INNOVATION AT THE FRONTLINES OF

KAISER PERMANENTE®

Dan Weberg, PhD, MHI, BSN, RN
Director, Nursing Innovation
Innovation and Advanced Technology & National Patient Care Services
Kaiser Permanente
2014

MEMBERS' NEEDS ARE CHANGING

CLINICIANS' NEEDS ARE CHANGINGTOO

Medical-Surgical Ward

Home Environment

Rethinking the Care Model

	Old Approach	New Approach
Care	Episodic visits	Continuous relationship
Management	Clinician	Clinical team
Decision-making	Training and experience	Evidence
Control	Care system	Patient
Variability	Clinician autonomy	Patient needs, preferences
Information flow	Restricted	Encouraged
Process visibility	Secrecy	Transparency
Safety	Responsibility of clinician	Responsibility of system
Needs	System reacts	System anticipates
Financial goal	Reduce cost	Reduce waste

Adapted from Kohn, Corrigan, & Donaldson, 2000, Table 3-1
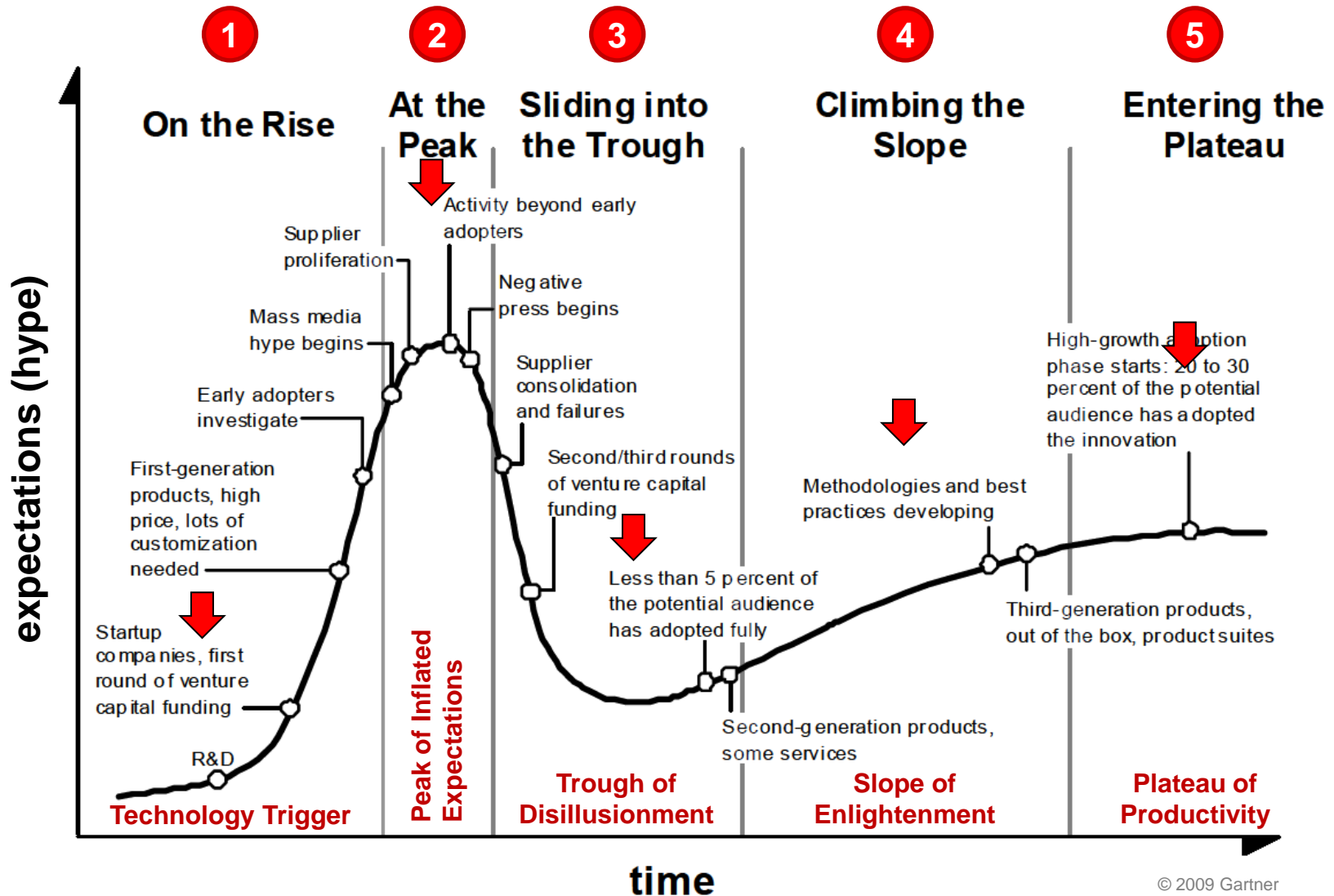
KAISER PERMANENTE®

SPARKING CONVERSATION & IDEAS

The Current System of Virtual Tools

Tools that Enable Care Anywhere

KAISER PERMANENTE®

Gartner Hype Cycle for Technology

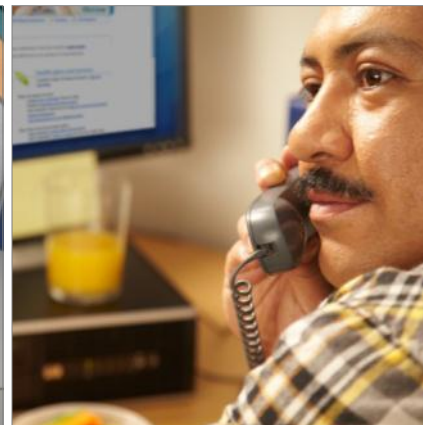# Current Virtual Care Models

© Regenstrieff

© Sony

© Getty Images

© Kaiser Permanente

Live Video Consultation

Synchronous

Saves travel time

Improves access

Convenient

Everyone has to show up at the same time

Store & Forward

Asynchronous, send photo or video

Saves travel time *and* more efficient

Improves access

Convenient

Impersonal

Remote Monitoring

Monitor data

Early intervention

Saves travel time *and* more efficient

Convenient

Intrusive

Requires engagement

Guided Self Service

Personalized education and guidance

Social networks

Automated rules-based supervision

Requires engagement

Kiosks

© HealthSpot

© DynaTouch

© SoloHealth

© Phoenix Kiosk

Mobile clinic © Kaiser Permanente

KAISER PERMANENTE®

Smartphone, Tablet: 28,000+ Apps

WellDoc

Baby Nursing

Pillboxie

RunKeeper

MyCVS

Nike Training Club

Dosecast

KP member app

HealthPrize

Jawbone

KAISER PERMANENTE®

Tracking Health

1 Video fitness classes
© Navafit

2 Fitness gaming © Mango Health

3 Fitness gaming for kids
© Zamzee / Hope Labs

4 Team contests
© Keas

5 VR fitness club
© Club One Island

6 Every Body Walk! app © KP

7 Sleep, diet, activity
sensors and apps
© Lark

KAISER PERMANENTE®

Professional Apps

1 AirStrip Cardiology

2 Mobisante

3 Epic Haiku

4 Phliips VS Camera

5 CellScope
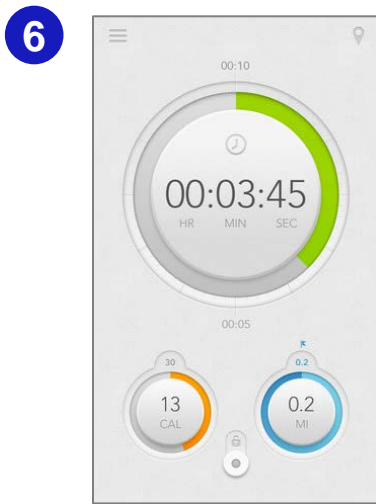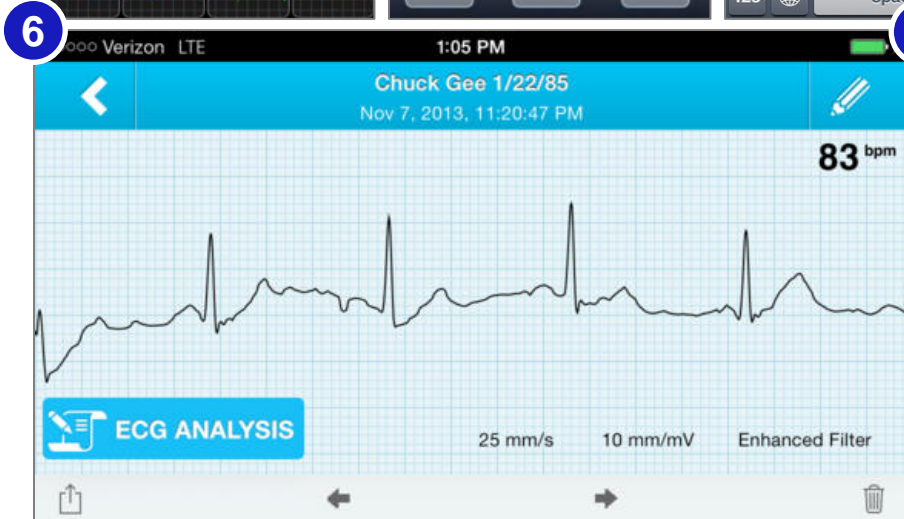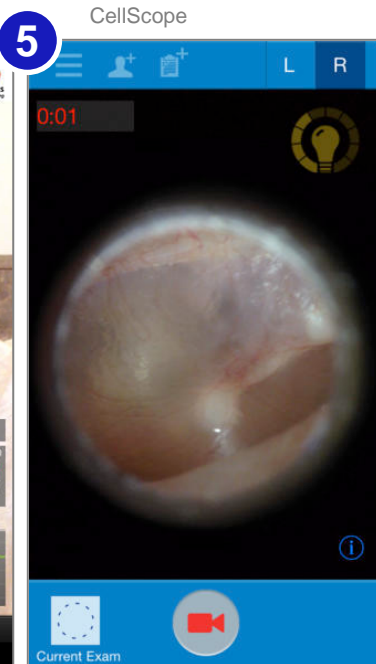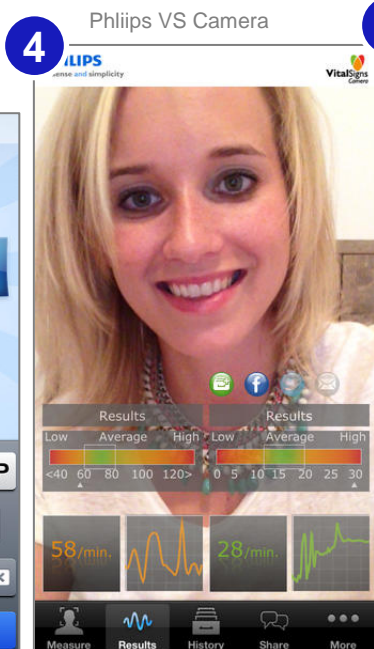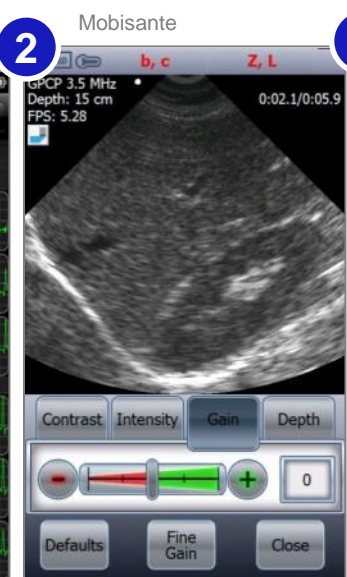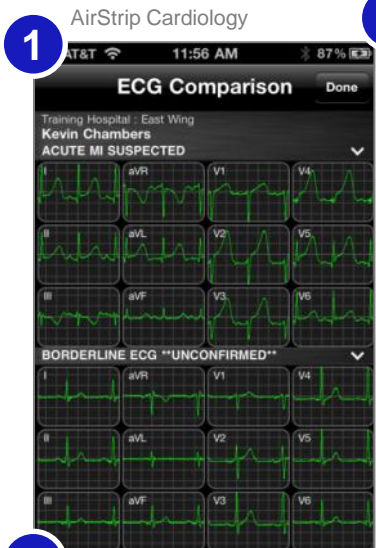
6 AliveCor

7 Mobile Stethoscope

KAISER PERMANENTE®

Fitness Trackers

1 vívofit – time, steps, distance, cals © Garmin

2 HR, motion, speed, time, cals, temp © Spree

3 Earbud sensor for VS, calories, speed, steps © Valencell

4 HR, speed, distance, GPS, altitude © Polar

5 HR, motion, skin temp, sweat © Basis

6 Spark – steps, cals, distance, time © Spark

7 Nike Plus Sensor – time, distance, pace, cals © Nike

8 Orb – 3-axis accel, steps, sleep, cals © Fitbug

9 Reign – activity, cals, sleep © Jaybird

10 Lift – posture alert © Lumo
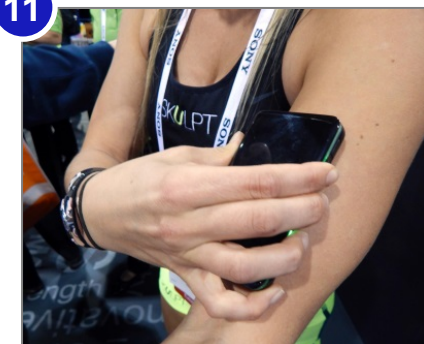
11 Aim – impedance myography © Skulpt

iat

KAISER PERMANENTE®

Alerts

1

GPS tracker © Trax

2

Sensible Baby – temp, position,
motion © Sensible Baby

Mimo jumpsuit – VS, position © Dragon Innovation

3

Teddy the Guardian – HR, T, SpO$_2$ © ID Guardian

4

Fall predictor insole @ Veristride

5

Pendant personal emergency response system
© Philips Healthcare

6

7

Wireless activity sensor stickers © Green Goose

8
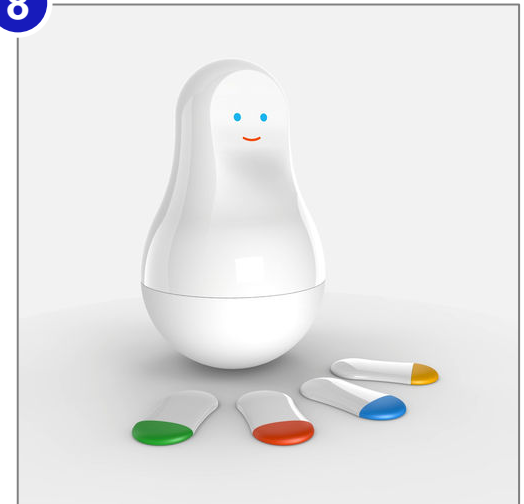
Wireless motion sensors © Sen.se Mother

KAISER PERMANENTE®

Medication Reminders

Multi-alarm © e-Pill

Med reminder watch © Cadex

Pill dispenser © MedReady

Pill dispenser © Ivation

Automated pill dispenser © Philips

GlowCap pill bottle cap © Vitality

Medivox © BYTEC

Pillstation © Senticare

Automated pill dispenser © TabSafe

KAISER PERMANENTE®

Specialized Sensors
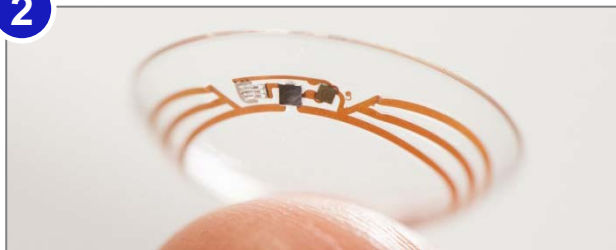
1

CheckLight – athletic head trauma cap © Reebok

2

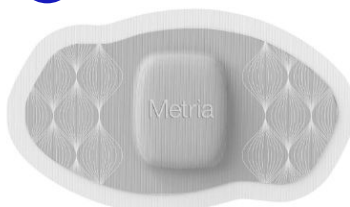Contact lens glucometer © Google

3

Mobile ECG © iHealth

4

Metria IH1 – accel, temp, GSR, disposable © Vancive

5

June – sun exposure sensor © Netatmo
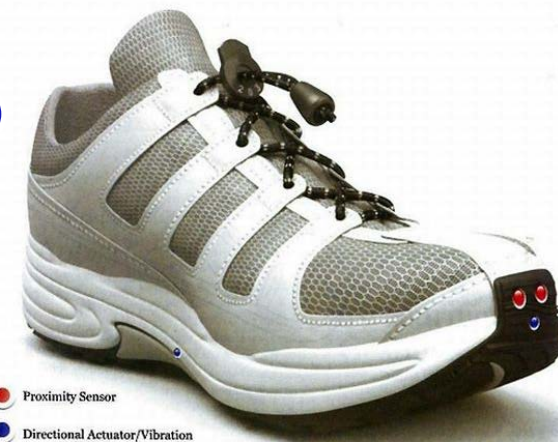
6

Skin glucometer © Dexcom

7

Diabetic foot ulcer insole @ Orpyx

8

iSonic – sensor cane @ Primpo

9

Le Chal – shoes for the visually impaired © Ducere Technologies

Proximity Sensor

Directional Actuator/Vibration

Ingestible Sensors

1 **e-Celsius thermometer pill**

E-Celsius – wireless ambulatory temperature © BodyCap

2 **MagneTrace necklace**

Magnet pill © MagneTrace

3 **Proteus Raisin microchip pill**

Electronic pill © Proteus

4 **Xhale SMART tracer system**

Tracer-coated pill © Xhale

KAISER PERMANENTE®

Implantable Sensors
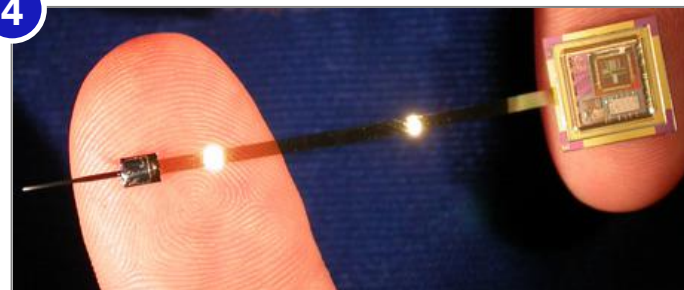

Wireless drug dispensing implant © MicroCHIPS

MIT bio-electronic ocular implant © engadget
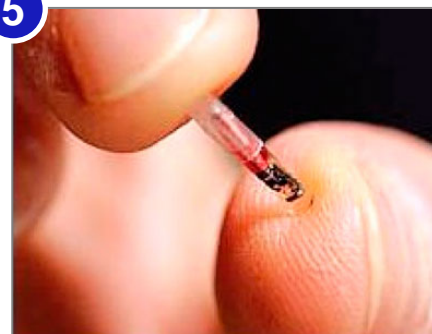

Artificial pancreas © J&J

Cochlear implant © Univ. of Michigan

Human tracking chip © Wireless

Mobile Instruments

1 iPhone glucometer © IBGStar

2 Clip-on pediatric otoscope © CellScope

3 Muse – EEG headband © InteraXon

4 Connected tracking toothbrush © Kolibree

5 AirSonea – asthma tracker @ iSonea

6 Wireless pulse oximeter © iHealth Labs

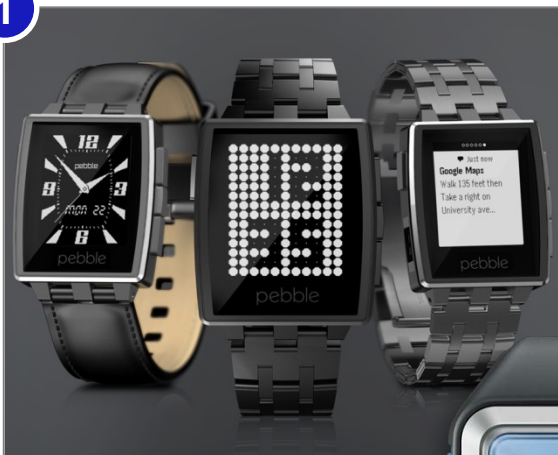**7** Ekoscope – connected ECG stethoscope © Parace Bionics

8 Withings Aura – sleep system © Withings

9 Tinké – smartphone plugin HR, RR, oximetry, HR variability © Zensorium

KAISER PERMANENTE®

Communicators

1

Time, SMS, email, GPS @ Pebble

2

Time, SMS, email @ Meta

3

Hi-Call – BT glove @ Hi-Fun

4

TrueSmart – Android smartphone @ Omate

5

Time, SMS, email, GPS @ Siemens

6

Linx – world's smallest hearing aid, Apple Mfi-compliant @ ReSound

7

Pine – detachable wrist smartphone @ Neptune

KAISER PERMANENTE®

Sensing Interfaces

1 Kinect in surgery © GestSure

2 Nintendo Wii © Nintendo

Wii casualty

3

Digits hand controller © Microsoft

4 Tobii – eye gaze tracking © engadget

5 Multi-touch surface table © NUITEQ

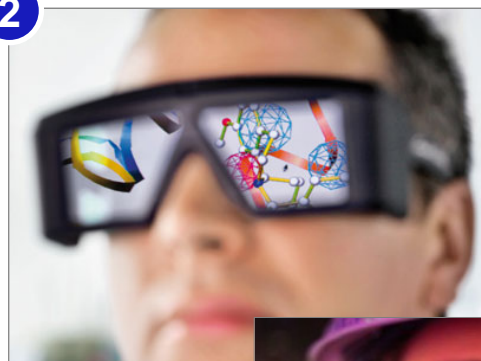**6** Electrical signal speech recognition © NASA

KAISER PERMANENTE®

Monitoring in Cyberspace: AR, VR

1

Vuzix iWear © gizmag

2

Molecular drug modeling © Roche

HC1 – AR headset © Motorola

3

4

Opto-acoustic noise reduction © VocalZoom

5

Google Glass © Google

6

VR phobia therapy © PanSci.tw

7

VR multi-user simulation training © Forterra

iat

KAISER PERMANENTE®

Robots

1

Virtual assistant
© InteliWISE

2

Autom – weight loss coach
© Intuitive Automata

3
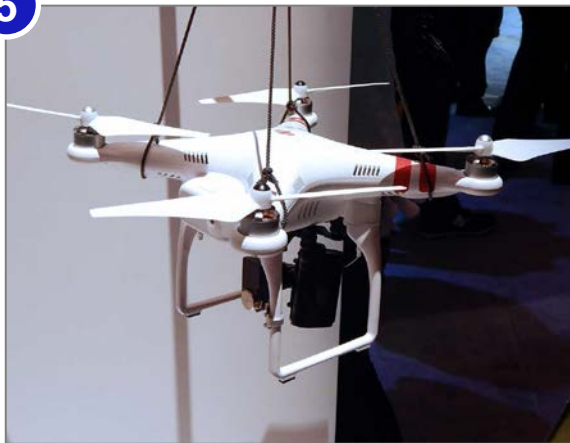

Paro – interactive baby harp seal

4

Legally blind driver in self-driving car © Google

5

Phantom 2 Vision quadcopter © DJI

6

© iRobot

7

Telepresence robots

© VGo

8

HD projector, audio, app-driven, room temp, CO_2, etc. © Keecker
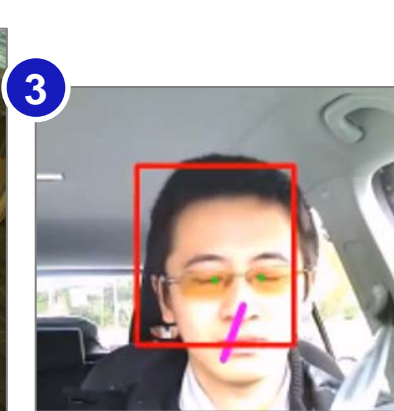
KAISER PERMANENTE®

Environmental Monitoring

1 VS sensing at a distance © Kai Medical
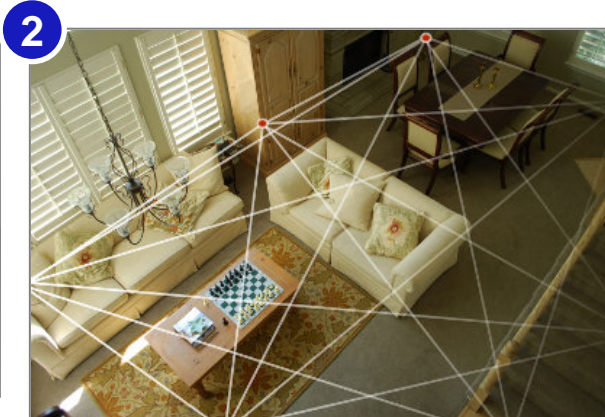
2 Radio nodes for movement tracking © Xandem

3 CarSafe - drowsiness app © Dartmouth

4 Buttocks ID - Adv. Inst. of Industrial Tech (Japan)

5 Under-mattress activity and VS sensing © EarlySense

6 LG – interactive mirror display © TechnoBuffalo

7 Real-time location system – RFID, Wi-Fi, ultrasound © Red Cell Innovation

KAISER PERMANENTE®

Challenges