Tackling long term goals by testing Personal Hypotheses based on Ubiquitous Sensing

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Personal Hypothesis (PH): achieving measurable end goals by setting measurable means goals

- An individual's belief about the ways that their actions affect their lives.
  - If I become more active **by taking more steps each day**, this will **improve my health**, in line with current health recommendations

Sensed Means Goal **Measureable End Goal**

Ubiquitous Sensors
Collect various types of data

- Activity Monitor Device/Phone
- Blood Pressure
- Log mood
- Log how well I feel
- Weight
- ….

Personal Hypothesis examples

Means Goal		End Goal
Walk 30 min/day	→	Feel healthier
Walk 30 min/day	→	Reduce hypertension
Exercise 60 min/day	→	Lose weight
Reminder every 30mins	→	Reduce continuous sitting time
Use my FitBit	→	Increase my physical activity
Learn 10 French words/day	→	Be able to read French newspaper
Buy a dog	→	Increase my physical activity

- **Many emerging devices for self tracking open the opportunity for people to explore personal hypothesis**
- **Lots of data is becoming available to help people achieve their goals (e.g. long-term health and well-being)**
- **It is challenging at present to exploit such data effectively**

Objective

Explore Personal hypotheses to achieve long-term goals

- A new approach to end-user ubicomp programming
- Exploit ubicomp sensing
- Explore personal hypothesis to achieve goals
  - A person explores what works for him/her

Challenges

User Interface challenge

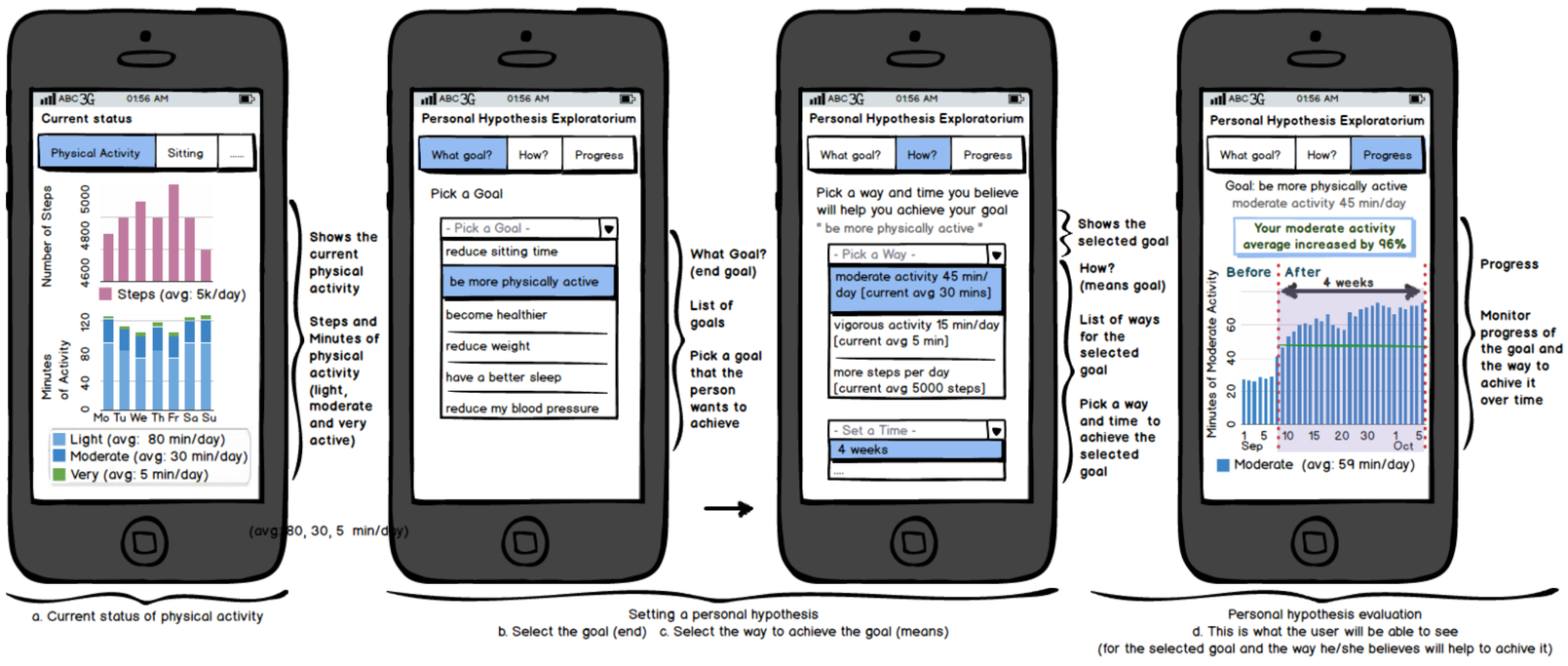
- To select and formulate a good hypothesis

Infrastructure

- Depends on multiple, available sensors and logging
- Should make use of available evidence
- To ensure data available to test hypothesis
- Over a required time period (months, years)

User View

- **Prototypes** for
  - Setting a personal hypothesis (define end and means)
  - PH evaluation (what they will be able to see)



a. Current status of physical activity
Setting a personal hypothesis
b. Select the goal (end) c. Select the way to achieve the goal (means)
Personal hypothesis evaluation
d. This is what the user will be able to see
(for the selected goal and the way he/she believes will help to achive it)

Potential Outcomes

- **Help** a person **to decide how to select** and **test** one personal hypothesis for an end goal
- Allow people **compare** two personal hypotheses for the same end goal
- **Share** results in a form of Citizen Science
- New class of **end-user programming interface** for ubicomp
- **Scope** of Research
  - Simple personal hypothesis
  - [Paired personal hypothesis]

Future Work

- **Implement** the architecture, based on **Personis** [5]
- **Create Interfaces**
- Conduct **usability studies**: lab for hypothetical users
- **Field trial** to learn about use
- **Evaluate analytical**
  - Infrastructural
  - User interface design

References

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