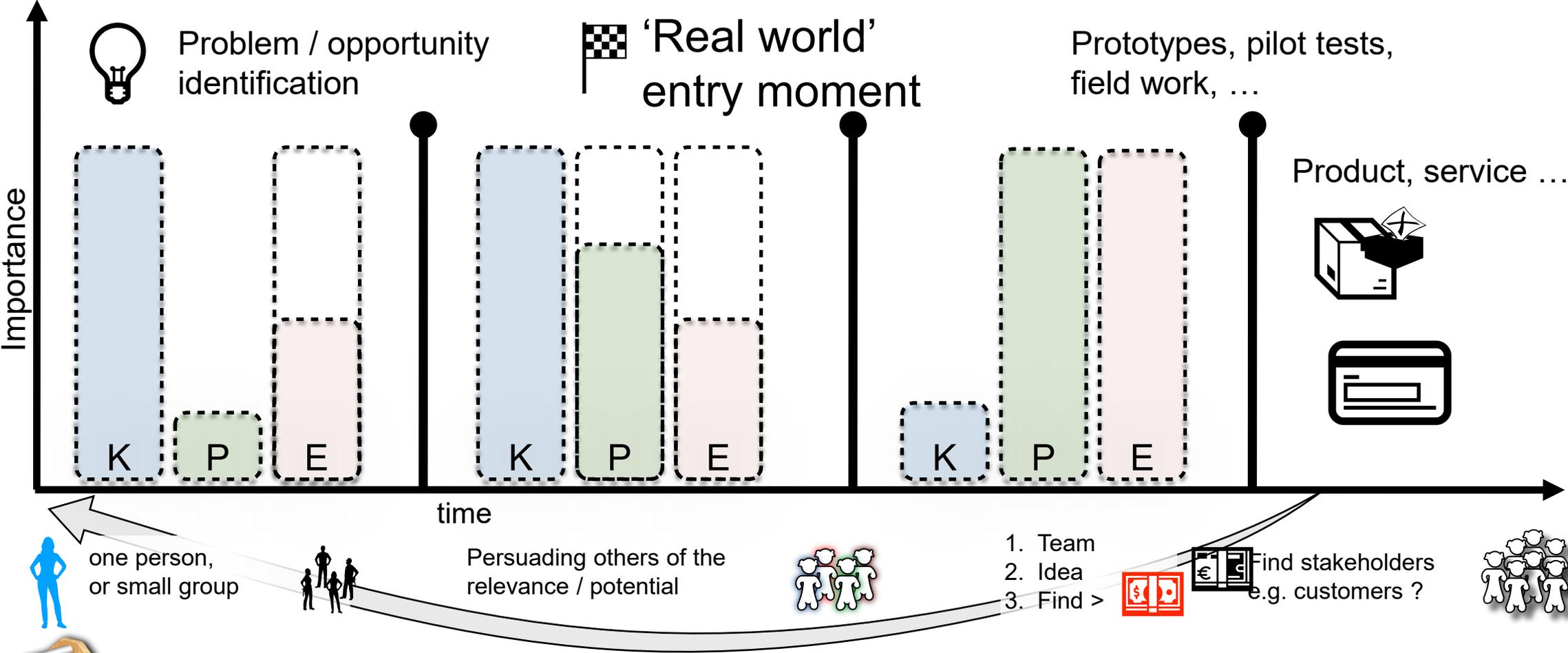
matches knowledge and **ingenuity** to practical challenges,

and never stops learning and **teaching** others

From idea



FlowBeams

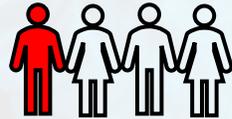


Problems

Needles cause

- Hesitancy | Pain | Fear

10-20% - COVID-19



~ **165 injections**
in a lifetime

- Medical complications

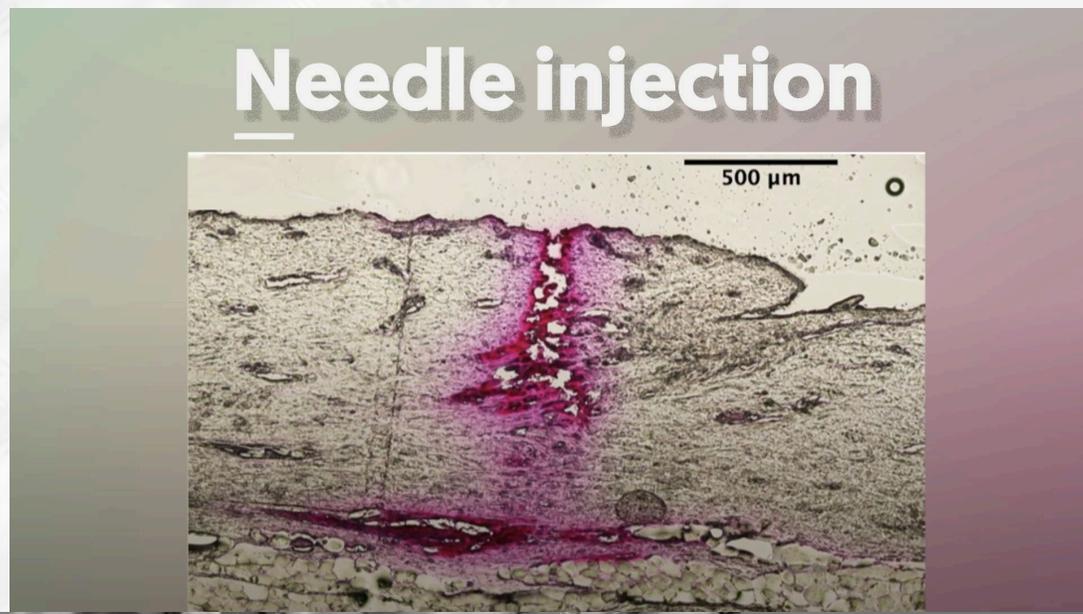
- 800.000 stick incidents => 40% HBV & HCV infections

- Unsafe needle injections | 1.3 million early deaths

Problems

Needles cause

- Bio-toxic waste |  44 M needles used each day [before Covid19]
- 8% of total waste is medical waste (NL) 

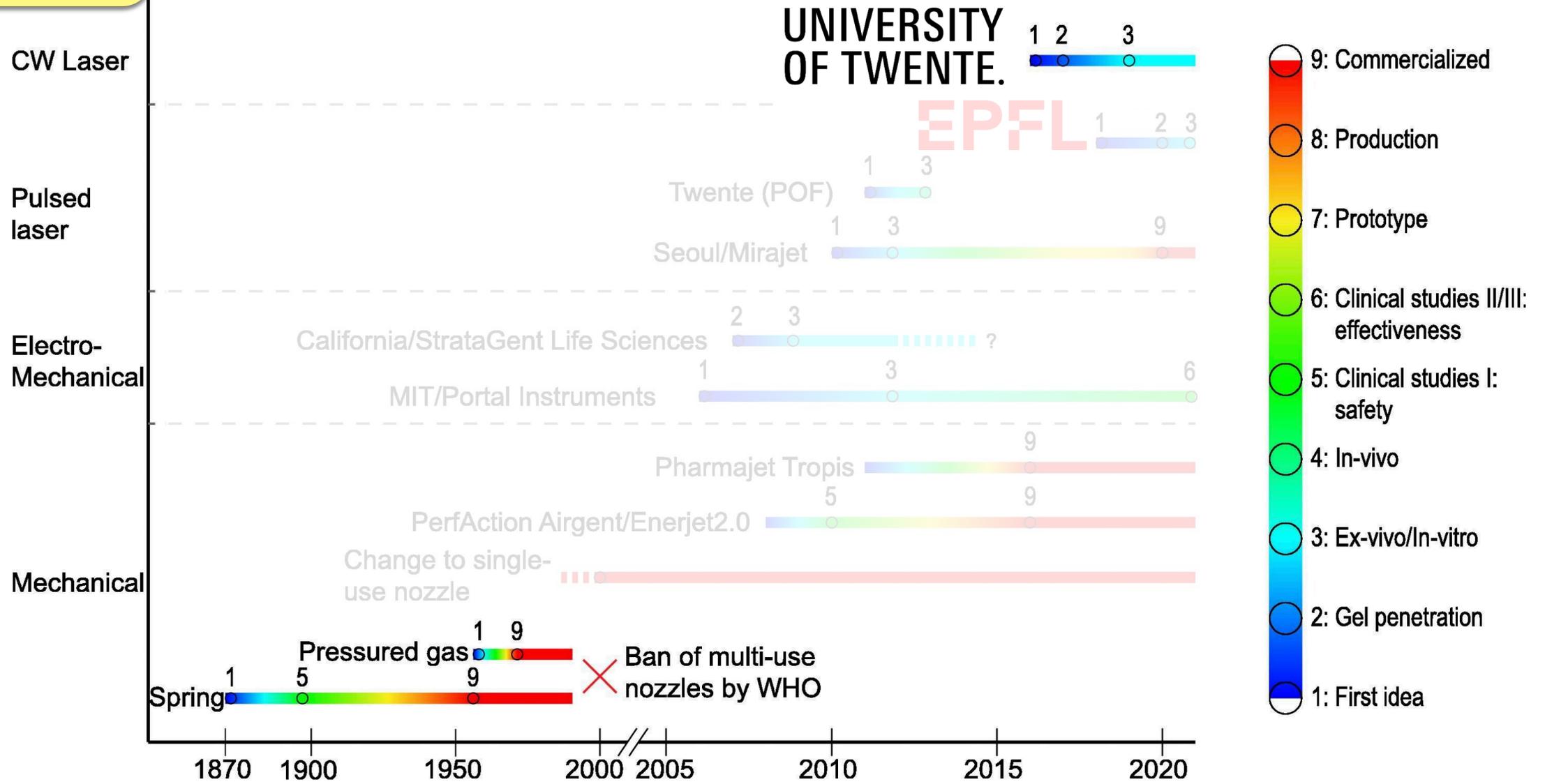


No needle = no trouble (?)

- Unique chance to develop new technology
 1. Less contamination
 2. Less risk for caregiver (prick accident)

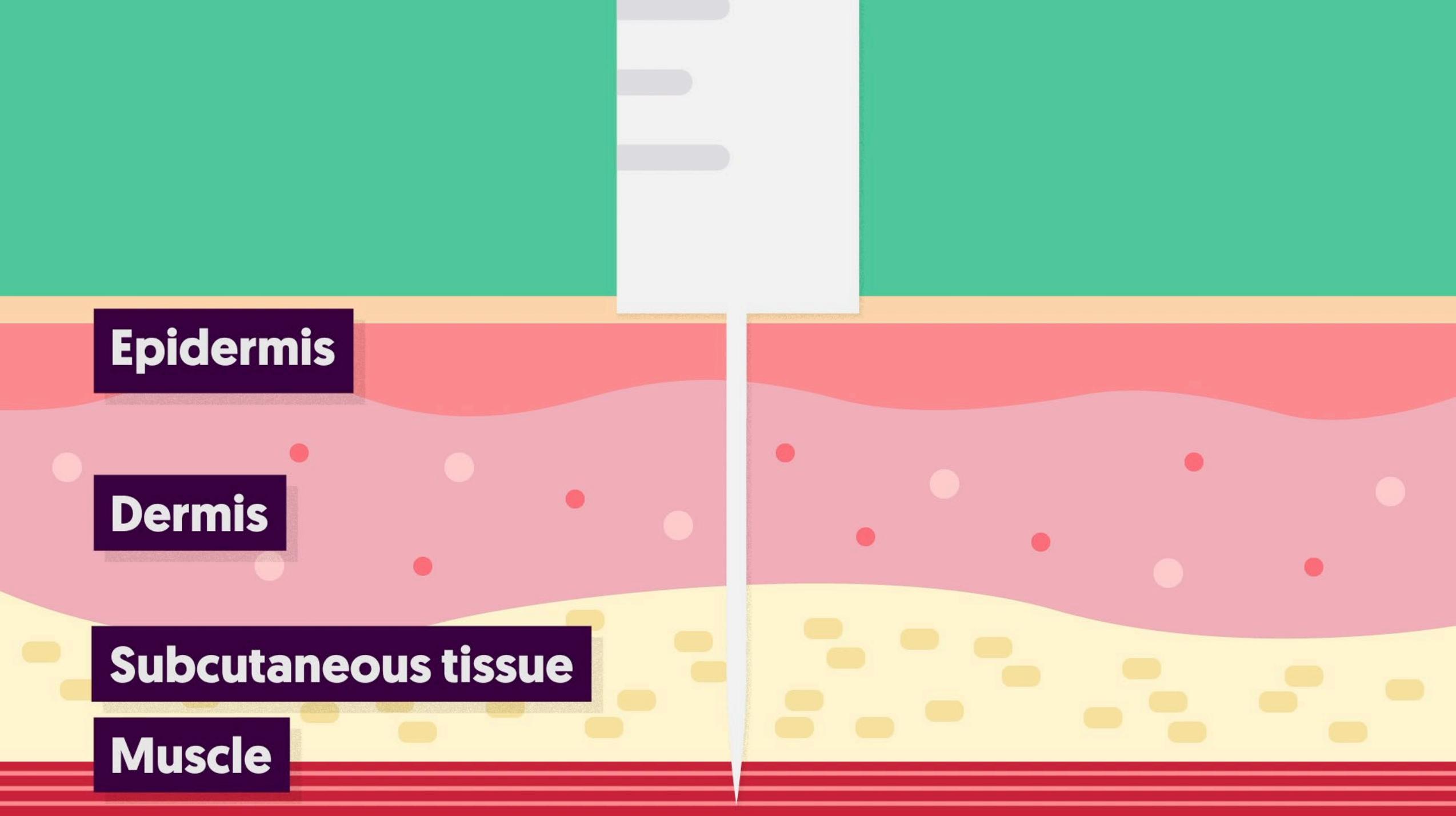


Race to inject



Schoppink and Rivas; Jet injectors: Perspectives for small volume delivery with lasers.

Advanced Drug Delivery Reviews, 2022



Epidermis

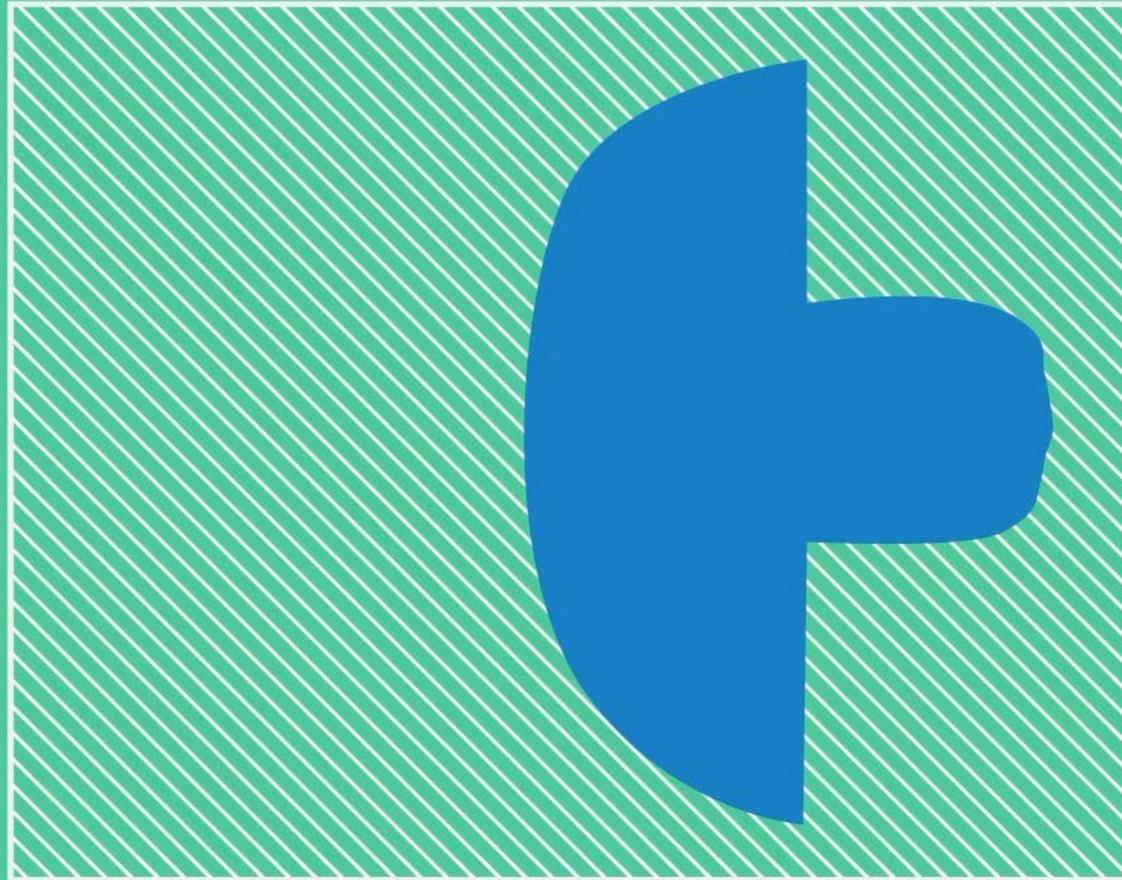
Dermis

Subcutaneous tissue

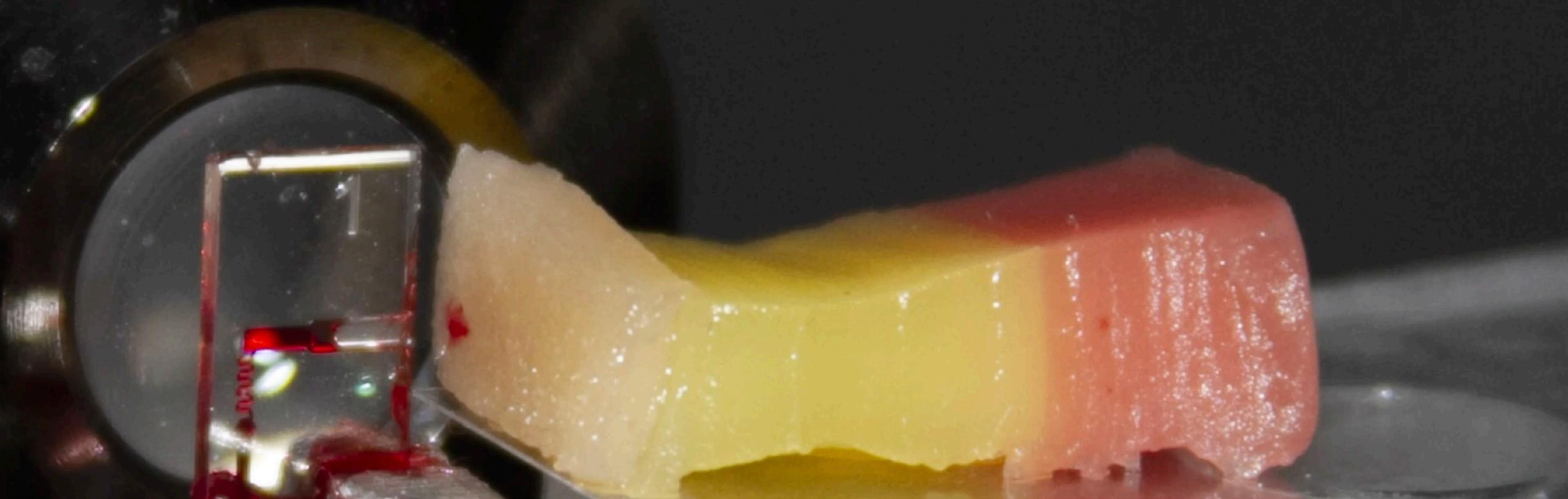
Muscle

Solution

**Needle-free
jet injection**



It works!



Fl+: +0.000 ms

In less than 1 ms - that is very, very fast !!

1 mm 

PATENT PORTFOLIO

- 1st published
 - Country phase: USA and Europe
- 2nd applied
- 3rd in preparation

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
17 September 2020 (17.09.2020)



(10) International Publication Number
WO 2020/182665 A1



WO 2020/182665 A1

(54) Title: JET INJECTION SYSTEM

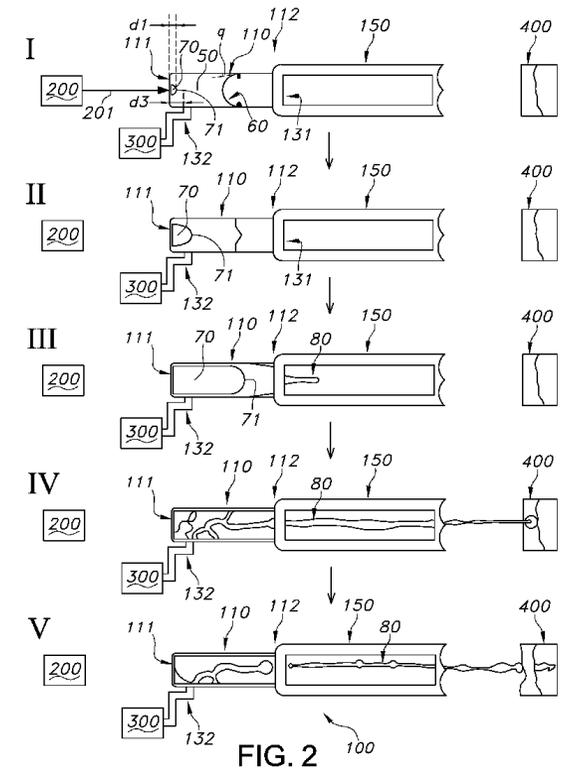


FIG. 2

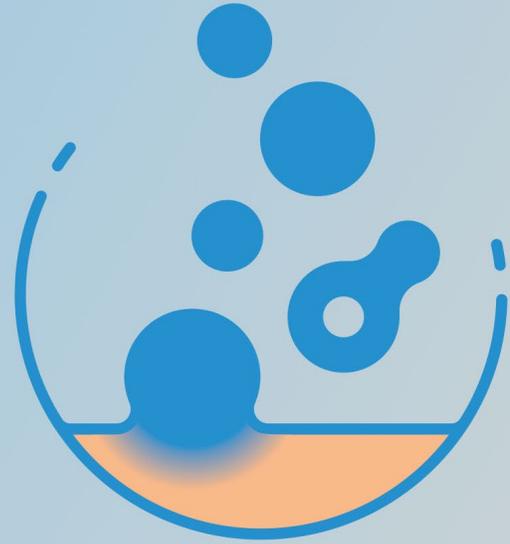
Stakeholders

K P E



<https://youtu.be/vuKqJmEz3ts>

<https://youtu.be/VpmSOrYuzFM>



THE FUTURE UNDER OUR SKIN



EMPATHIC ENTREPRENEURIAL ENGINEERING

THE MISSING INGREDIENT

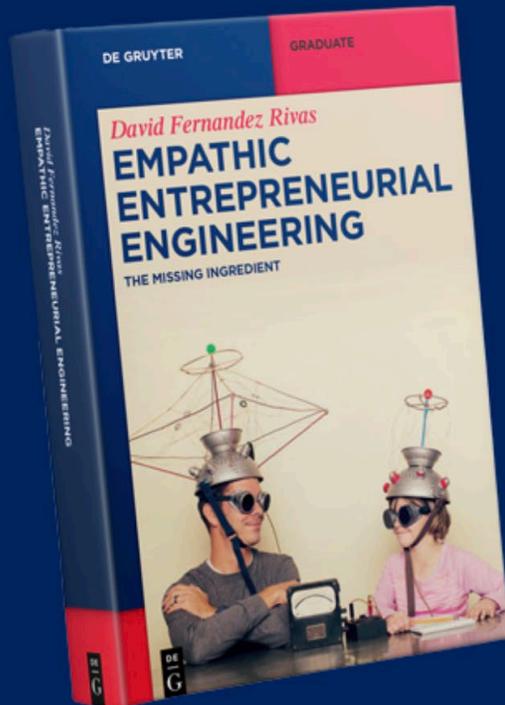
[HOME](#) [BIO](#) [DAVID](#) [CONTACT](#)

“I had the honor of seeing the preview and I think the topic is highly relevant for higher education and companies, specifically in the beta domain.”

— Eveline van Zeeland (Dr.) Author beste marketingboek 2020

★★★★★

<https://empathic-engineering.com>



Robert Langer

“This book should serve as an innovation guide for both people new to innovation and experienced professionals.”

Institute Professor
at Massachusetts Institute of Technology MIT



Jarka Glassey

“... this combination of professional skills is particularly timely as we face some of the greatest societal challenges in human history.”

Professor of Chemical Engineering
Education, Newcastle University



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Thank you for your attention !!

**Main Ingredients to Innovate:
Persuasiveness and Empathy**

David Fernandez Rivas, Prof. Dr. ir.

FlowBeams | BuBclean | University of Twente

SRIDHAR KUMARASWAMY, MBA

Founder & CEO Ancora Health





ANCORA

**Democratizing preventive health through
technology enabled behavior change**

Ancora Health – Our vision and mission

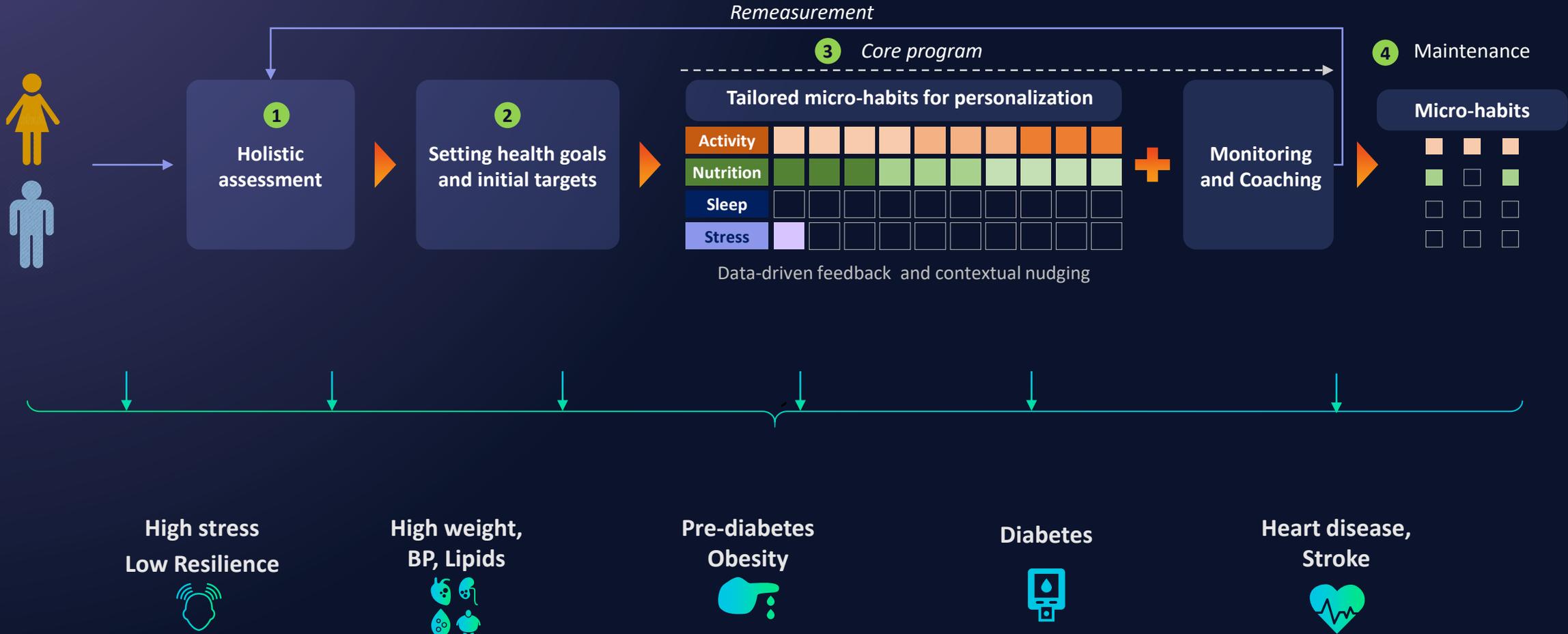


We want to add 5 million healthy years to communities and make lifestyle therapeutics an integral part of standard care by 2030.

The mission of Ancora is to empower people to take ownership of their health and wellbeing.



Ancora Health is a digital therapeutics platform translating health goals into a series of micro habits for sustained engagement and outcomes



Why TechMed ?

Behavior

Impact

Entrepreneurship



Ancora - TechMed: What we have done in 12 months!

Strategic MoU

- Develop new responsive and predictive **AI models** to stimulate and sustain healthy behaviors to improve health outcomes

Grant proposals and projects

- **Diameter** Impact the lives of T2 Diabetes patients being treated at ZGT and other hospitals
- **LOAD** - Individualized monitoring and coaching strategies through an e-coaching buddy for osteoarthritis patients
- **PerfectFIT** - Interoperable Platform for Blended Personalized Care to Fit People Living with Type 2 Diabetes

Challenges are linked to scaling adoption, showing evidence, and overcoming resource constraints

Scaling delivery of prevention

Economic and societal impact

Utilization of funding programs

Utilize knowledge to make a positive, structural contribution to the society of tomorrow.



ANCORA

PANEL DISCUSSION



Prof. Ruud Verdaasdonk, PhD
Chair of Health Technology Implementation



Saskia Kelders, PhD
Associated professor Psychology, Health & Technology



Sridhar Kumarswamy, MBA
Founder & CEO Ancora Health



Prof. David Fernandez Rivas, PhD
CEO BubClean & CEO FlowBeams



Roderik Erens, PhD
COO IHB Skytron

“

*The Twente Innovation ecosystem has
all the important parties onboard*

”



“

For acceleration we need to invest in joint RD&I roadmaps with business, care and cure organizations, investors and knowledge institutes

”

“

If the TechMed Centre Innovation hub can offer roundtables with all relevant stakeholders, companies can accelerate faster

”

“

If the TechMed Centre Innovation hub can determine maturity on all related domains in an easy way, real acceleration can happen

”

Closing remarks

Thank you to all speakers, thank you audience for your questions and attention.

Do reach out!



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