

# TECHNOLOGIES AND DESIGN: APPLICATIONS AND CHALLENGES FROM MULTI- DISCIPLINARY PERSPECTIVES

DR IAN KELLAR

PROTOTYPING AND PLAYING

# MEDSMINDER

- SBRI
  - PHASE 1 IS INTENDED TO SHOW THE TECHNICAL FEASIBILITY OF THE PROPOSED CONCEPT. THE DEVELOPMENT (6M - £100k)
  - PHASE 2 CONTRACTS ARE INTENDED TO DEVELOP AND EVALUATE PROTOTYPES OR DEMONSTRATION UNITS



**Improving medicines adherence**

**SBRI Healthcare NHS England competition for development contracts**

**May 2014**



# WHY ME?

## Key policy documents

Concordance, adherence and compliance in Medicines taking: Report for the National Coordinating Centre for NHS Service Delivery and Organisation R&D R Horne et al (Dec 2005)

NICE clinical guideline 76, Medicines Adherence: Involving patients in decisions about prescribed medicines and supporting adherence 2009

NICE Guide to resources Medicines Adherence: Implementing NICE Guidance 2009

4

[www.nice.org.uk/nicemedia/live/11766/43741/43741.doc](http://www.nice.org.uk/nicemedia/live/11766/43741/43741.doc) (accessed 02May14)

Department of Health: Improving the use of medicines for better outcomes and reduced waste: An Action Plan October 2011.

NHS England: Making medicines-taking a better experience <http://www.england.nhs.uk/wp-content/uploads/2014/04/mo-ws-report-02-14.pdf>

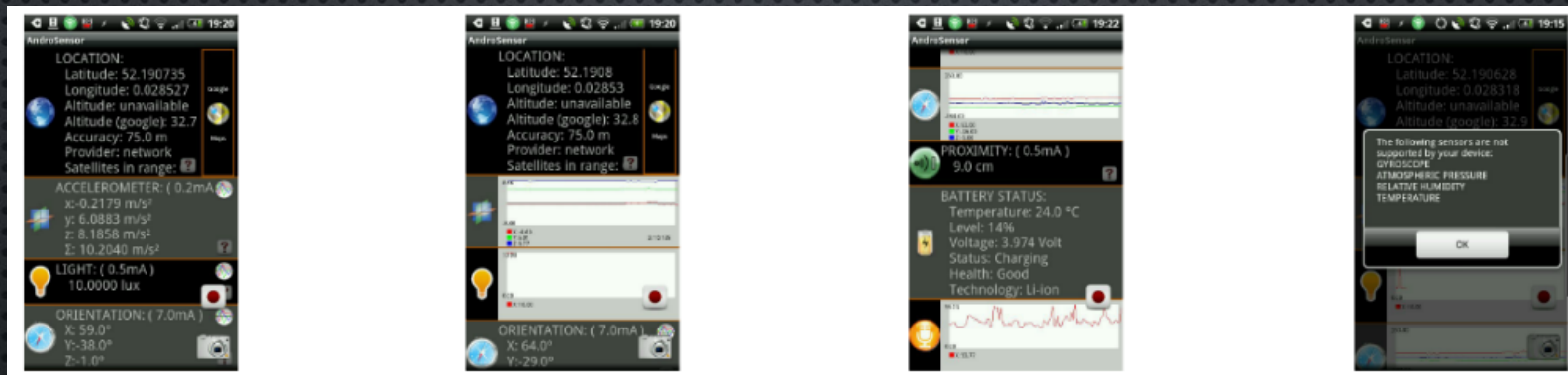
Non-adherence falls into two overlapping categories:

<b>Intentional</b>	Patient decides not to follow the treatment recommendations.	For example, because of side effects
<b>Unintentional</b>	Patient wants to follow the treatment recommendations but has practical problems in doing so.	For example, poor recall or difficulties in understanding the instructions, problems using the treatment, inability to pay for the

2

		treatment or simply forgetting to take it
--	--	---

# PROTOTYPING





# PROTOTYPING

## Sensors

- Smartphone sensors
- Power
- Phonecall activity
- SMS (who, title & what)
- Email\*
- Time
- SSID & strength
- CellID & strength
- Application activity
- Calendar activity
- NFC\*

- Falls
- Sleep apnea
- Tinnitus

### On phone

- Speech
- Social
- Physical activity intensity\*
- Physical behaviour\*

### In the cloud

- Co-presence
- Emotion

# (MACHINE) LEARN (ING)

- CONTEXT
  - OPPORTUNITY TO INTERVENE
  - OPPORTUNITY TO ACT
  - TEMPTATION
    - LEARN FROM FAILURE
    - LEARN FROM SUCCESS

## Environment

### Location + GIS

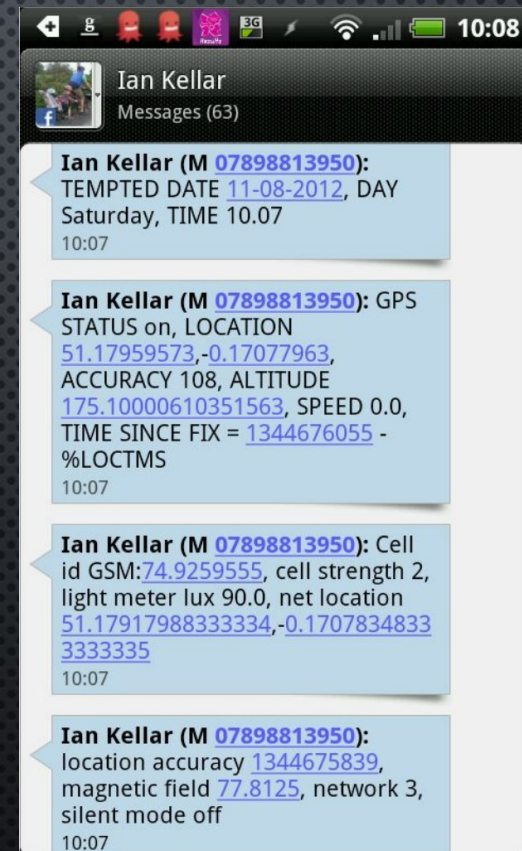
- Food
- STD
- Traffic density / RTA
- Health service
- Environmental
- Crime

### Location + sensors / POI

- Air pollution
- Physical activity



# PROTOTYPING (TASKER)



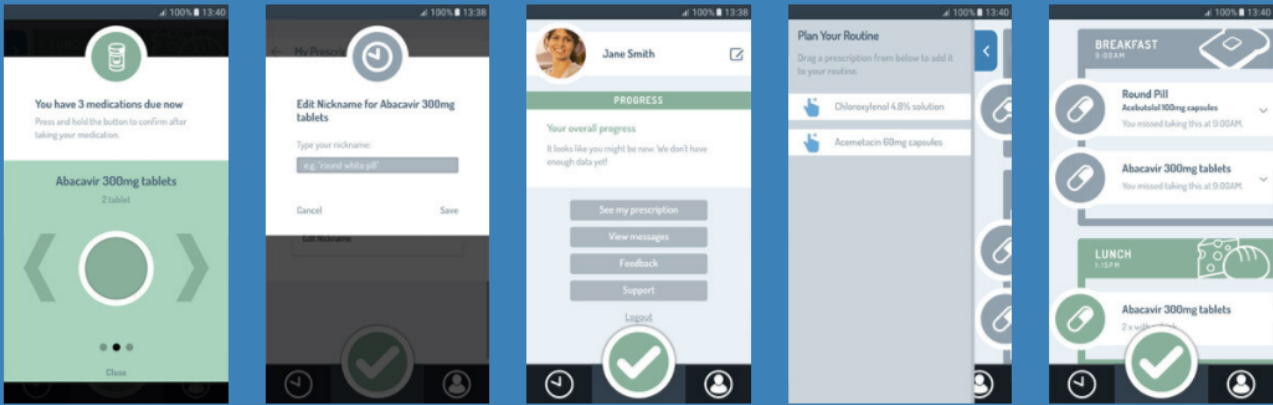
MEDS MINDER



MEDSMINDER

# MEDSMINDER

- I'VE FOUND IT MUCH EASIER TO PLAN WHEN I TAKE MY MEDICATION SO THAT IT FITS IN WITH MY DAY-TO-DAY LIVING.
- I TAKE THE RIGHT DOSES AT THE RIGHT TIME AND I FEEL MUCH BETTER BECAUSE OF IT.



The image displays five sequential screenshots of the MedsMinder mobile application interface, illustrating its key features for medication management. Each screenshot is framed within a blue border and includes a descriptive text block below it.

- Screenshot 1:** Shows a notification "You have 3 medications due now" with a large green pill icon and a "Close" button. Below, it lists "Abacavir 300mg tablets" with a "2 tablet" dosage.
- Screenshot 2:** Displays the "Edit Nickname for Abacavir 300mg tablets" screen, allowing users to type a nickname (e.g., "round white pill") and save it.
- Screenshot 3:** Shows the "PROGRESS" screen for "Jane Smith", displaying "Your overall progress" and buttons for "See my prescription", "View messages", "Feedback", "Support", and "Logout".
- Screenshot 4:** Displays the "Plan Your Routine" screen, where users can drag prescriptions (like "Chlorzexfenol 4.8% solution" and "Acemetacin 100mg capsules") into their routine.
- Screenshot 5:** Shows the "BREAKFAST" and "LUNCH" routine screens, where users can drag pills into their schedule. It shows missed doses for "Round Pill" and "Abacavir 300mg tablets" at 9:05 AM.

**You can log when you take your medications so that medsminder can keep a lookout in case you forget to take them.**

**You can give each medication a name that is easy for you to remember.**

**As you make progress, medsminder will let you know how well you're doing.**

**Your medications are planned into your normal routine: you decide when to take them.**

**Planning your medications couldn't be easier: just drag them onto your Routine.**



# PLAYING

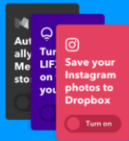
- ELDEST HAS HIGH FUNCTIONING AUTISM
- WANTS INDEPENDENCE
- NEEDS SUPPORT
- GEOFENCING
- TEMPERATURE
- LIGHTS
- EMERGENCIES
- CONTROL & COMPANY

**IFTTT is a free platform that helps you do more with all your apps and devices**

**Get started**

**WHAT ARE Applets?**

Applets bring your services together to create new experiences.

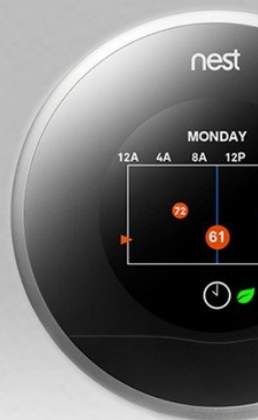


**WHAT ARE Services?**

Services are the apps and devices you use every day. Each service has useful Applets you can turn on.



**echo dot**





# PLAYING

- IFTTT
- TRACKR BRAVO
- SAMSUNG SMARTHINGS
- LIFX
- NEST
- ALEXA
- IFTTT DO

# APPLICATIONS AND CHALLENGES

- SERVICES LIKE TASKER, LOCALE, IFTTT, STRINGIFY ETC LET YOU JOIN SERVICES AND COMBINE TO MAKE THINGS HAPPEN
- SENSORS LIKE PHONES, TRACKR, NEST, SMARTHINGS LET YOU TRACK, DETECT AND CONTROL THINGS
- WHAT DO YOU WANT TO DO?
- EVIDENCE SYNTHESIS VS CO-DESIGN
- THRESHOLDS VS MACHINE LEARNING
- RIGOUR VS ROI
- @DRIANKELLAR
- I.KELLAR@GMAIL.COM