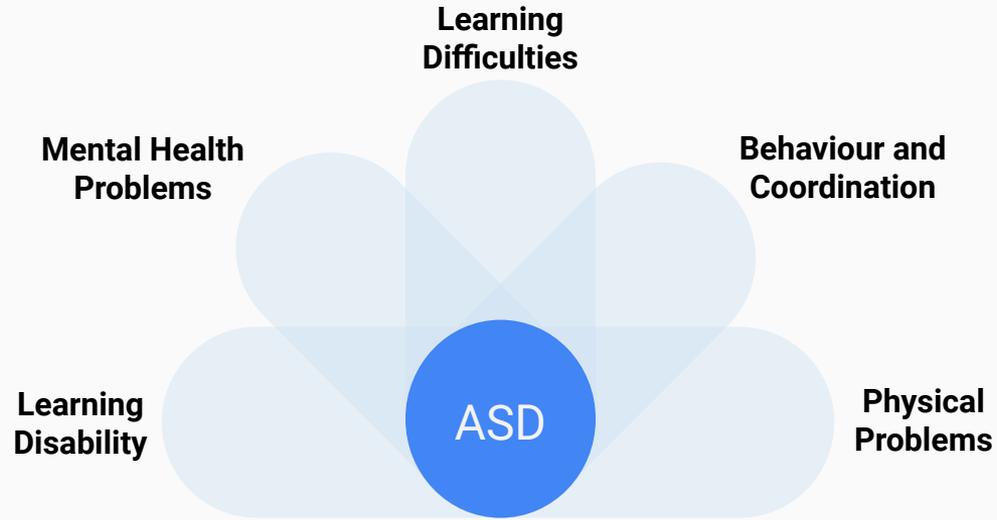




Digital Biomarkers for earlier intervention of Autism Spectrum Disorder



Autism Spectrum Disorder

Early intervention benefits

Early intervention

ESDM : Intensive 2 years program

**Highest brain neuroplasticity
level**

- Better socialization level
- Better communication skills
- Control stereotyped behaviour

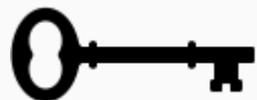
**A More
Independent Life**

Impact on Society Dependency Cost

\$203.148,00

Average Lifetime Savings

from 28 months earlier intervention



Early Detection

1 year old

Average detection of the first
observable symptoms



4 years old

Average age of
diagnosis and
intervention

Diagnostic is Subjective and Experts Intensive

“...we had many different people observing the same child and **came up with different outcomes...** the examiner’s **clinical skill and experience** with this tool is extremely important.”

Sofia Rocha,
Occupational Therapist
in Portugal and UK

Checklist

M-CHAT

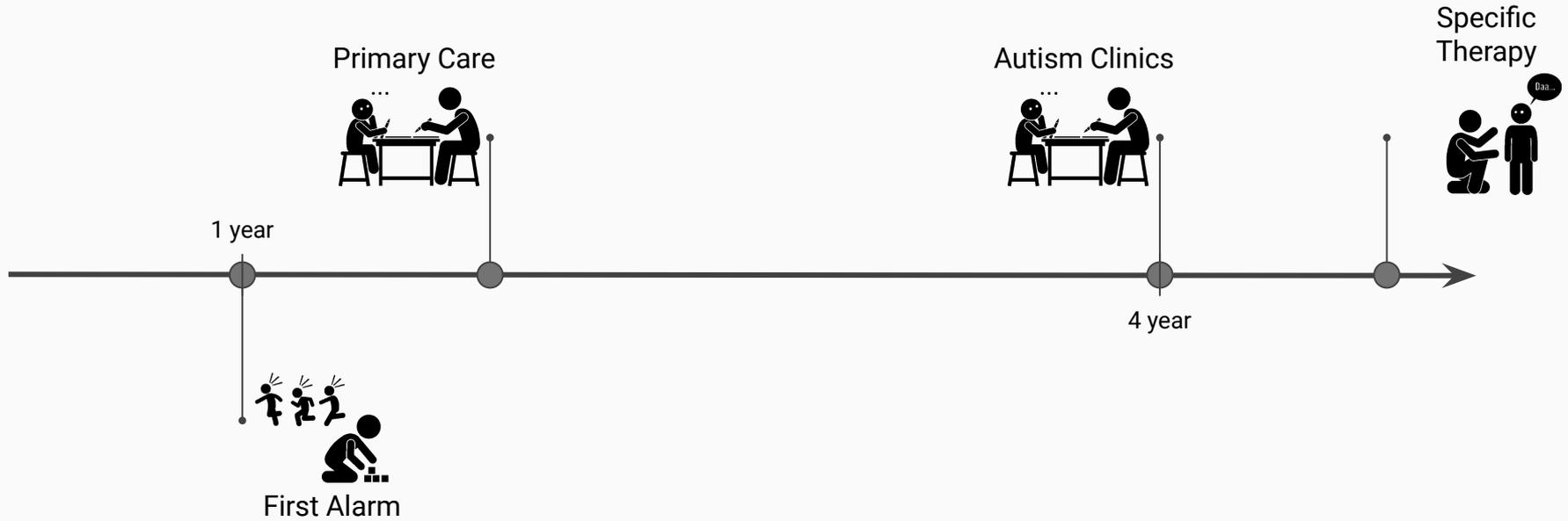
Questionnaire

CARS

Questionnaire
(**Gold Standard**)

ADOS

Clinical Pathway



A Pathway Limited by Delays



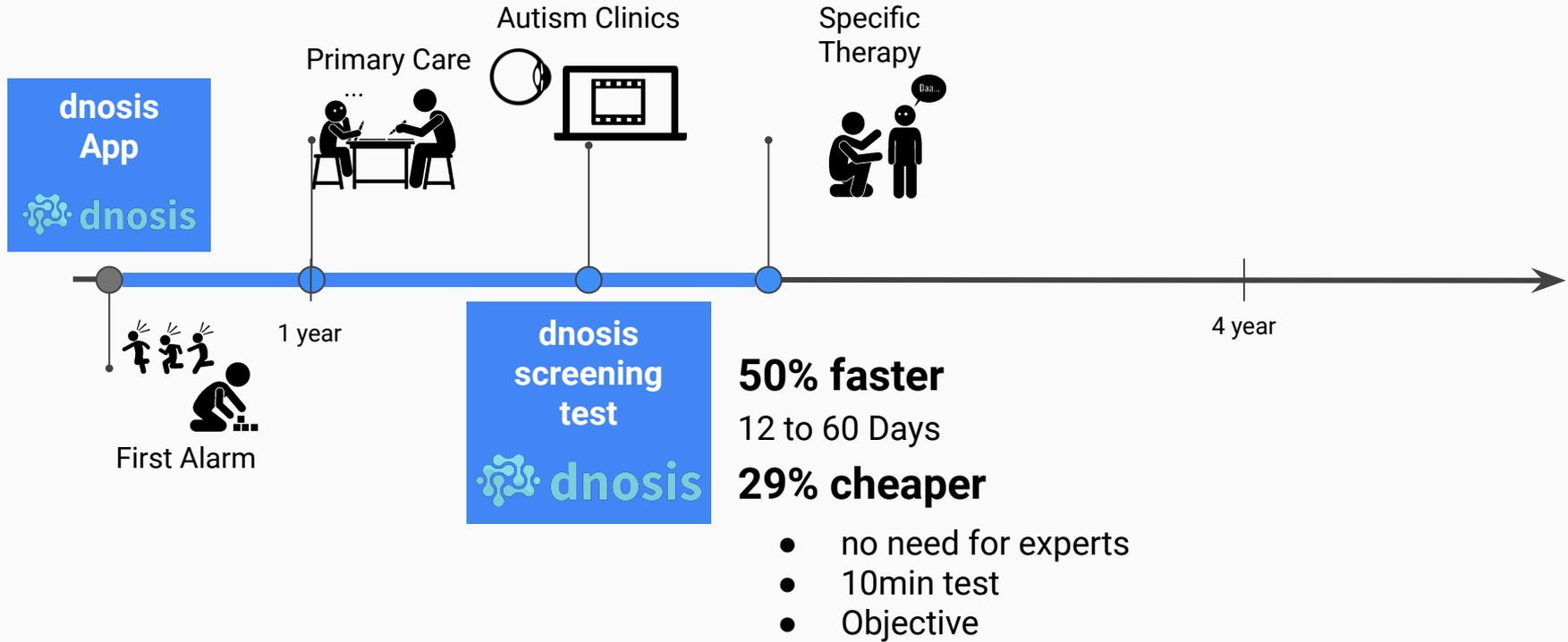
Up to 36 Months delay in total



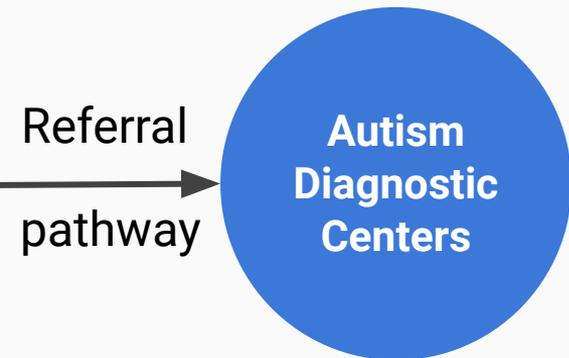
- Lack training
- Lack of resources
- Results Disbelief

To enable Autism Spectrum Disorder (ASD) early intervention, we need to reduce delays through diagnosis pathway with an **easy, accurate, and affordable early-stage screening**

Accelerating the path to intervention

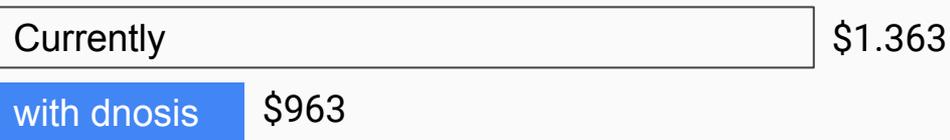


Value for Diagnostic Centers



as low as
40€(EU)
80\$ (USA)
/report

Resources (Cost per diagnosticated child)



29% cheaper

Delay (Time until first intervention)



50% faster

Value for Healthcare System

With the Same Diagnostic
and Intervention Budget

 15%
unnecessary
Intervention

 22%
missed
Interventions



 7%
necessary
Intervention

Value for Healthcare System



€36.024/kid

savings in lifetime caregiver cost

from 28 months earlier intervention



Already reimbursed in the US

CPT Code	Medicare (2019)
96112 (Screening)	\$130,10
97151 (Monitoring)	\$82,50 per 15min

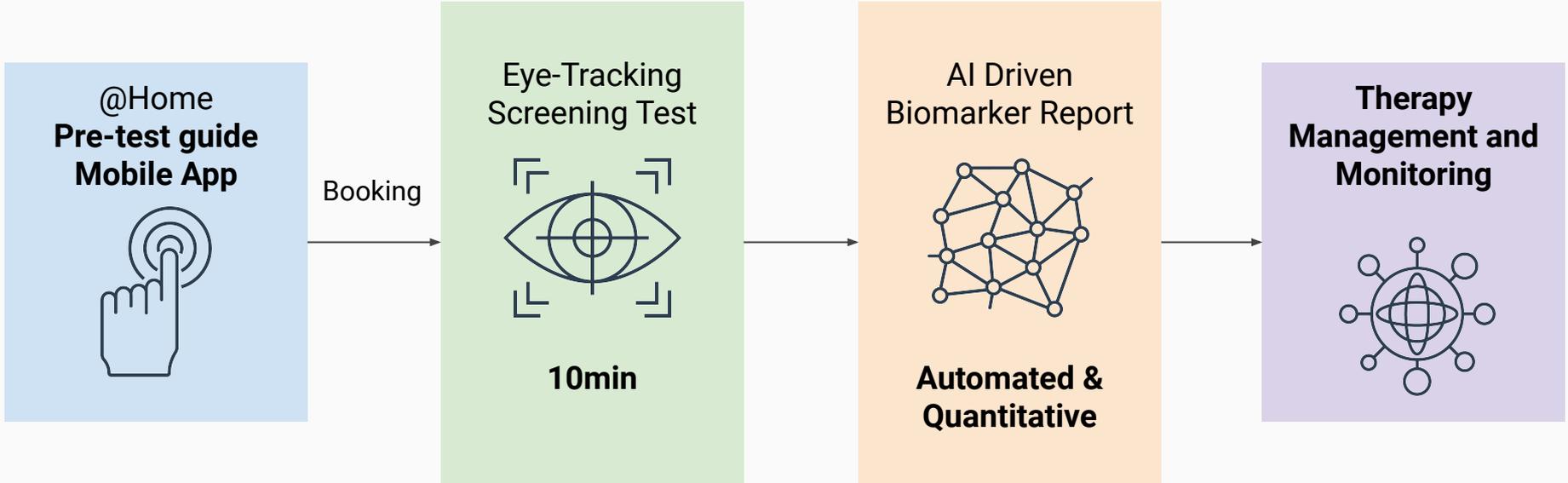
costs to USA Society **\$461 billion**
by 2025

Source:

JAMA Pediatr. 2017;171(1):23-30. doi:10.1001/jamapediatrics.2016.2695

JACA Psychiatry. 2017;56(9):777-783. doi: <https://doi.org/10.1016/j.jaac.2017.06.007>

How dnoosis works?



**Off-the-shelf
Eye Tracking
Equipments**

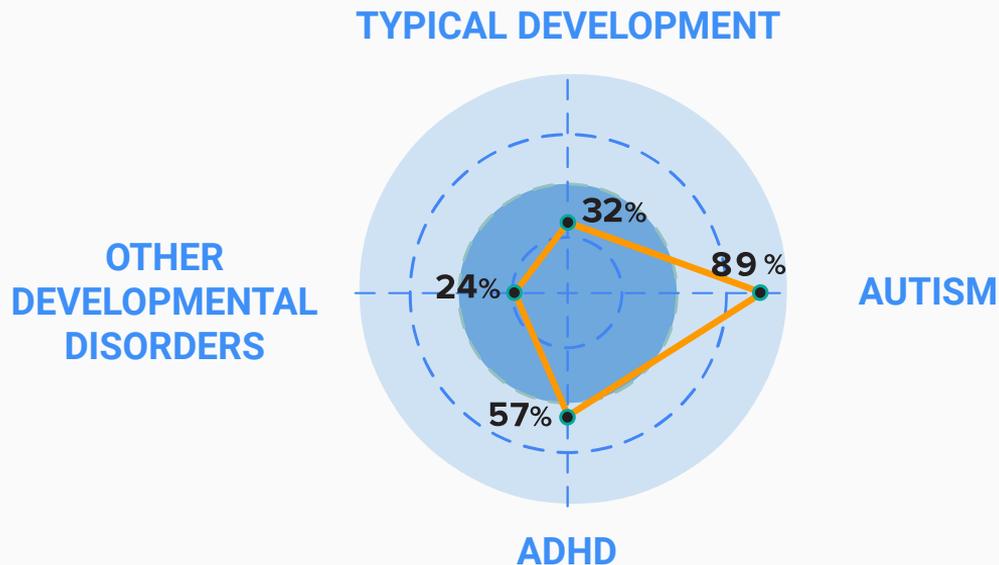
**Biomarker:
Gaze Path to Video
Stimuli**

AI ASD Classifier

24 Months Autism Spectrum Disorder

6 Months Typical Development

diagnosis Screening Report



**Computer-aided Diagnosis (CADx)
for Differential Diagnostic of Autism**
Medical Device Class IIa

State-of-the Art Technology

Biomarker supported
by latest scientific
research

95% Accuracy with 300 kids

Preliminary study in partnership with



ADANSI
ASOCIACIÓN DE FAMILIARES Y
PERSONAS CON AUTISMO



Innovative Technology



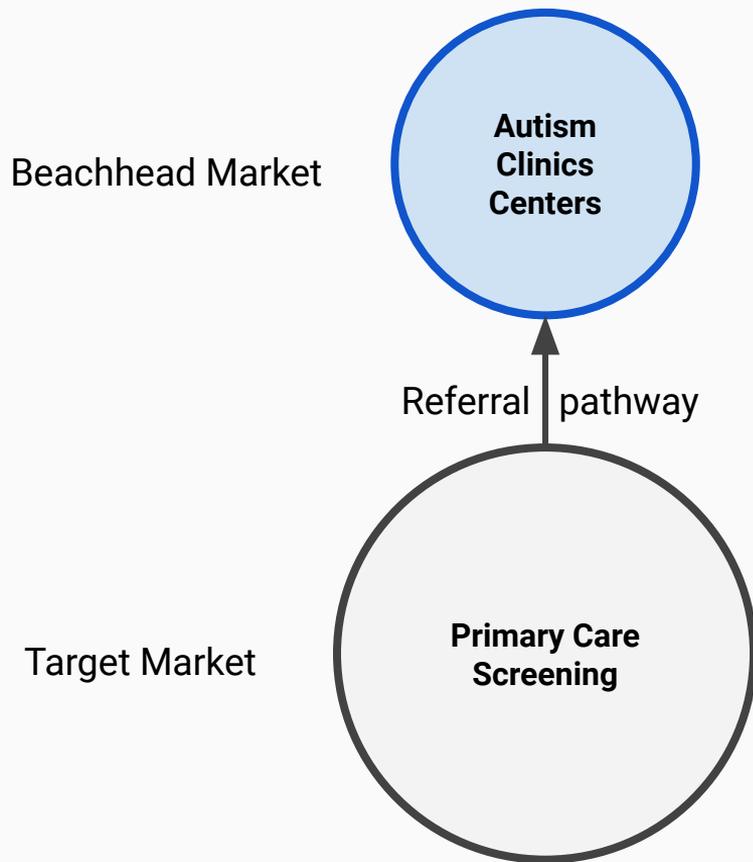
Provisional Patent on
Stimuli Processing

AI Model Agnostic to Video Stimuli Variations

Competitive Landscape

	Accuracy	Minimum Age	Cost	Duration	Subjectivity	Specialist	Training
ADOS	96%	1 year	45 €	60 min	Yes	Yes	Yes
Cognoa	93%	2 years	-	10 min	Yes	Yes	No
Playcare	95%	3 years	-	10 min	No	No	No
 dnosis	95%	6 months	40€	10 min	No	No	No

Business Model



B2B Pricing
Pay per report
Or
Annual License

Market Size

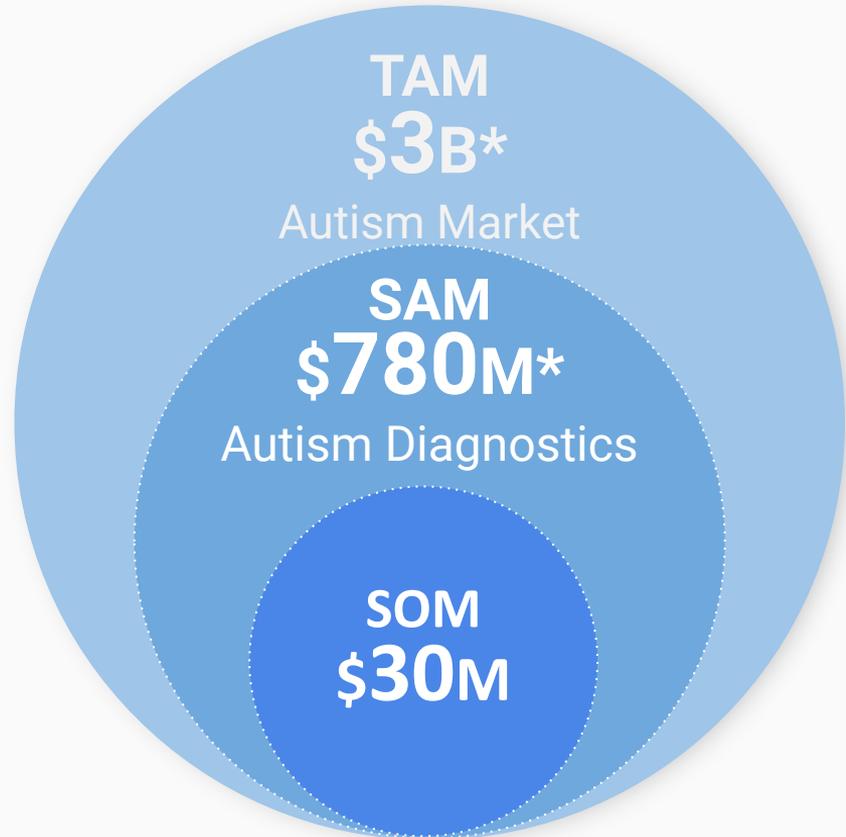
1%

Of the population is
impacted



7,5 millions

in Europe



*Worldwide by 2022 - Global Market Insights

Market Entry

➔ (Q1 21') **Portugal/Spain/France/UK** (New Borns: 2M/year)

7.250€ (Annual Licence) + 40€(per report)

➔ (Q3 21') **USA** (New Borns: 4M/year)

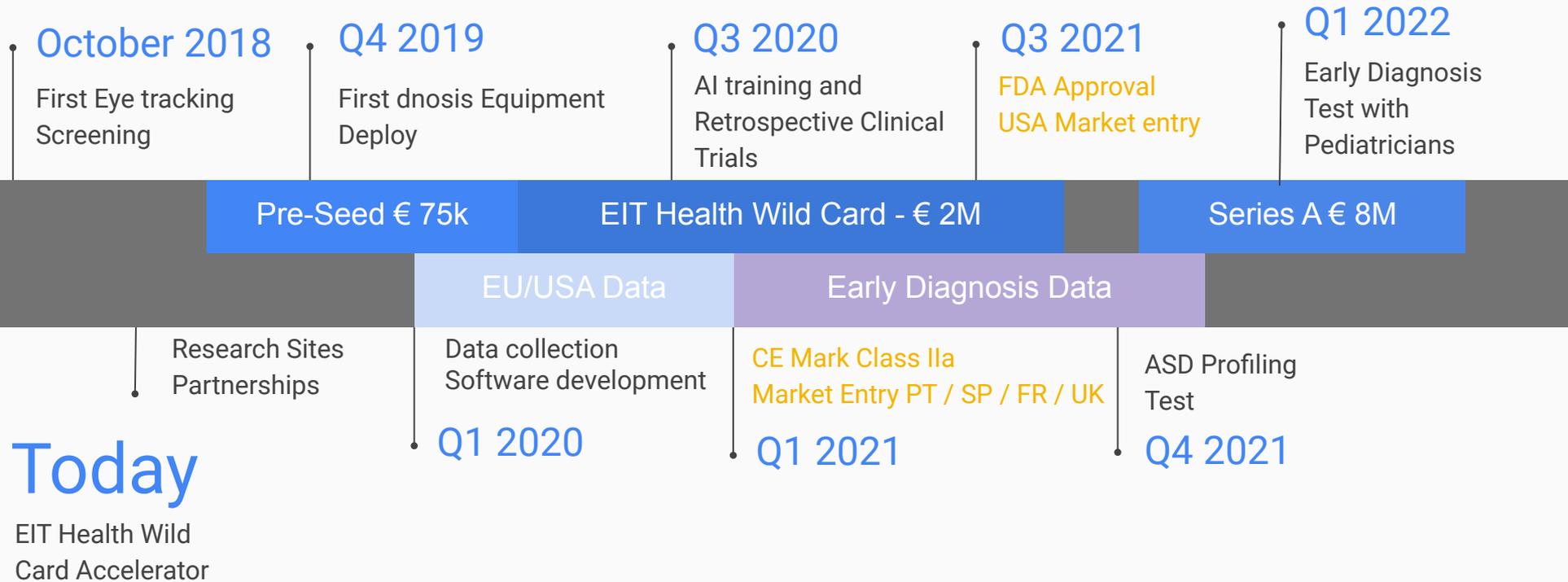
11k\$ (Annual Licence) + 80\$ (per report)

Financials

	2019	2020	2021	2022	2023	2024
Tests Per Year	0	0	6937	45482	138790	274504
Installed Equipments	10	20	40	70	110	160
Average Price per Test	€0.00	€0.00	€107.18	€73.04	€68.13	€66.75
Revenue	€0	€0	€743,456	€3,321,865	€9,455,223	€18,322,229
Gross Profit	-€180,000	-€210,000	€323,456	€2,661,865	€8,525,223	€17,092,229
Fixed Costs	€127,000	€1,238,500	€1,380,000	€1,560,000	€2,150,000	€2,680,000
Net Profit	-€307,000	-€1,448,500	-€1,056,544	€1,101,865	€6,375,223	€14,412,229
Investment	€2,000,000	€0	€1,000,000	€0	€0	€0
Cash Flow	€1,693,000	€244,500	€187,956	€1,289,821	€7,665,043	€22,077,273

Rate
12.00%
Valuation (DCF)
€9,438,542

Roadmap



Today
EIT Health Wild Card Accelerator

Who is the Team?



Jane Bourginaud
CTO

Cognitive/AI Engineer MSc
MBA in Entrepreneurship
Founder of B.Mind



Andreu Oliver-Moreno
CEO

Cognitive Psychologist PhD
Eye Tracker Technical and Sales
Expert



Miguel Amador
COO

Biomedical Engineer MSc
PhD Candidate Health Data
and Innovation Previous Scale-up
COO

Partnerships

Current Clinical Network



Technology Development Partners



Eye-Tracking Partners



Incubation



Parc Científic de Barcelona
UNIVERSITAT DE BARCELONA

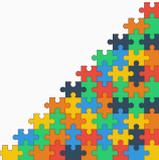




Digital Biomarkers for earlier intervention of
Autism Spectrum Disorder

team@dnosis.com

www.dnosis.com



Our vision is to use digital biomarkers to empower people with developmental disorders

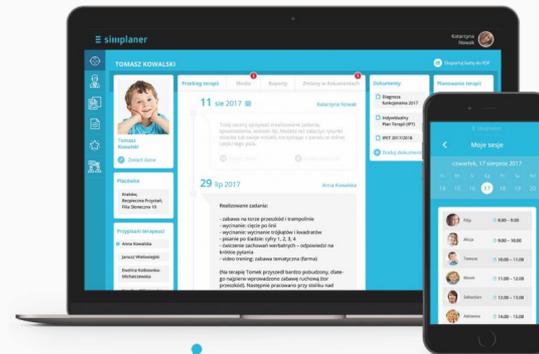
Pipeline

Multimodal Biomarkers for Automated Profile Report



Provisional Patent

Integrated Therapy Management and Monitoring



ASD Dependency Costs

Dependency Cost for Society till 65 years on Intervention Delay



Dependency Cost for Healthcare till 65 years on Intervention Delay

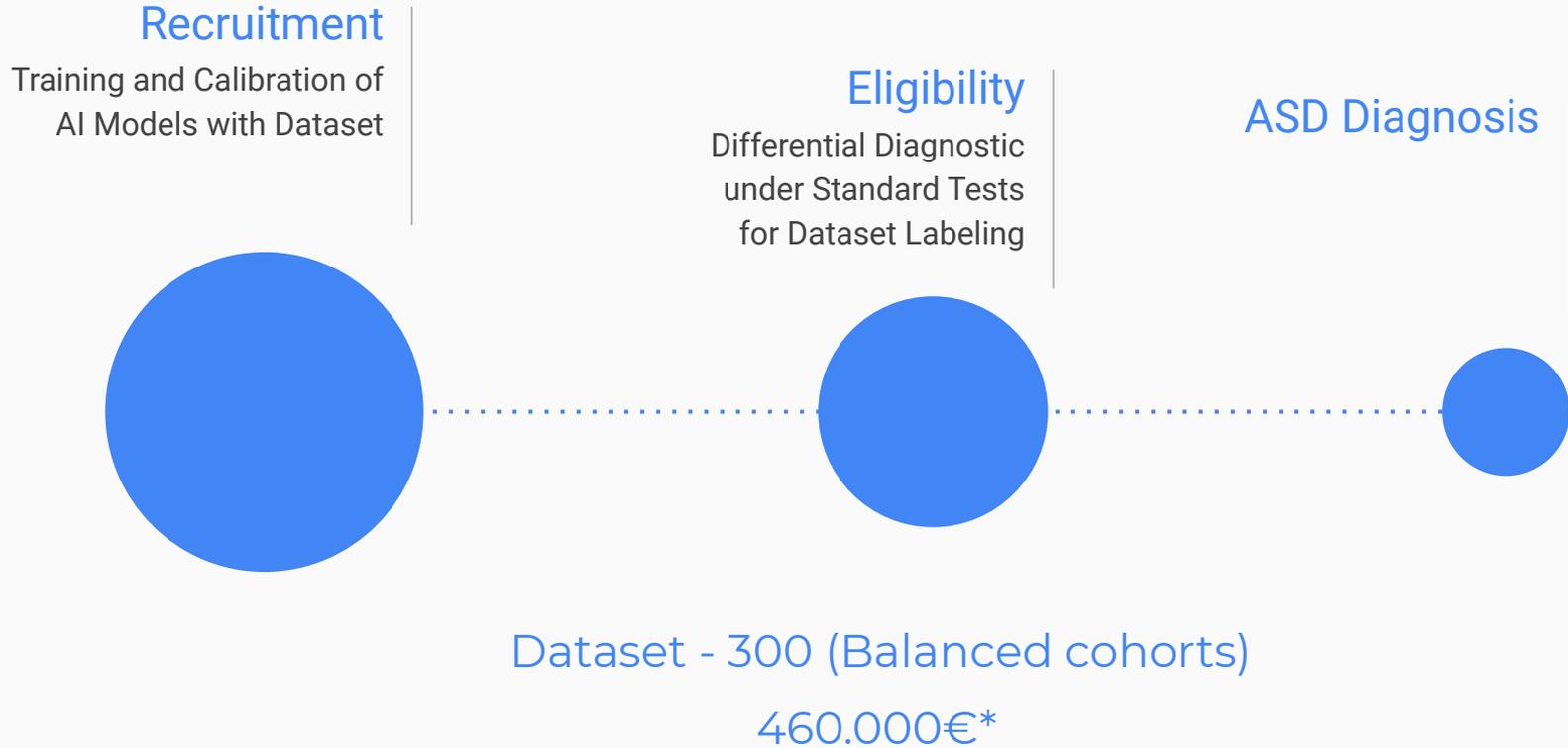


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Clinical Trial



*Recruitment, Data Collection and Validation Test

AI Classifier

What do we want to do ?

Classify the data in one of the following groups :

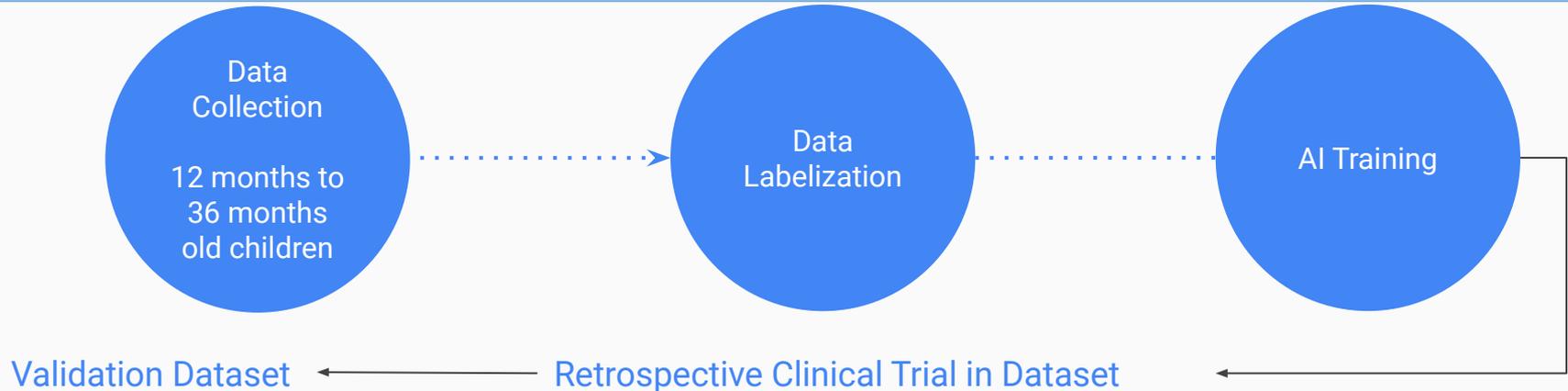
- Typical Development
- Deteriorated Development
- Autism

The data :

- Personal parameters (age, gender)
- Risks factors (Family member that has Autism)
- Calculated parameters from eye tracking data for 3 different situations

Supervised classifier software

AI Technology Development and Validation



IP Strategy

There is freedom to
Operate in the use of Eye
Tracking for Autism
Diagnostic

2 Provisional Patents on AI
Model technological
limitations



Apparatus Patents

AI Model / Dataset -
Trade Secret

Clinical Certification

Early Stage Denver Methodology (ESDM)

Promote development start using the child's first interests as a beginning to help him discover human interaction through imitation.

2 years intensive programme

Fully personalized

From 1 year old

Parents are key

Alternatives Landscape

Ongoing Research of Objective Tests

No single test can stratify diagnostic. Not yet one objective test in clinical use

Name	Type	Biomarker	Tech	Clinical Validation
Cognoa	Diagnosis	Parental inputs and diagnostic data and responses to therapeutics	AI	FDA Breakthrough Designation
Playcare	Diagnosis	App Interaction	AI	Class 1 Medical Device
SensPD	Diagnosis	Oto-Acoustic-Emission (OAE)	AI	Research
SynapDX	Diagnosis	Blood comprising 24 metabolites	AI	Research
Akili Labs	Treatment Diagnosis	Cognitive Behaviour	AI	Autism Clinical Validation with Pfizer

Our Tech

Response

Launch - ASD/Non-ASD/Typical Development

Eye Tracker

Research - 93% Accuracy - 300 kids Trial

2nd Phase - ASD Profile

Mobile Game Test

Market - 94% Accuracy - 700 kids Trial

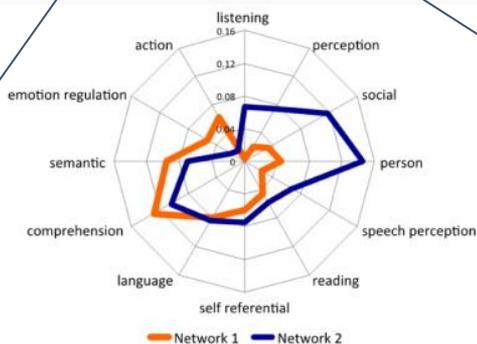
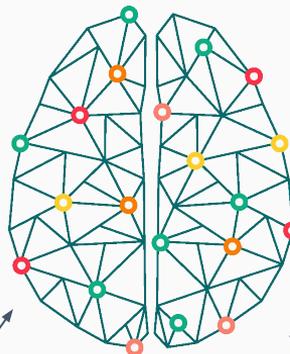
Facial Expression

Research

Biofeedback (stress)

Research

AI Classifier
from multiparametric features
based on functional Brain Model connections network



Each assessment gives a perspective view of brain networks which enriches with more data and can be tracked and combined along the time

We go beyond existing pattern recognition from individual measurements

Stimuli

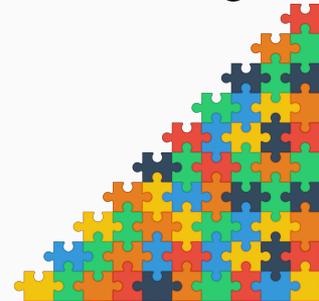
Video

Sound

Social Immersion

Physical Interaction

Cognitive Challenges



Computer Assisted Diagnosis Software (CADx) for Differential Diagnostic of Autism

Medical Device Class IIa

- Video Stimuli
- Eye Tracking



A man with glasses and a beard is sitting at a computer. A baby is sitting on his lap. The man is looking at the computer screen. The baby is looking towards the camera. The background is a blurred office setting.

The best way to manage
Autism Spectrum
Disorder (ASD) is to
detect it early.

...quick and cheap...

by just sitting in
front of a computer