



PainChek

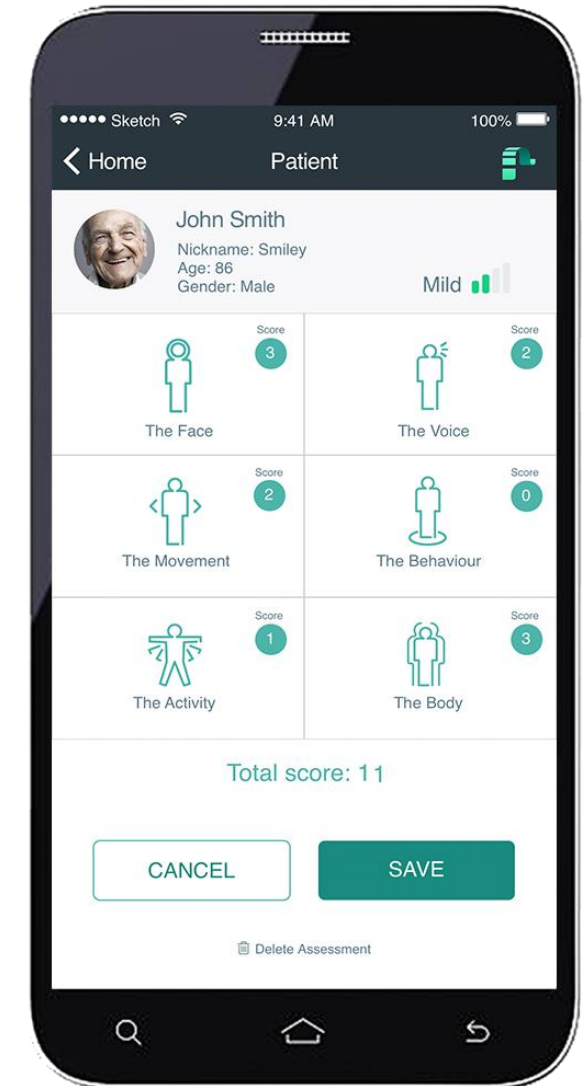
Intelligent Pain Assessment

Investor Presentation Update November 2017

ePAT Technologies Ltd

Highlights

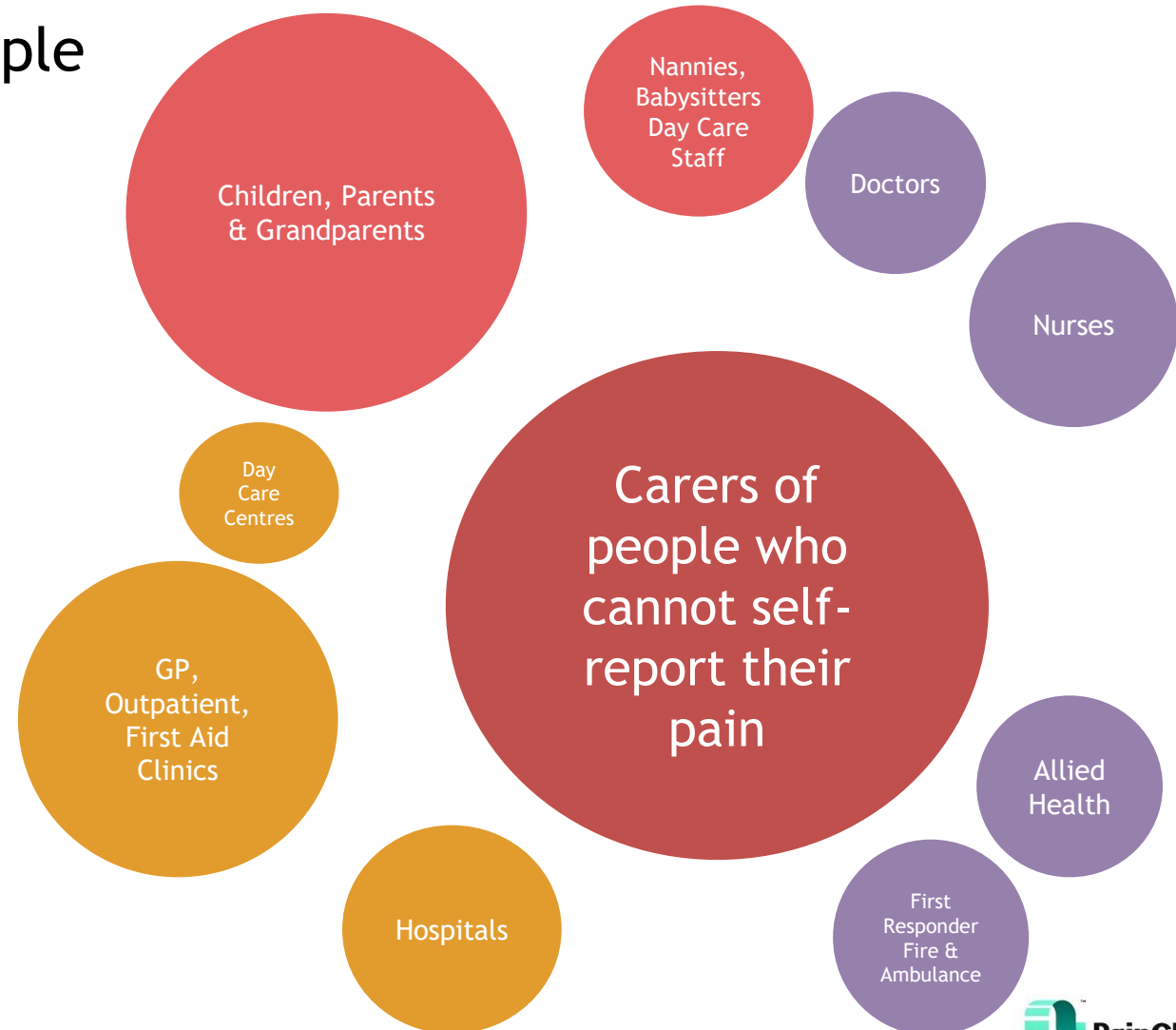
- A digital healthcare company
- Mobile apps to assess and monitor pain
 - pain the most common reason to see a doctor
 - accurate pain assessment is a big problem
- Very large global market opportunities
- Multiple products and revenue channels
- Innovative technology with patent protection
- Commercialisation commenced in Q4 2017
- Experienced board and management



Our Target Markets

Carers of non-communicative people with pain:

- Dementia sufferers
- Pre-verbal children



Large initial market in dementia care

- Advanced dementia associated with inability to communicate pain
- Dementia care in residential aged care and home care

47 Million with Dementia¹

- growing at 3% p.a.

Carers of people with dementia

Healthcare Professionals
Trained Carers
Allied Health
Family Members

7,500,000 people in Western Europe

6,000,000 people In North America

400,000+ people in Australia²

¹ World Alzheimer Report 2016

² Alzheimer's Australia Key Facts and Statistics 2017



Blue sky market is pre-verbal children

- Neonates (0-1 month), infants and toddlers (1 month - 3 years)
- Sources of pain include: rashes, teething, middle ear infections, headaches, gastro-intestinal.
- Current pain assessments are often subjective and based on intuitions, assumptions and personal beliefs

Carers of pre-verbal children

Mums & Dads
Grandparents
Health care professionals
Nannies
Babysitters
Day care workers

~ 130 million¹

Births per year in world

~ 1.25 million²

0-3 year olds in Australia

~ total of 400 million

0-3 year olds worldwide

¹ <http://www.ecology.com/birth-death-rates>

² ABS 2016



The pain problem in dementia care

- Up to 85% of people in aged care suffer pain regularly¹
- More than 50% of people in Australian aged care have dementia²
- Pain is often poorly assessed, documented, monitored and managed
- Tools are subjective and manually based
- Adverse impact on quality of care, operational efficiency and compliance



¹ Aged Care Awareness

² Australian Govt. Dept. of Health data at 30 June 2015

Current pain assessment tools lack objectivity and require specialist skills

Abbey Pain Scale - For measurement of pain in patients who cannot verbalise

Addressograph

Name and designation of person completing the scale:

Date: Time:

Q1. Vocalisation

eg. **Whimpering, groaning, crying**
Absent 0 Mild 1 Moderate 2 Severe 3

Q1

☐

Q2. Facial Expression

eg. **Looking tense, frowning, grimacing, looking frightened**
Absent 0 Mild 1 Moderate 2 Severe 3

Q2

☐

Q3. Change in body language

eg. **Fidgeting, rocking, guarding part of body, withdrawn**
Absent 0 Mild 1 Moderate 2 Severe 3

Q3

☐

Q4. Behavioural Change

eg. **Increased confusion, refusing to eat, alteration in usual patterns**
Absent 0 Mild 1 Moderate 2 Severe 3

Q4

☐

Q5. Physiological change

eg. **Temperature, pulse or blood pressure outside normal limits, perspiring, flushing or pallor**
Absent 0 Mild 1 Moderate 2 Severe 3

Q5

☐

Q6. Physical changes

eg. **Skin tears, pressure areas, arthritis, contractures, previous injuries**
Absent 0 Mild 1 Moderate 2 Severe 3

Q6

☐

Add scores for 1-6 and record here Total Pain Score

Now tick the box that matches the Total Pain Score

0-2 No Pain	3-7 Mild	8-13 Moderate	14+ Severe
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Finally, tick the box which matches the type of pain

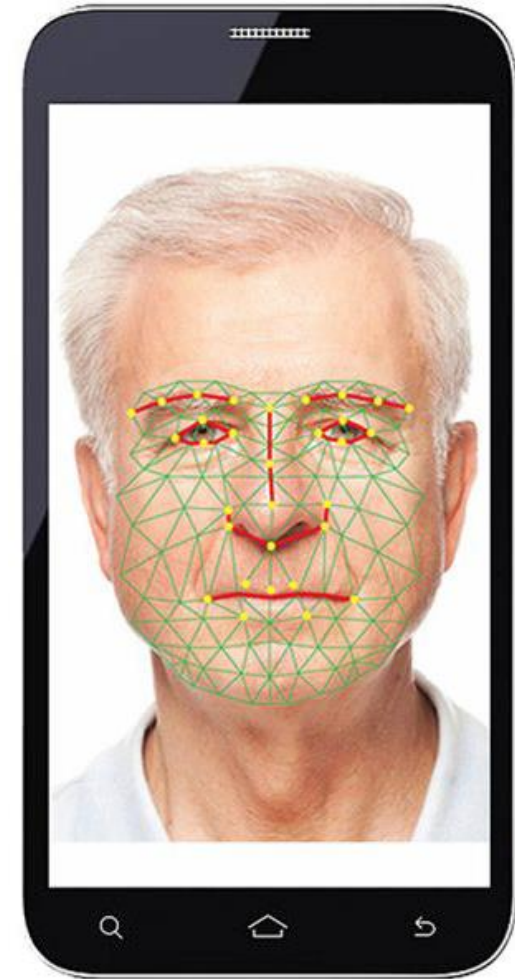
Chronic	Acute	Acute on Chronic
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Facial expression analysis on the Abby Pain Scale requires the user to both detect and quantify facial expression indicative of pain: this is subjective and vulnerable to user bias.



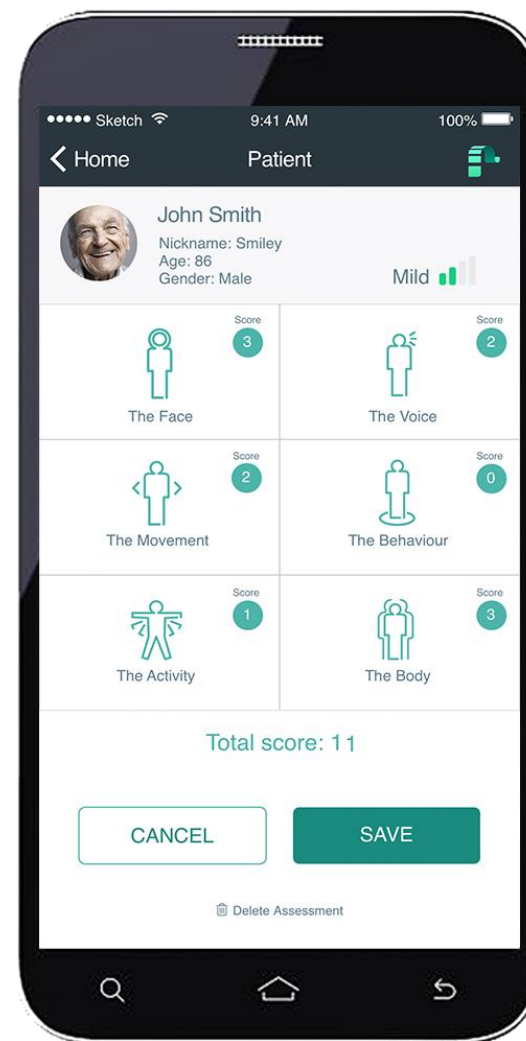
The PainChek™ solution

- A secure, validated, medical device in the form of a mobile app
- Uses existing smartphone and tablet hardware
- Artificial Intelligence (AI) technology to analyze facial expressions indicative of pain in real time



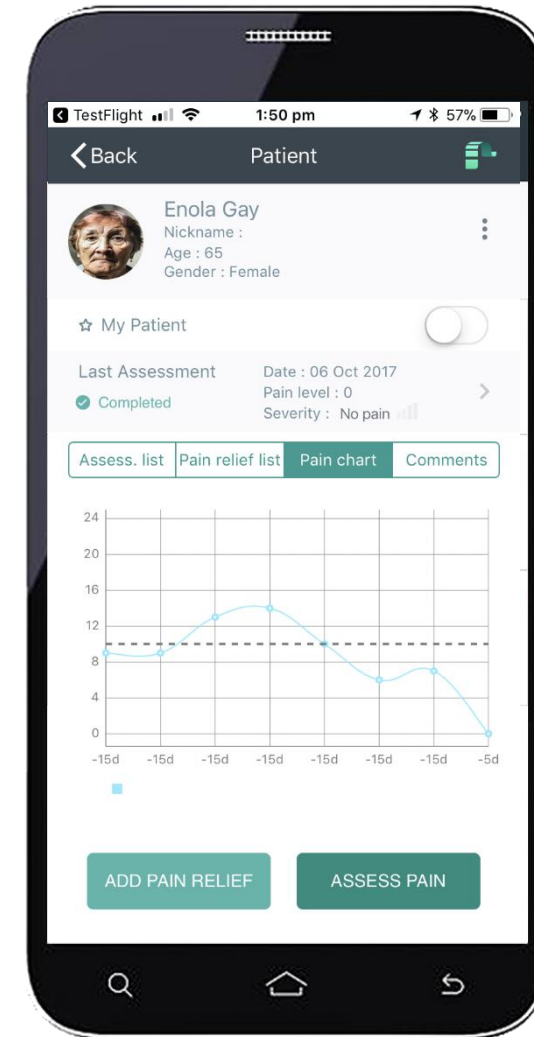
The PainChek™ Dementia App

- **Automated facial pain analysis:**
 - 3 second video of patient face
 - recognises 9 micro-facial expressions that indicate pain
- **Digital questionnaire checklist:**
 - guide the carer in other pain assessment factors e.g. movement, vocalization
 - leading questions with Yes/No decisions
- **Automated pain assessment score:**
 - based on 42 test points
- **Documented electronically via cloud backend:**
 - pain trend line and monitoring of treatment
 - integrated into patient medical records



Dementia App key benefits

- ✓ **Automate** key assessment processes, saving time and reducing the risk of error
- ✓ **Empower** caregivers to monitor and manage pain accurately without expert support
- ✓ **Reduce** patients' need to seek medical advice for pain, enabling better in-home care
- ✓ **Improve** health outcomes for people in pain and reduce operational cost for healthcare providers
- ✓ **Document** assessment for compliance and monitoring effectiveness of treatment and revenue assurance



Our technology development partners

nViso

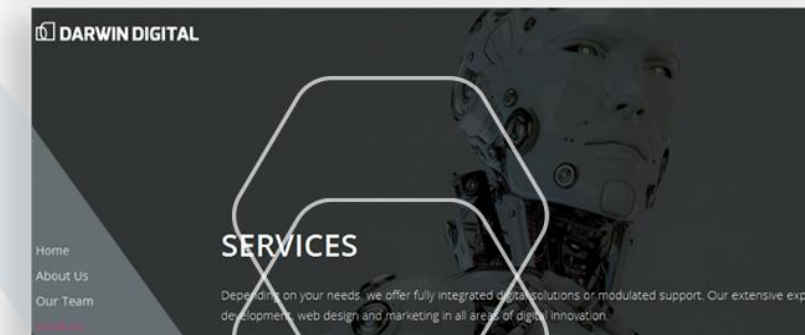
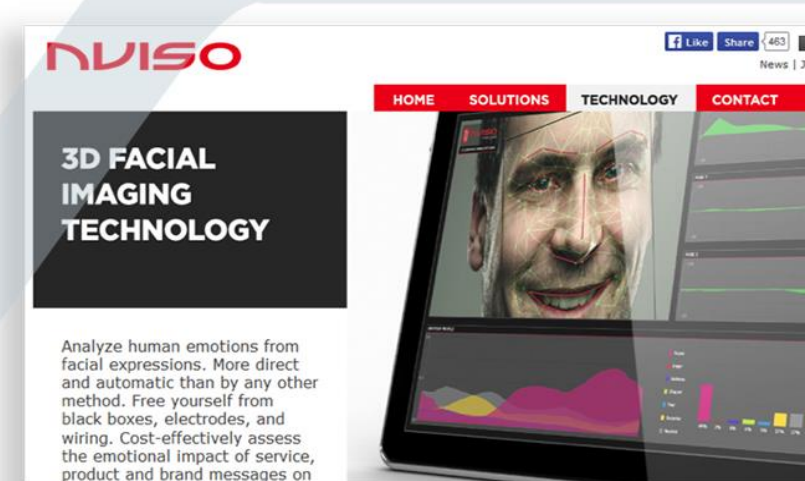
- Global leaders in AI enabled facial authentication technology
 - PainChek™ has secured a global, exclusive, perpetual license for use of nViso facial authentication in the field of pain assessment with adults and kids (July 2017)

Darwin Digital

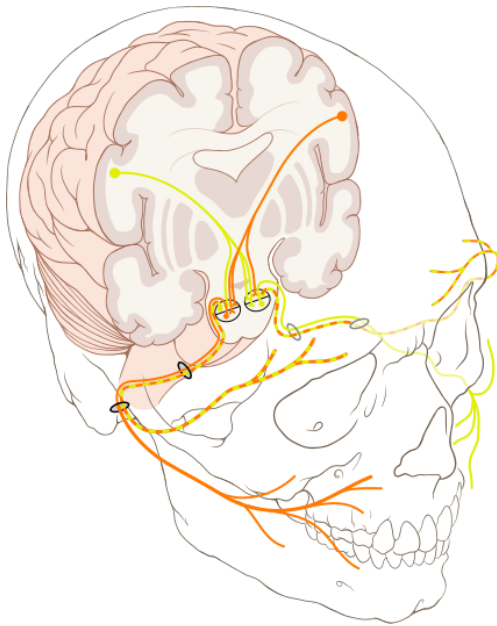
- Designs and develops the Dementia App and backend system

Curtin University

- Contracts services of PainChek™ founders:
 - Professor Jeff Hughes, Chief Scientific Officer, pharmacist
 - Mustafa Atee, Senior Clinical Research Scientist, pharmacist

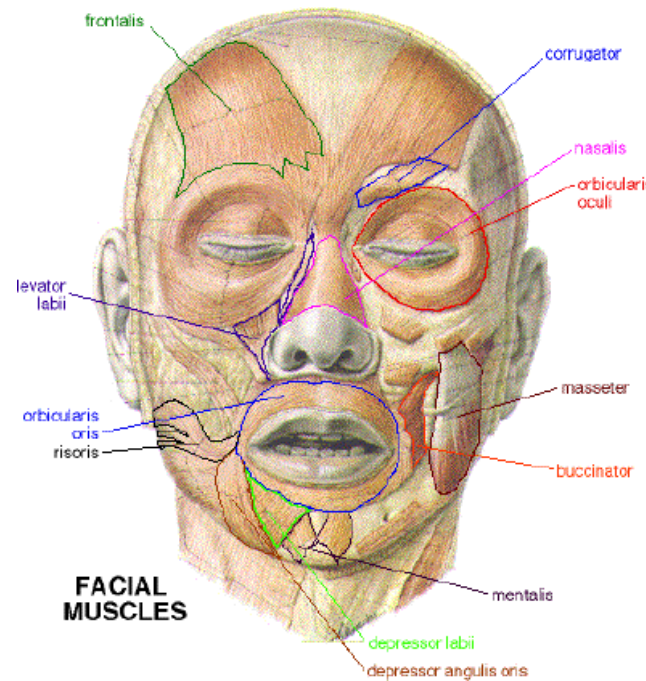


INNATE HUMAN BEHAVIOR ARE EXPRESSED THROUGH FACIAL MUSCLES



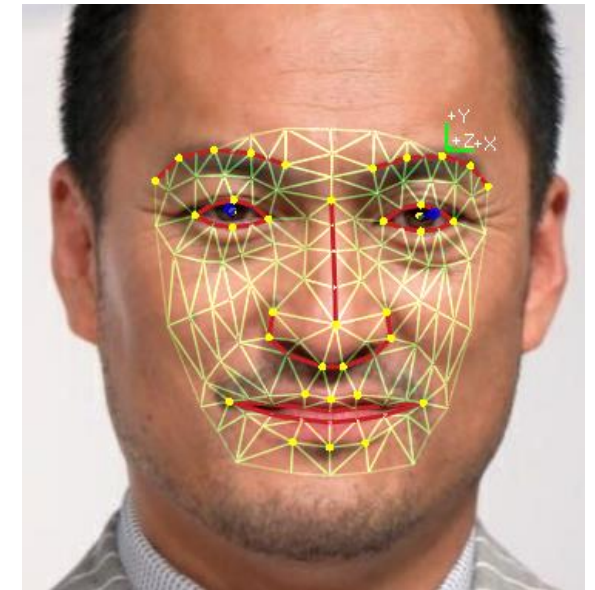
BRAIN REACTION

- 20 – 40 ms



FACIAL MOVEMENTS

- 43 facial muscles

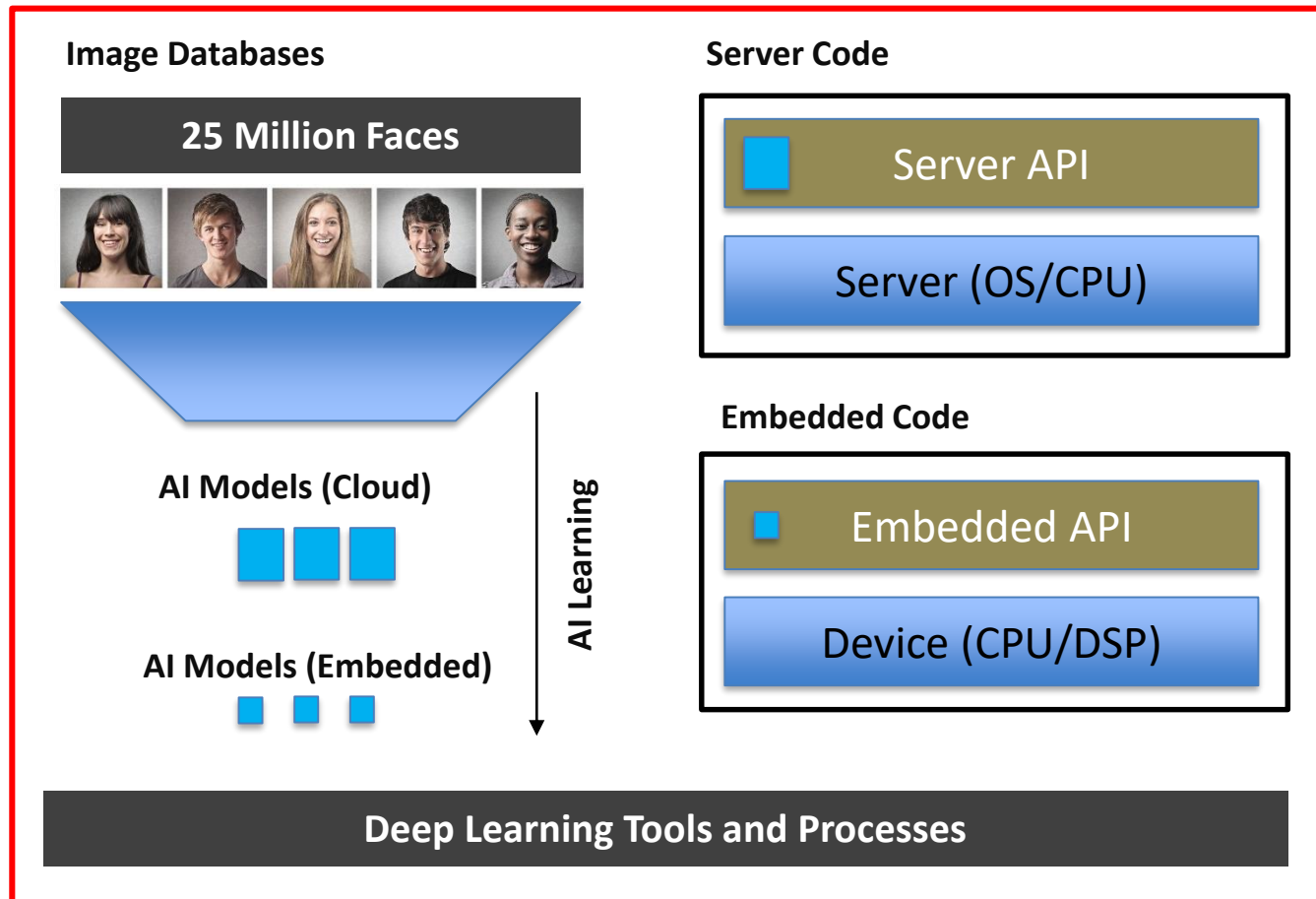


FACIAL TRACKING

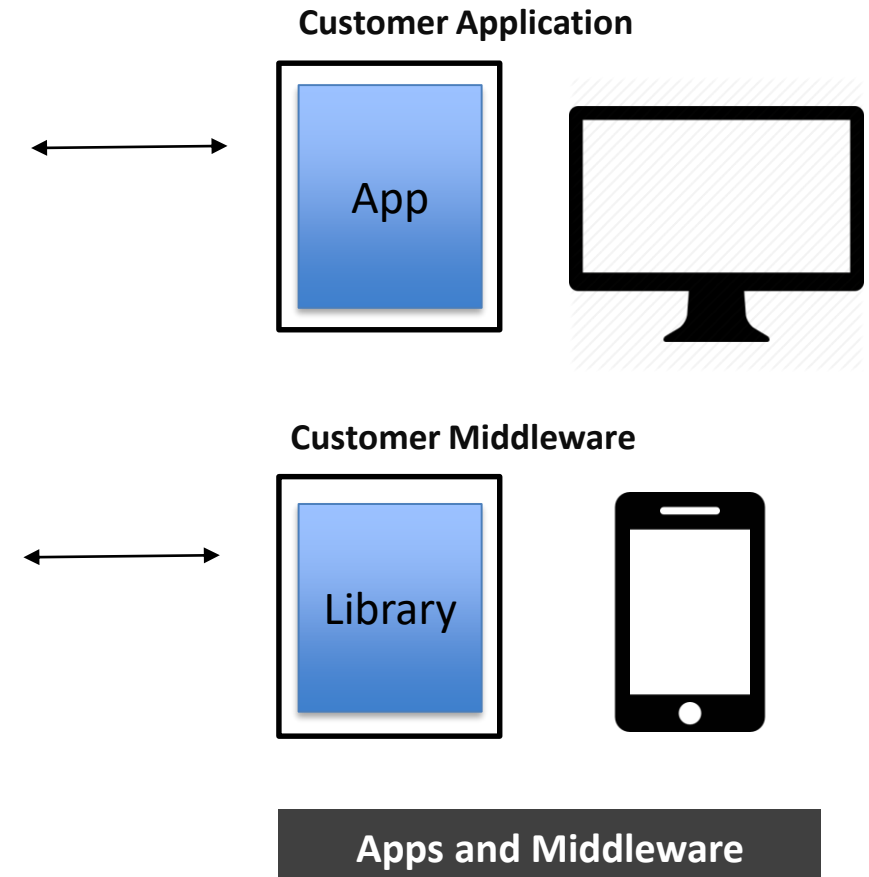
- 68 or 170 points

DEEP LEARNING ENABLED APPLICATIONS

nViso Deep Learning facial emotion data plus ePAT pain data



PainChek™ App Development



PainChek™ proven record of key milestone achievements



Dementia App

- Q4 2016**
Validation studies - completed and published
- Q3 2017**
Implementation studies - completed
- Q3 2017**
Target for regulatory approval in Australia and EU - completed
- Q4 2017**
Target for commercialisation in Australia –first sale achieved in September Q3 2017
- Q1 2018**
Target for FDA approval in the USA – process commenced in Q3 2017
- Q2 2018**
Target for commercialisation in Europe – USA to follow in Q4 2018

Pre-Verbal Children Apps

- Q4 2017**
Completion of children video library, data model and algorithm – on track
- Q1 2018**
Development of App
- Q2 2018**
Clinical studies and validation
- Q2 2018**
Finalise App and build regulatory file for approvals
- Q3 2018**
Target for regulatory approval in Australia and EU
- Q4 2018**
Target for commercialisation in Australia and Europe

Dementia App: Validation Study

Location

- Bethanie, Brightwater and Juniper Aged Care Groups, WA

Findings

- 40 residents, 353 paired assessments
- Excellent performance
 - > 88% accuracy for detection of pain
- Excellent validity results



July 2017: Published in Peer Reviewed Alzheimer's Disease Journal

Dementia App:

TGA and CE Mark clearance – July 18th 2017

- PainChek™ App is now cleared for use as a Class 1 medical device in Australia (TGA) and CE Marked for European markets
- The PainChek™ App's intended use is “*to assess and monitor pain in people who cannot verbalise such as people with dementia or communication difficulties*”
- Regulatory clearance is key business milestone and requirement by our customer base

PainChek™ Patent Status

- Patent clearance for PCT filing received in August 2016
- National filings commenced Feb 2017 in all key global markets;
 - Europe
 - US
 - Australia
 - China
 - Japan

PATENT COOPERATION TREATY		
From the: INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY		
To: Dr Andreas Hartmann GRIFFITH HACK Level 19, 109 St Georges Terrace Perth, Western Australia 6000 Australia		PCT NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty) (PCT Rule 71.1)
		Date of mailing (day/month/year) 08 August 2016
Applicant's or agent's file reference P96779.PCT		IMPORTANT NOTIFICATION
International application No. PCT/AU2015/000501	International filing date (day/month/year) 18 August 2015	Priority date (day/month/year) 18 August 2014
Applicant ELECTRONIC PAIN ASSESSMENT TECHNOLOGIES (EPAT) PTY LTD		
<ol style="list-style-type: none">1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translations to those Offices.		

Business Model

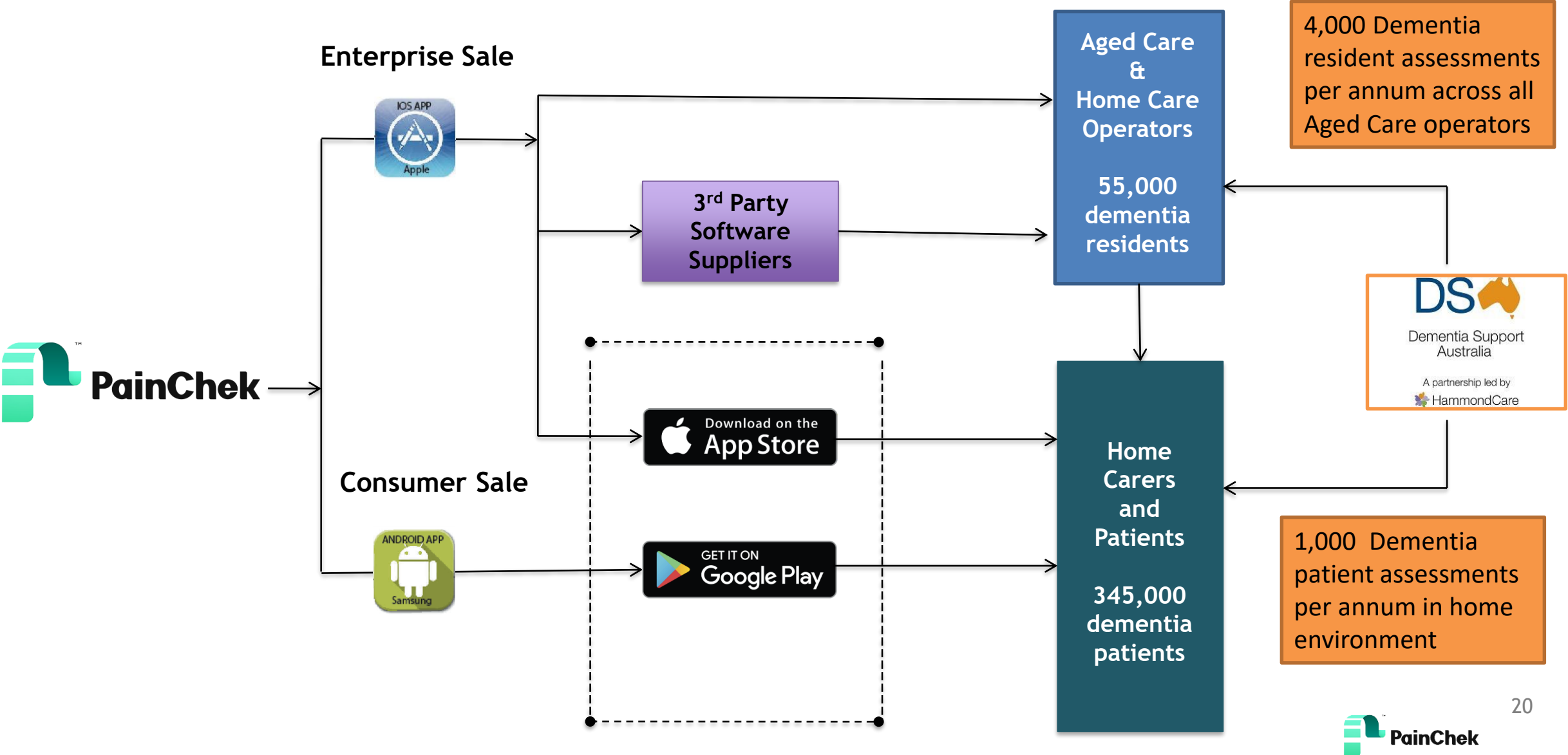
- Recurring revenues
- Software sold as a service
 - via software enterprise partners and direct to business
 - direct to consumers via App Store and Google Play

Dementia Support Australia Agreement

September 2017

- PainChek™ achieves first commercial agreement for clinical use of its TGA cleared pain assessment tool (PainChek™ App) with Dementia Support Australia (DSA).
- DSA are government funded dementia support specialists with a nationwide team of 150 clinical consultants covering community, residential and acute settings.
- DSA will use the PainChek™ App as a first line pain assessment tool for around 5,000 different people with dementia in Australia each year.
- Significant milestone in accelerating the awareness and commercialisation of the PainChek™ App in Australia and overseas.

ePAT and DSA “pull-push” strategy will accelerate Australian market awareness and revenue generation



Dementia App commercialisation Update

- DSA contract in place (Sept 18)
 - SA and WA trained and commenced
 - National roll out in Q1 2018
- 2 new Residential Aged Care (RAC) license agreements completed (Nov 18)
- Multiple negotiations ongoing with small, medium and large RAC providers
- 3rd party software suppliers engaged
- UK key market entry contacts established



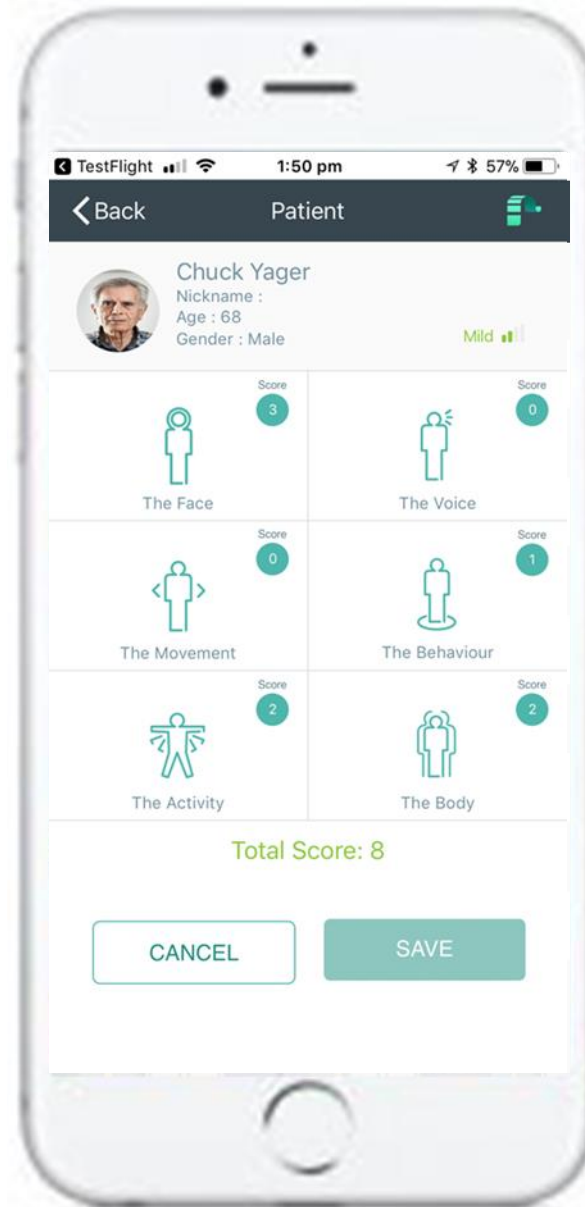
Children's App commercialisation Update

- Children's video Images and library now complete
- Prototype infants App (0-1 years) scheduled for Clinical studies and regulatory work Q2-Q4 2018
- Infant App commercialisation scheduled for Q4 2108 in Australia
- Toddlers (1-3 years) and Children's (4 years to 12 years) Apps to follow in early 2019.



Technology Update

- PainChek™ branding now embedded
- IOS version now commercially available for Dementia App
- App optimized for use on iPad and other Tablet platforms
- Development of Android Dementia App completed for Q1 2018 release



Experienced Board

- John Murray, Chair
 - 25 years in tech VC, multiple board roles including aged care
- Philip Daffas, MD
 - Senior global healthcare exec: Roche, Cochlear
- Ross Harricks, NED
 - Senior global medical device exec with Nucleus and healthcare NED
- Adam Davey, NED
 - Corporate finance exec and director Patersons Securities



Financial Update

- Current shares on issue: 828,634,589
- Market cap undiluted at 5.1c = \$42.26M
- Options on issue: 184,167,730
- Fully diluted capital: 1,012,802,319
- Fully diluted market cap: \$51.65M
- Cash at bank: 31 October 2017: \$5,200,000



PainChek™

Summary of Customer Benefits

- Proven clinical utility improves care
- Empowers all caregivers to monitor and manage pain for time saving and greater clinical efficiency
- Automates documentation for operational efficiency, quality accreditation and revenue assurance

PainChek™

**Investor Presentation Update
November 2017**