



medicsen

Personalized virtual assistant for diabetes

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Forbes 30 under 30



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medicsen_ES

MEDICAL
CARE

HEALTH

Predictive
algorithms





María, 11 y/o

Type 1 Diabetes diagnosed in 2015

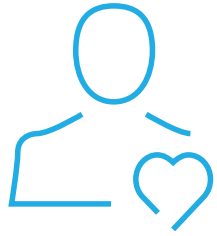
**Complaint about not having a normal life
and her friends laughing at her**



"I am afraid of needles"

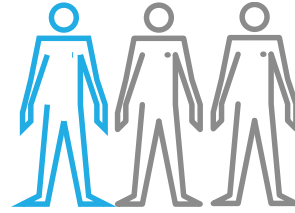
-María





Low quality of life

Reduces treatment adherence



33% of patients achieve target goals

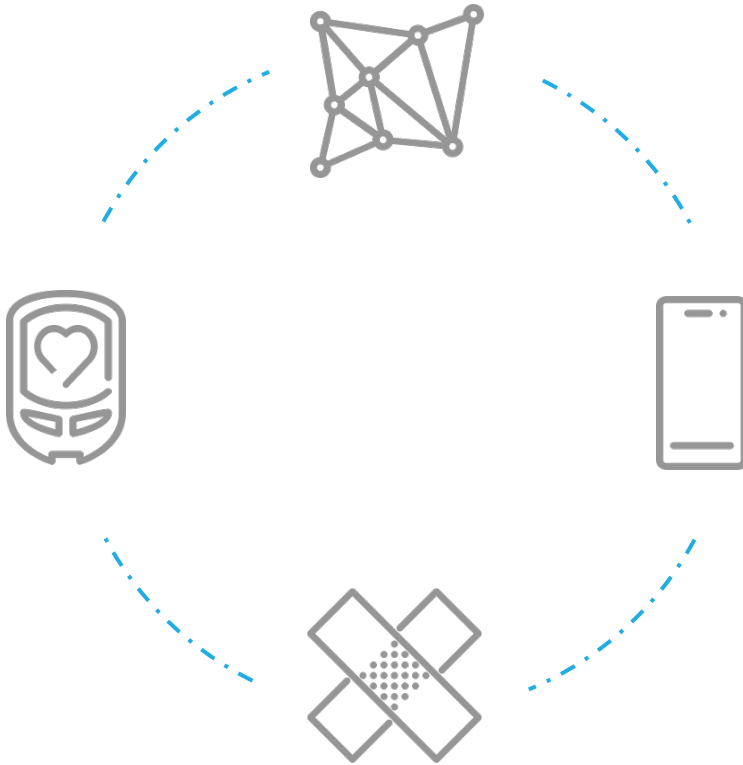
400M patients worldwide
>4M in Spain



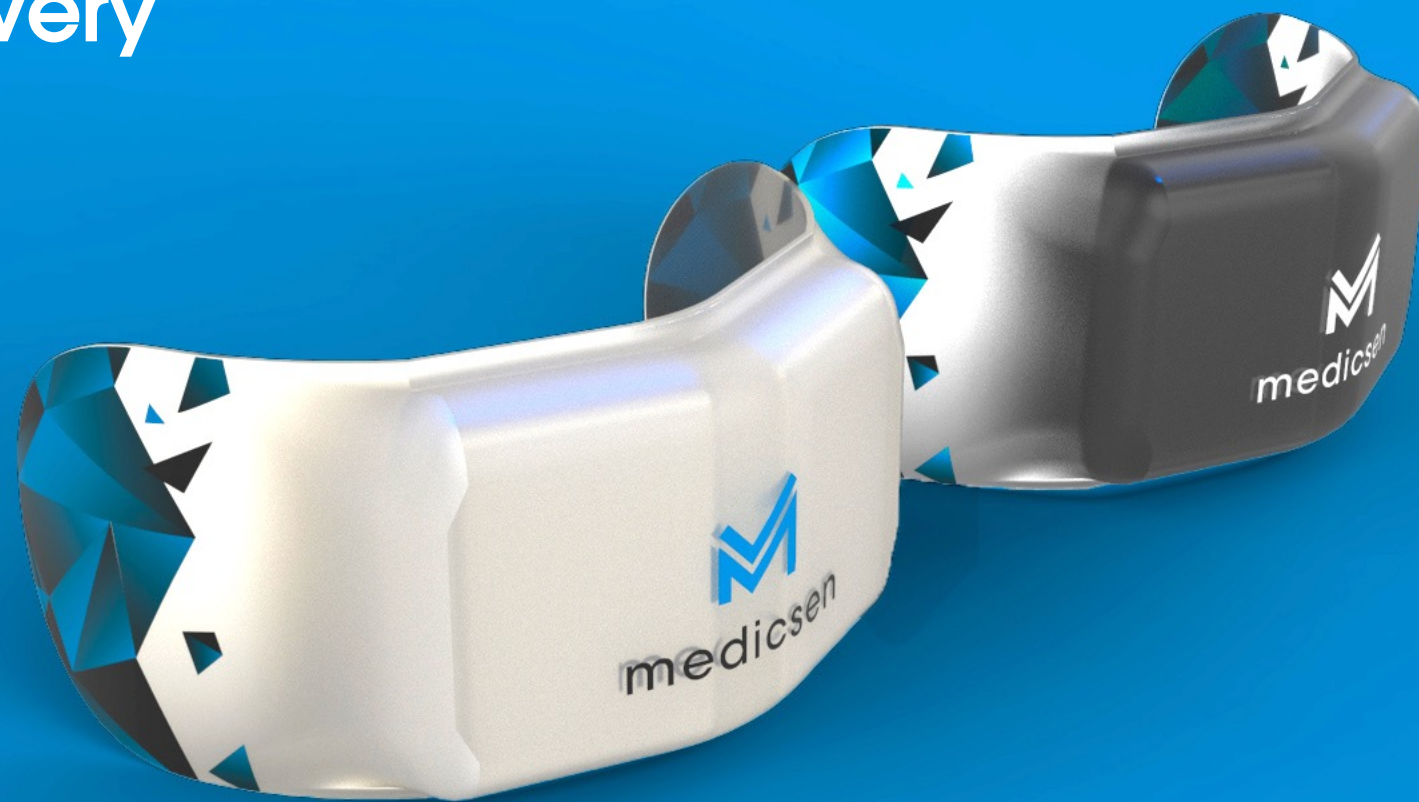
High costs

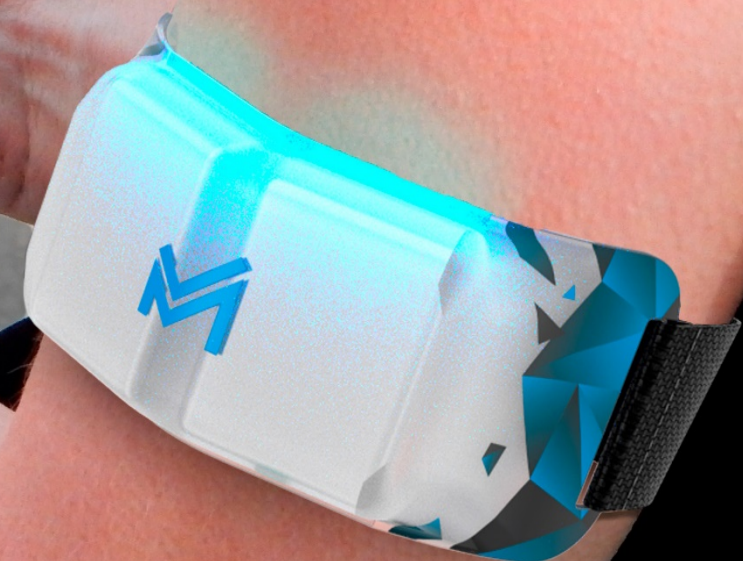
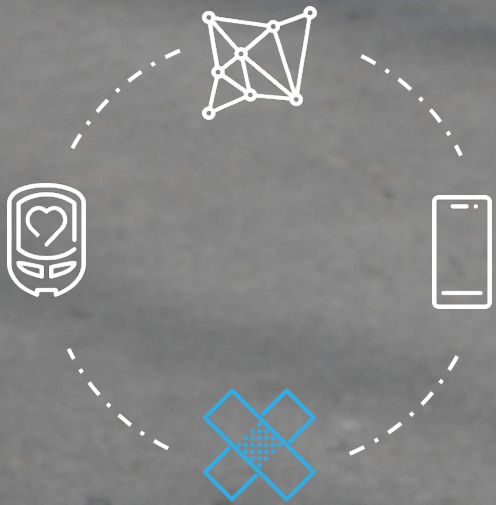
12% annual health expenses

Non invasive artificial pancreas



Hardware for drug delivery



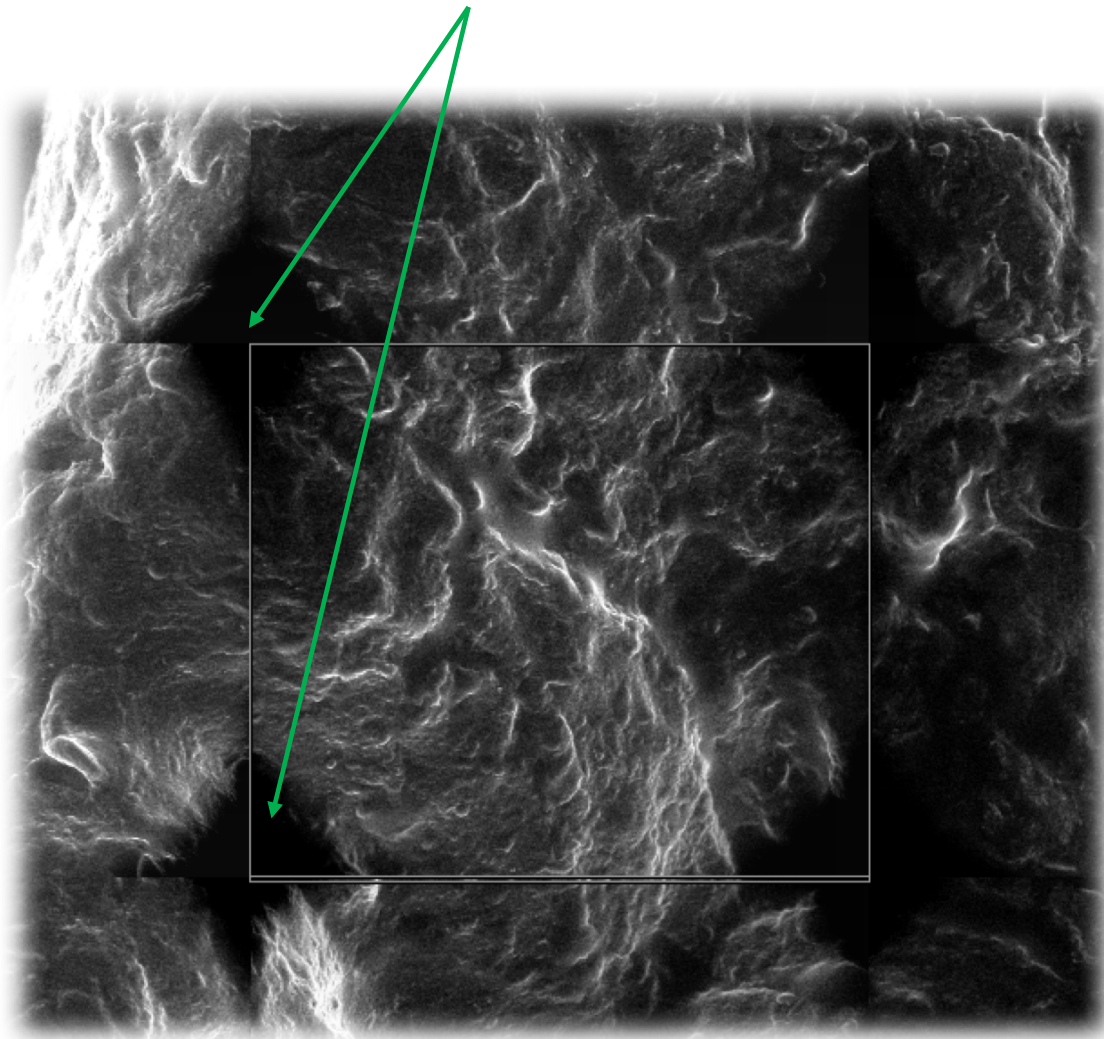


Insulin smartpatch: non invasive drug delivery

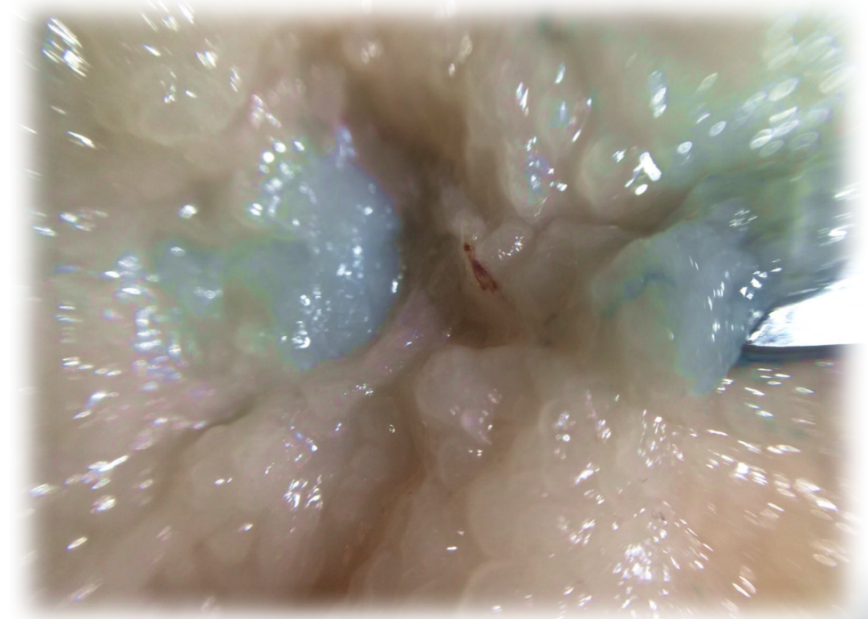
- No Needles
- Automatic
- IP protected
- In vitro validation

Test in vitro: electronic microscopy and absorption tests

Micro-pores



Insulin penetration
incremented up to 50 times
with no harm



Chatbot interface to increase adherence



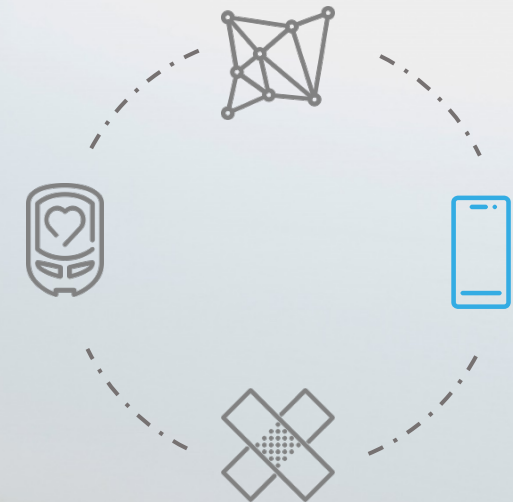
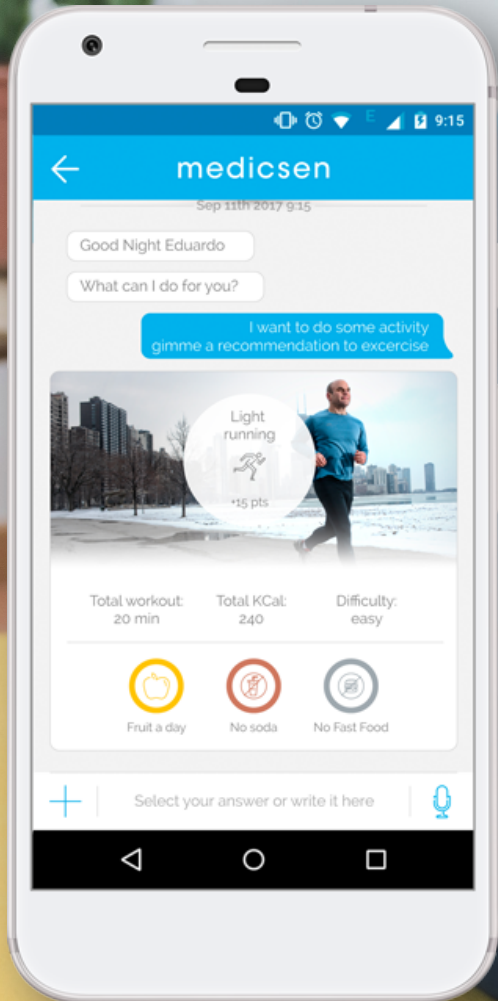


Gathers data from
wearable sensors





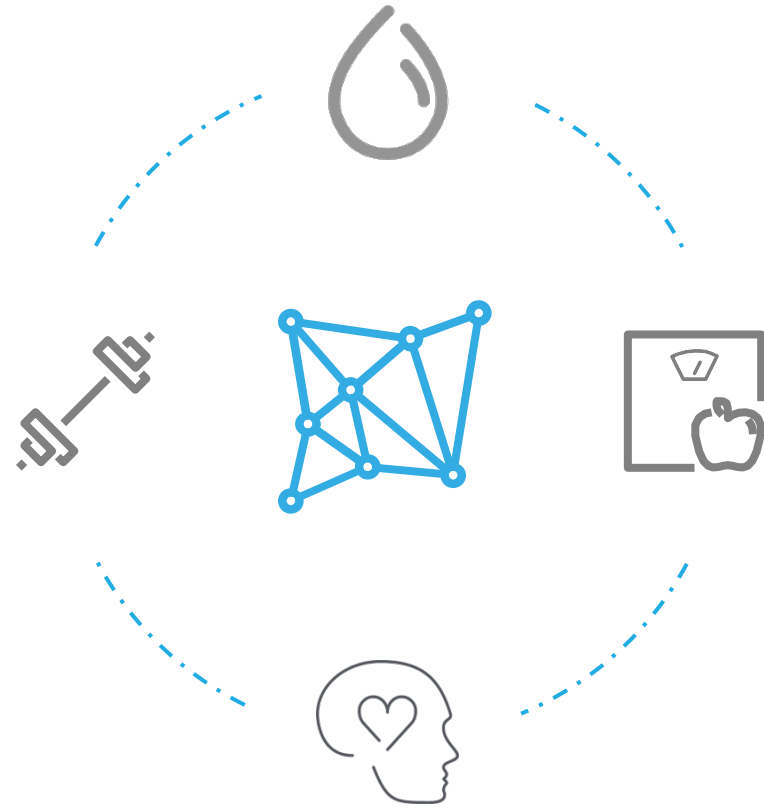
Predicts future glucose levels



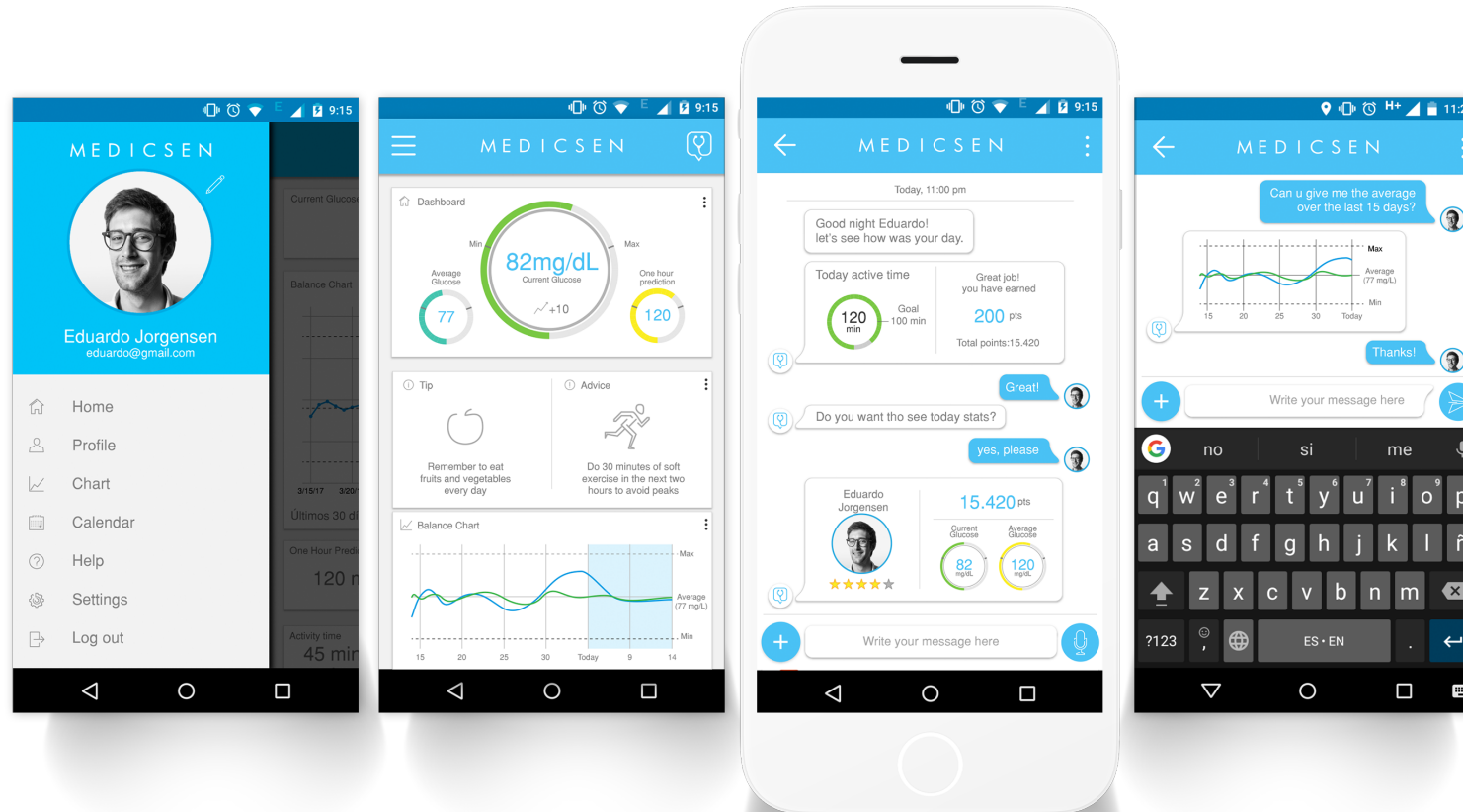
Personalized lifestyle plans (recipes, activity)



Medicsen's algorithm



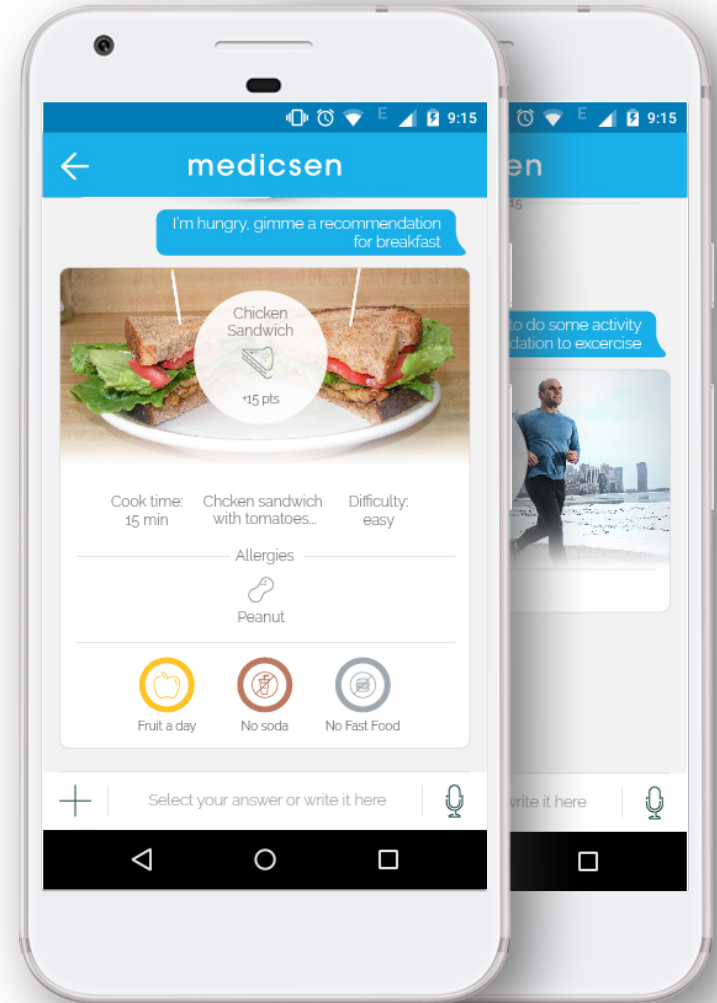
2 hour glucose level forecast



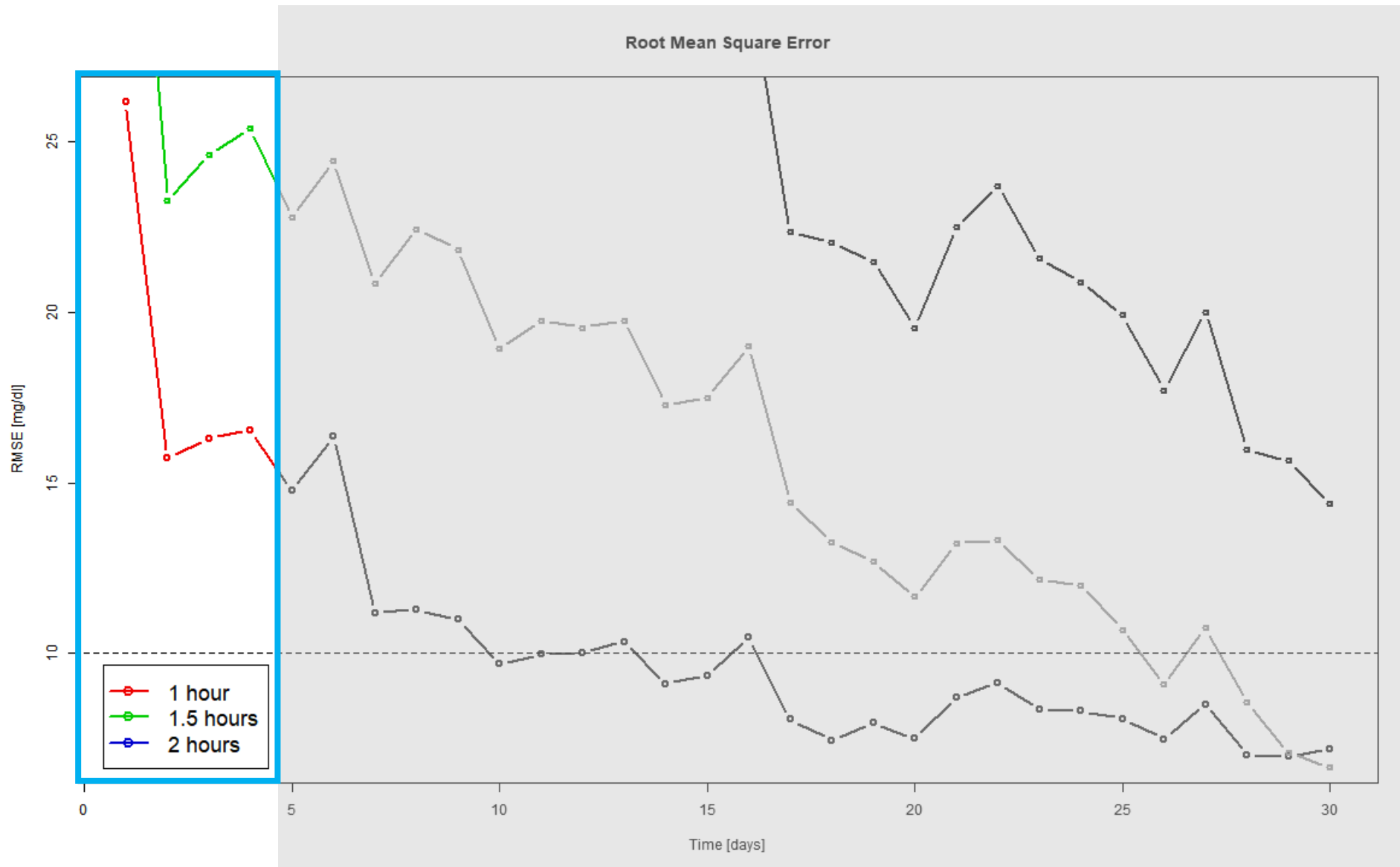
What can I have for lunch today?

- 15g of CHO
- 30% complex CHO
- 70– 140 mg/dl

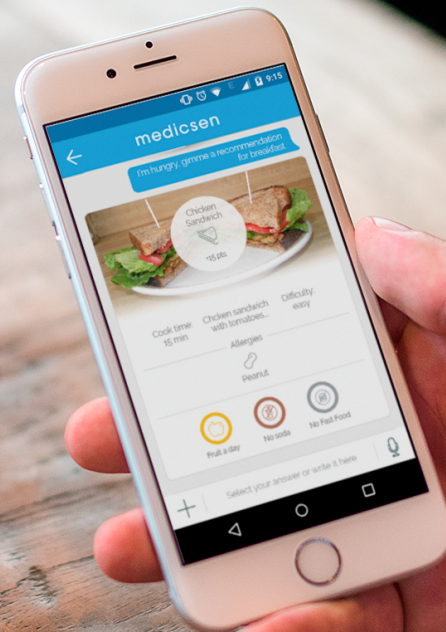
Algorithm's output



Big errors without learning

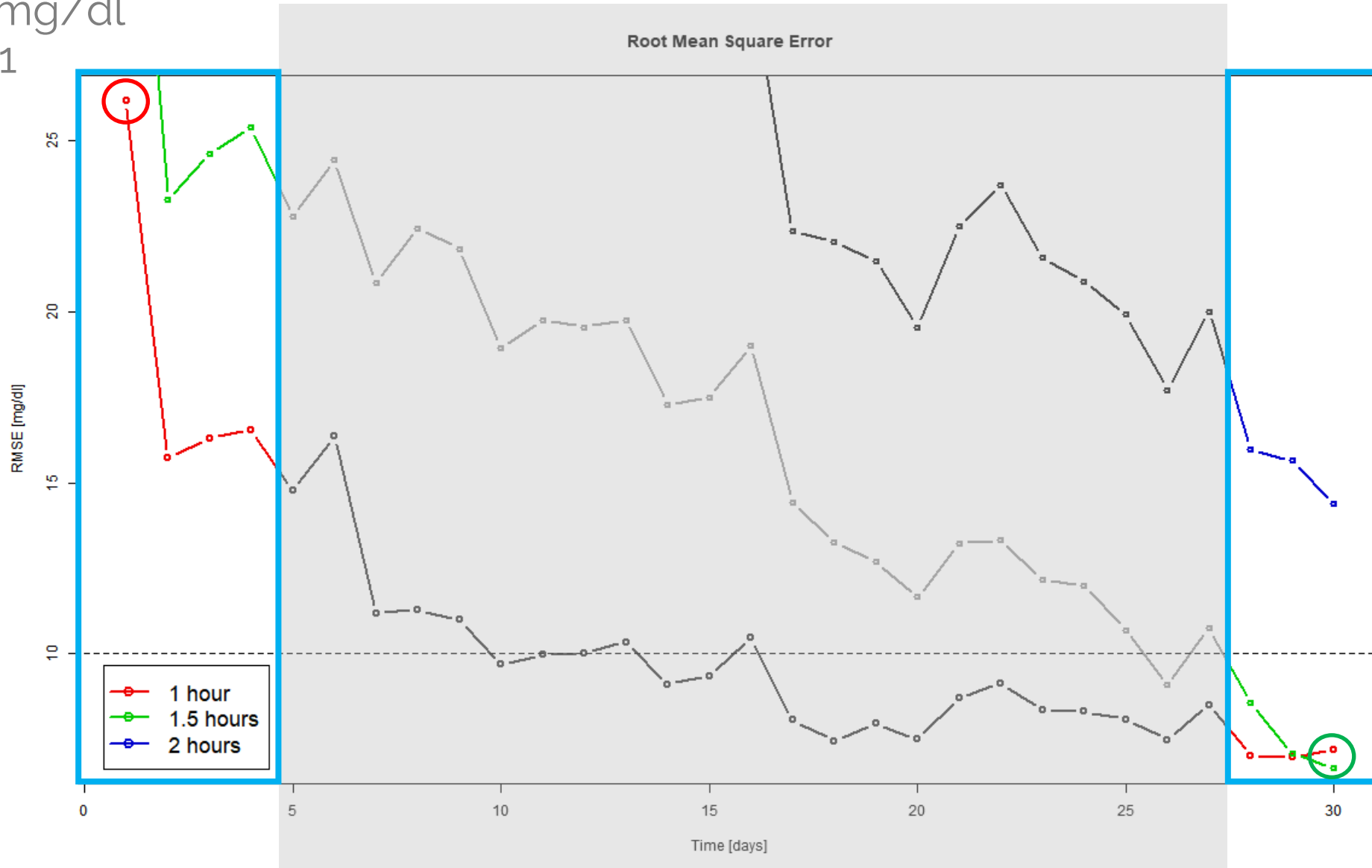


Individual patterns



Improved performance with training

>25 mg/dl
day 1



<5 mg/dl
day 30

Sanitas Disruptive (part of Bupa)

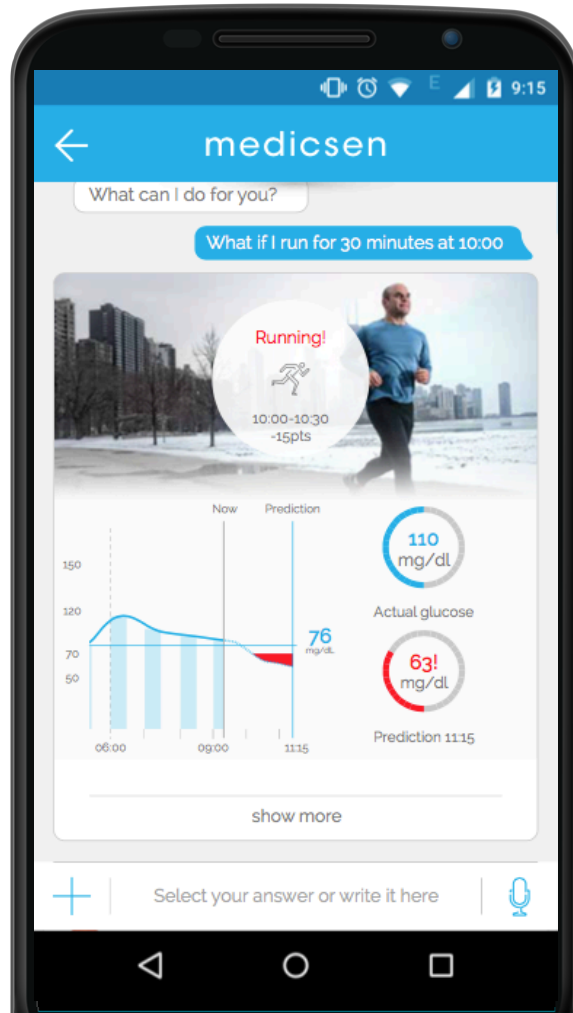


DISRUPTIVE
imagine · incubate · innovate



Pilot tests with Sanitas Disruptive

Virtual assistant for diabetes



Breakfast **options**



Predict **evolution**



Lifestyle **recommendations**



Chatbot **interface**



Data **export**





Challenge #1

Security & Access to complete datasets





Challenge #1

Security & Access to complete datasets



statice



Challenge #2

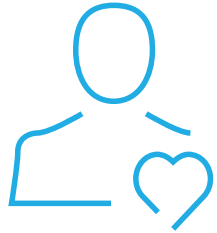
Access to CGMs
and their accuracy



Challenge #3
Robustness vs
personalization



Next steps to improve the tech



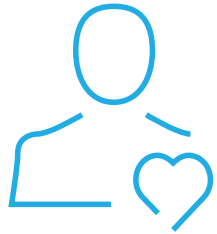
Detection of individual patterns

Classify routines

Repetitive outliers

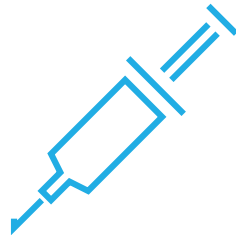
SVM; N. networks

Next steps to improve the tech



Detection of individual patterns

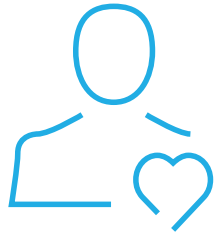
Classify routines
Repetitive outliers
SVM; N. networks



Insulin therapy design

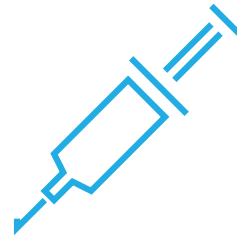
Old: PID, MPC
No deep learning
Non linear models

Next steps to improve the tech



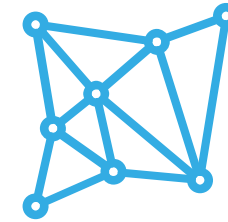
Detection of individual patterns

Classify routines
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Insulin therapy design

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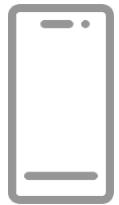
Reinforcement learning

AlphaGO & OpenAI
Software agent
Unknown environm.



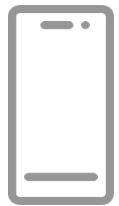
Uncertainty and
bad control

Clinical relevance



Support
tools

Clinical relevance

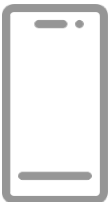


Support
tools



Optimal
range

Clinical relevance



Support tools

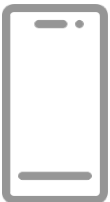


Optimal range



HbA1c <7%

Clinical relevance



Support tools



Optimal range



HbA1c <7%

20% cheaper



- Predictive A.I.
- Reduce costs
- Improve control

What if you asked your data
a question and it answered
in **real time**?

WE'RE HIRING



Loubna Bouarfa





**Wearables
Health**

amina

At Home Nutrient Testing

Track your nutrition levels at home with a single drop of blood.

The Amina Bio brings lab quality test results straight to you.

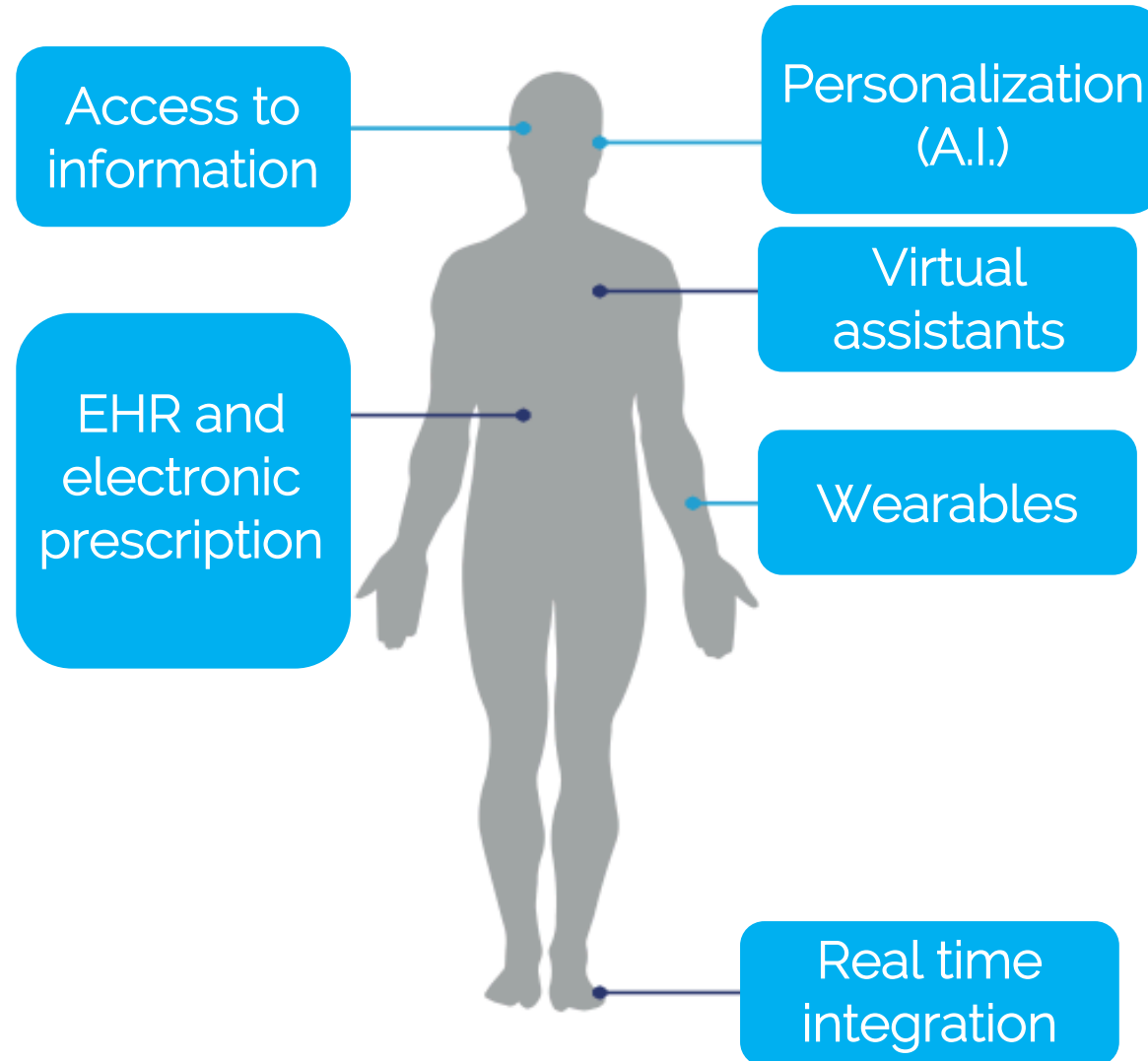


Prediction of epileptic crisis



Supervised self-management

Guided digital health





- Autonomous patient
- Less feeling of disease
- Automatic detection

Deep learning to train Digital health solutions

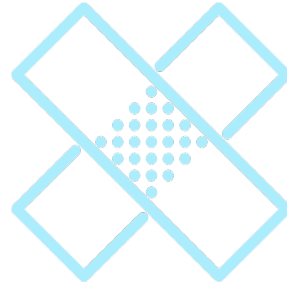


Needs 2019-2020



SW clients

To further improve the algorithms and features



Key resources

Trials conduction, regulatory expertise.



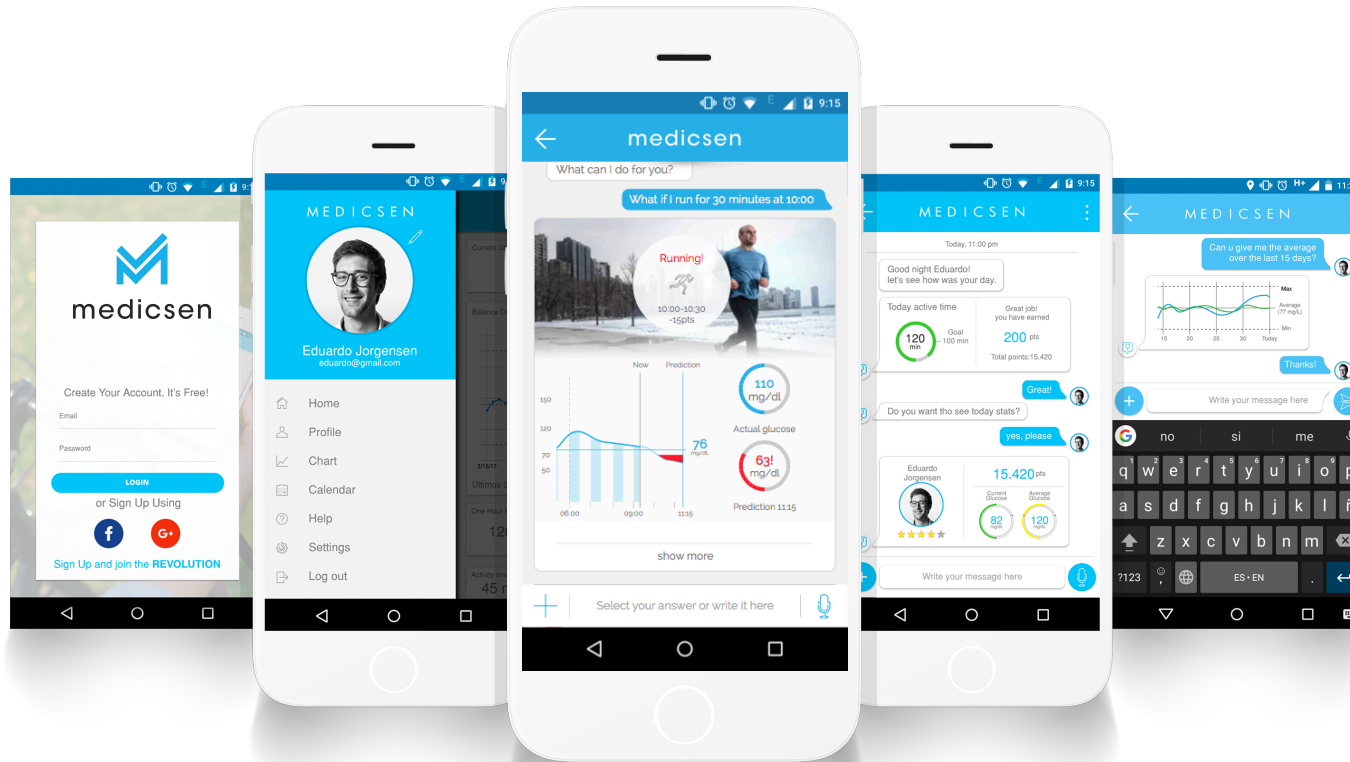
Series A funding

€4M for SW growth and Smartpatch to market

Seeking a strategic partner



It is the right moment to invest in A.I. that improves management of chronic diseases





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