Exercise with my "Avatar" – Opportunities for Telerehabilitation in Cardiovascular Disease Rehabilitation *(PATHway as an example)*

Coordinated by: Dr Kieran Moran

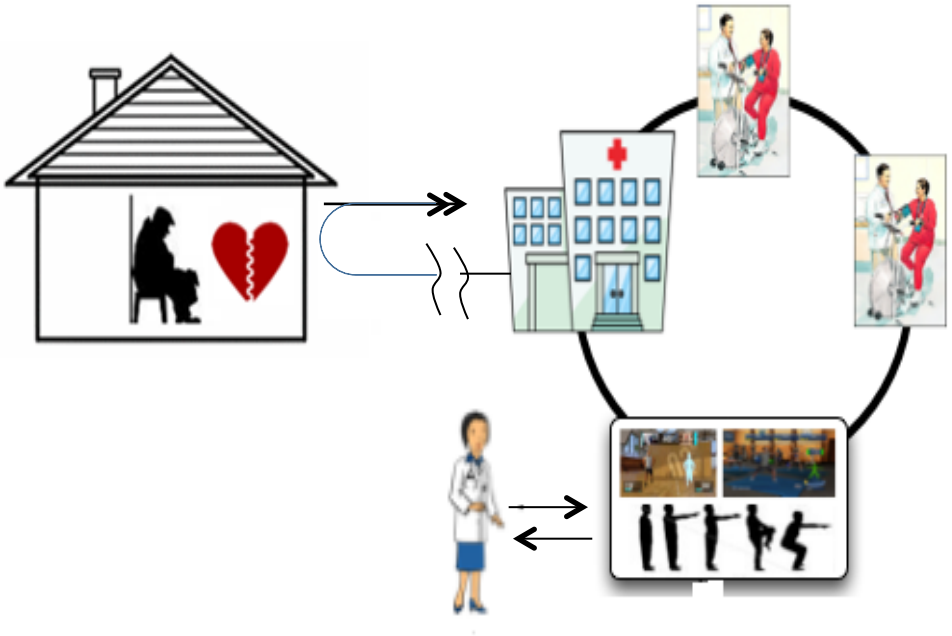
School of Health and Human Performance; INSIGHT Centre for data analytics

H2020 PATHway Grant Agreement 643491 (**www.PATHway2health.eu**)

CARDIAC
REHABILITATION
Take Your Recovery To Heart

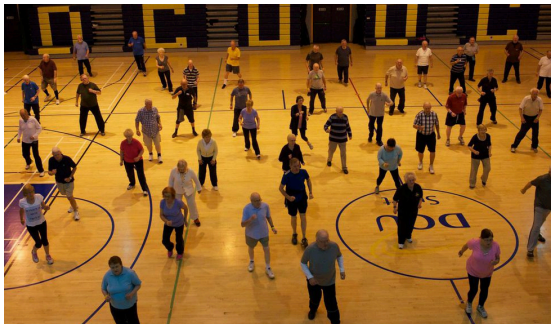
Physical activity alone reduces premature death by 24%

Usual care



Phase 2: Out-patient cardiac rehabilitation

Phase 3: Community based cardiac rehabilitation



MedEx, DCU

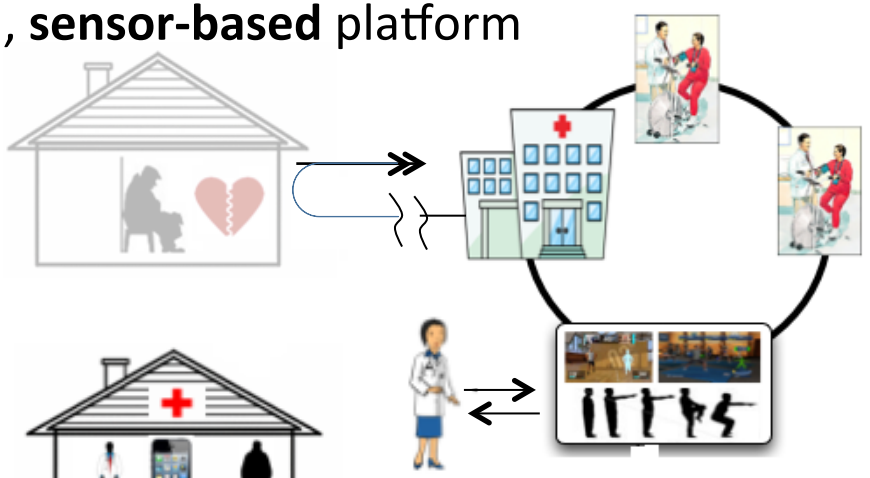
Problem: *Only 10% of patients recovering from CVD attend Cardiac Rehabilitation programmes in the community (phase 3)?*

XL Websites
Bettystown
Donore
Laytown
Duleek
32 min
41.9 km
1 h 11
every 30 min
Skerries
Garristown
Dunsany
Dunshaughlin
Ashbourne
Ballyboughal
Lusk
Rush
Donabate
Swords
Malahide
Dublin Airport
Clonee
DCU - Dublin City University

Busy

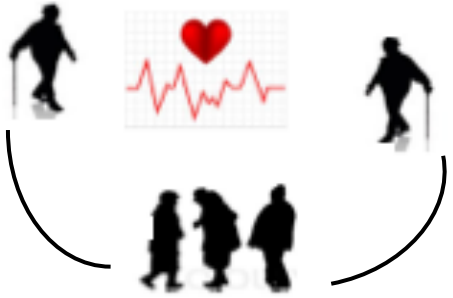
Help!
I'm
new

PATHway: allows remote participation in an individually tailored Cardiac Rehabilitation exercise program at any time from their **own home** or in their **own community** via an **internet enabled**, **sensor-based** platform

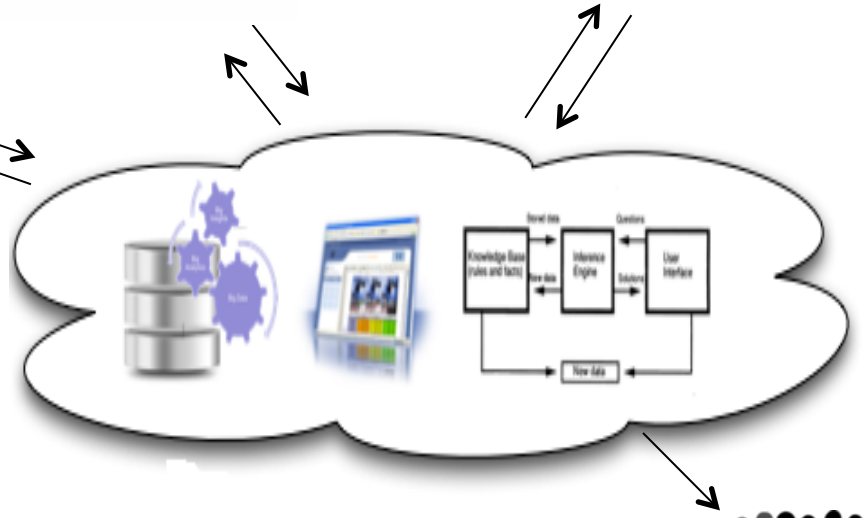


Peer support

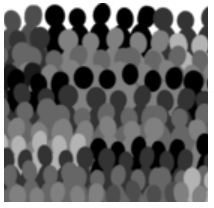
Home



Community

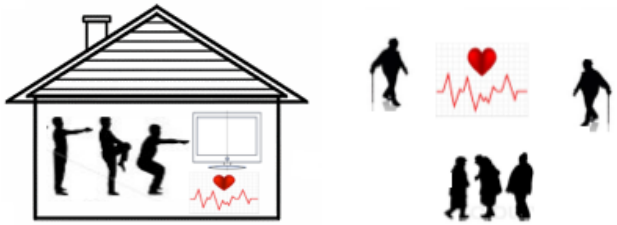


society-level
"crowd-researching"



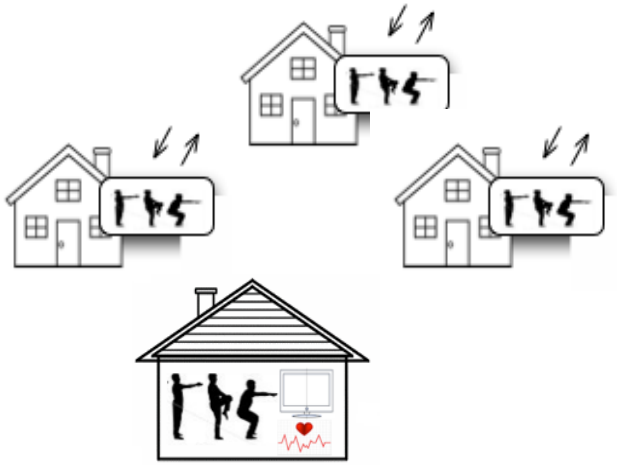
4 Key drivers to maximise effectiveness

Behavioural Change Theory



Self-managment of condition through (self-) empowerment

Peer support / Social interaction



Individualised

Technology is the **facilitator** not the driver

4 Key drivers to maximise effectiveness

Behavioural Change Theory

Self-managment of condition through (self-) empowerment

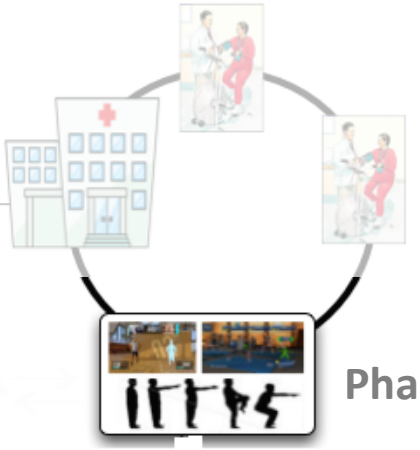
Social inter

ualised

Patient and Stakeholder design driven

PATHway in more detail

Phase 3



Phase 2

Peer support

society-level
"crowd-researching"

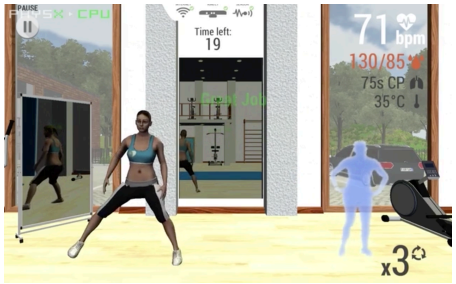
INTERNET
KINECT
SENSOR
7
WATCH
AND GET PREPARED
FPS: 61.77

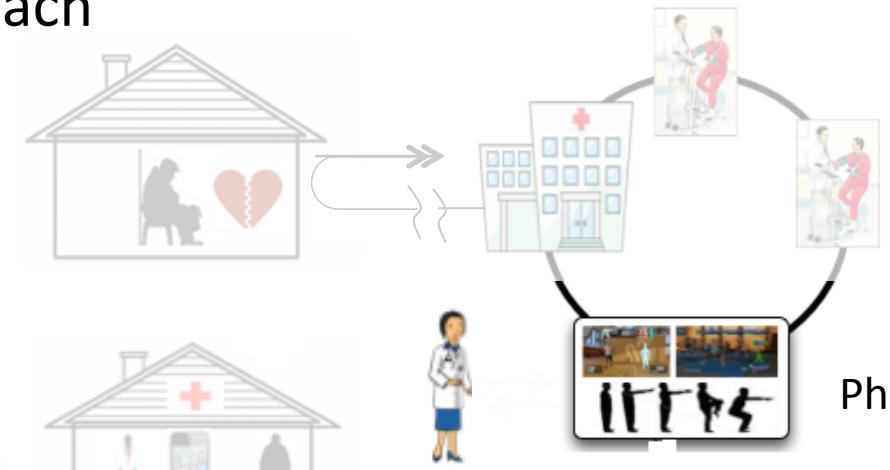
We also target Life-Style change

Exercise and Lifestyle Assessment → Patient Feedback: compared to norms/ guidelines → Patient sets their own goals → Given access to tips and recommen-dations → Given access to advanced content

Patient exercise sensed and Lifestyle behaviours logged → Patients get **Health Behaviour Change Notifications** (DSS): Keep on track, Booster, Applaud, Advice, Arrange

Exercise programme and goals: developed by the patient in collaboration with a clinical nurse (ExerClass and ExerGame) delivered by a virtual '*Avatar*' coach





Phase 2

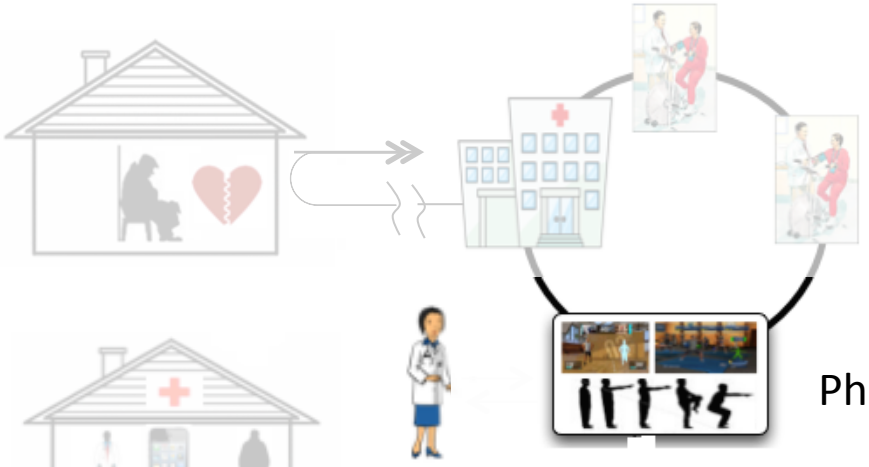
PATHway

Peer support

society-level
"crowd-researching"

Automatic monitoring: exercise movement and physiological response ..... and social interaction and level of enjoyment.

Peer support



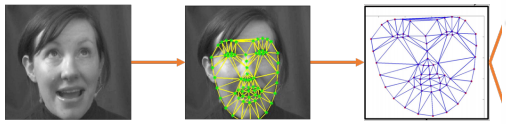
PATHway

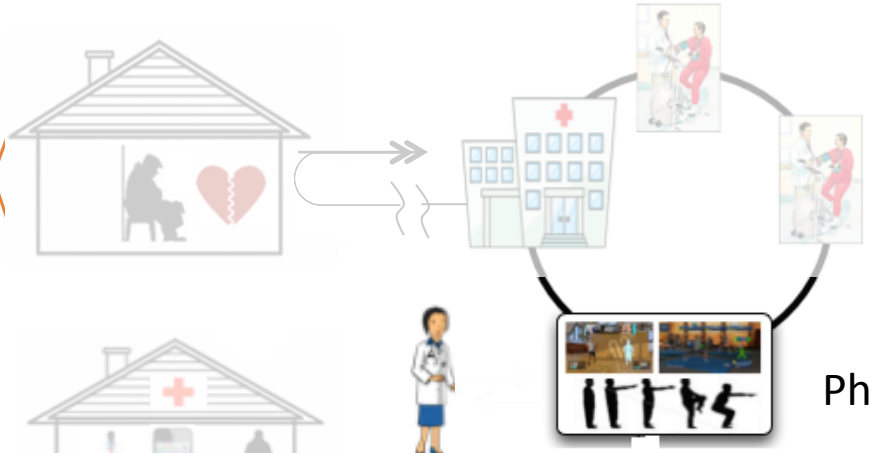
Phase 2

society-level
"crowd-researching"

Automatic monitoring: exercise movement and physiological response ..... and social interaction and level of enjoyment.

Peer mentor



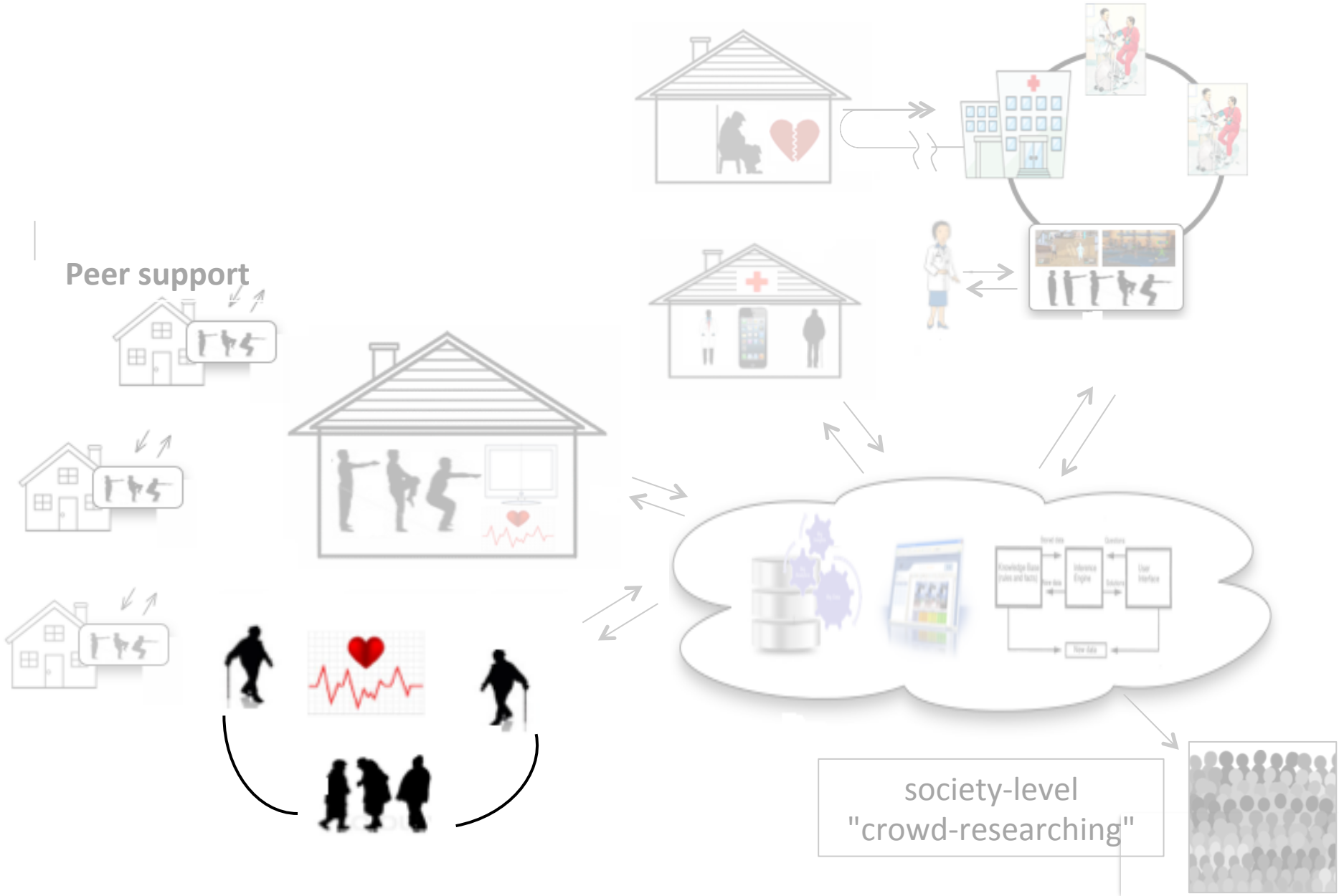


Phase 2

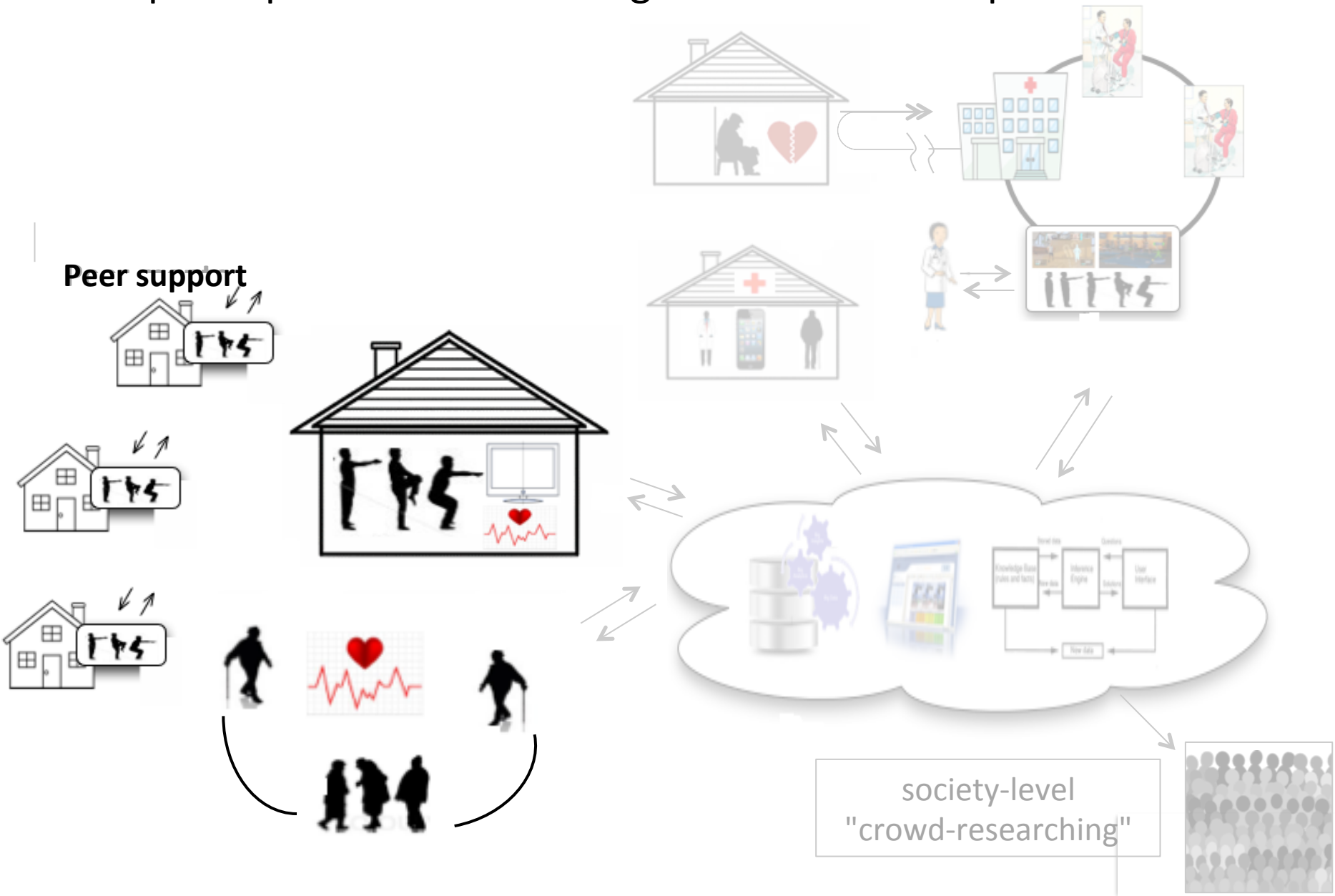
PATHway

society-level "crowd-researching"

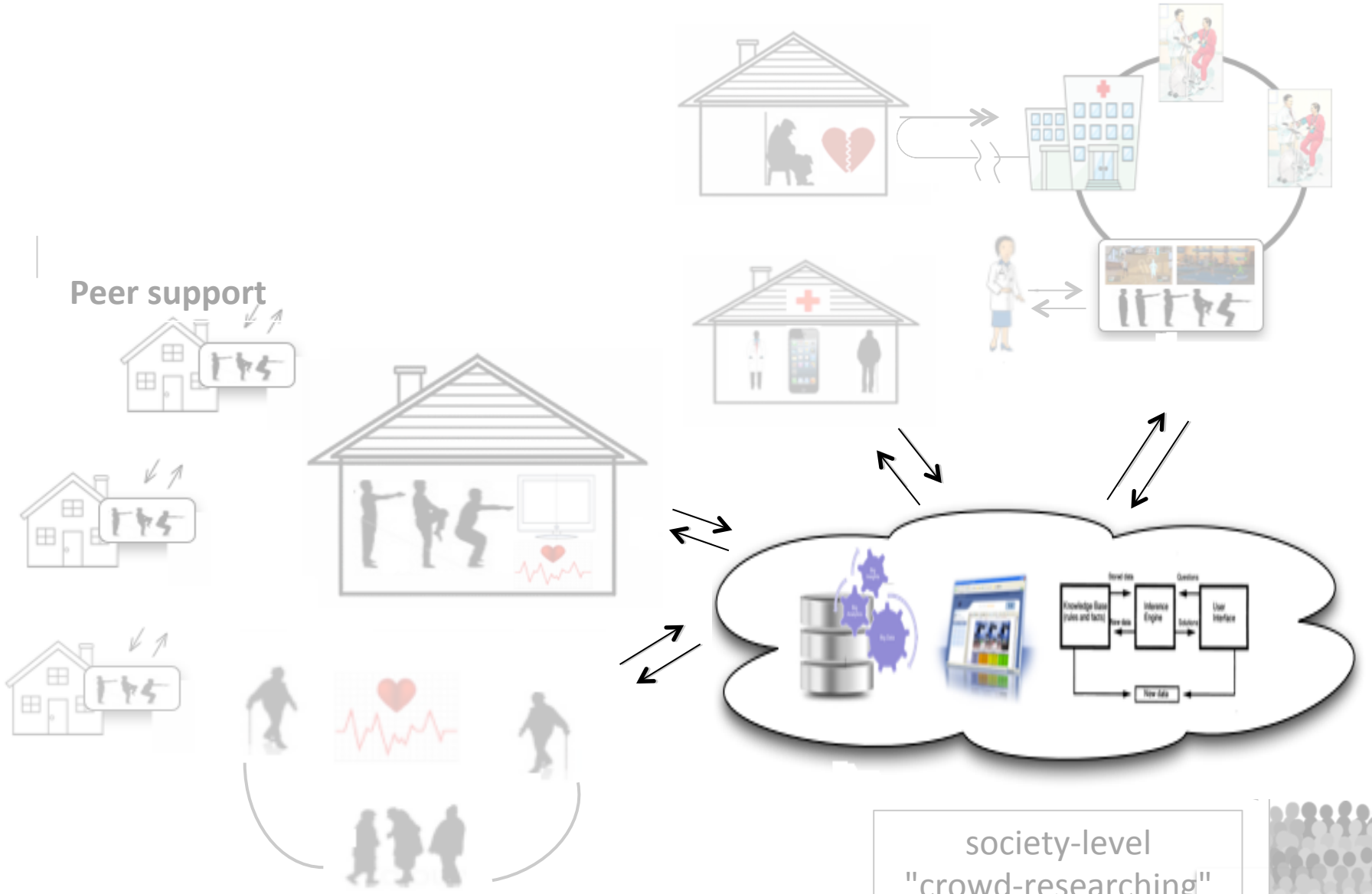
All-day assessment: monitor participants' physiological responses (HR) and physical activity (step count / rate).



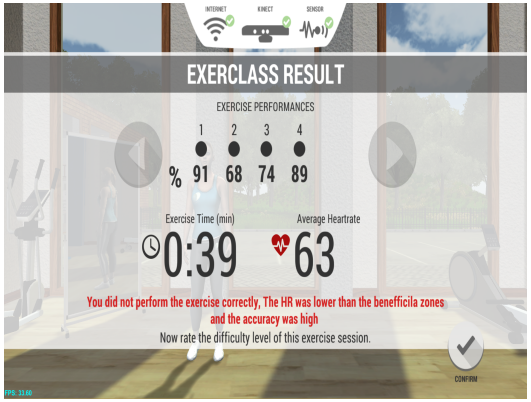
Social connectivity/interaction: will enable small groups of remote participants to exercise together in a virtual space



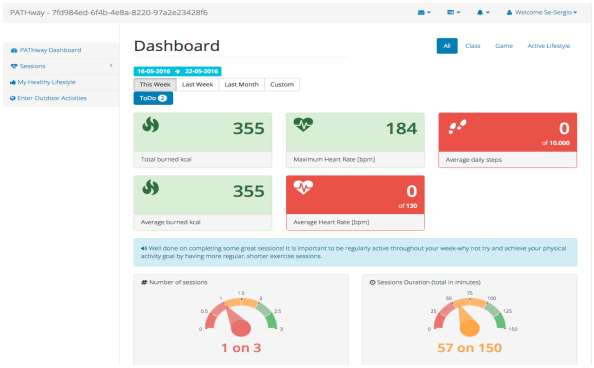
Data mining and modelling - turning data into knowledge



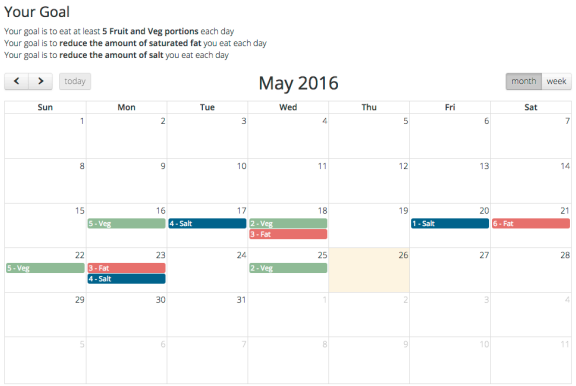
Patient Feedback



Individual Session



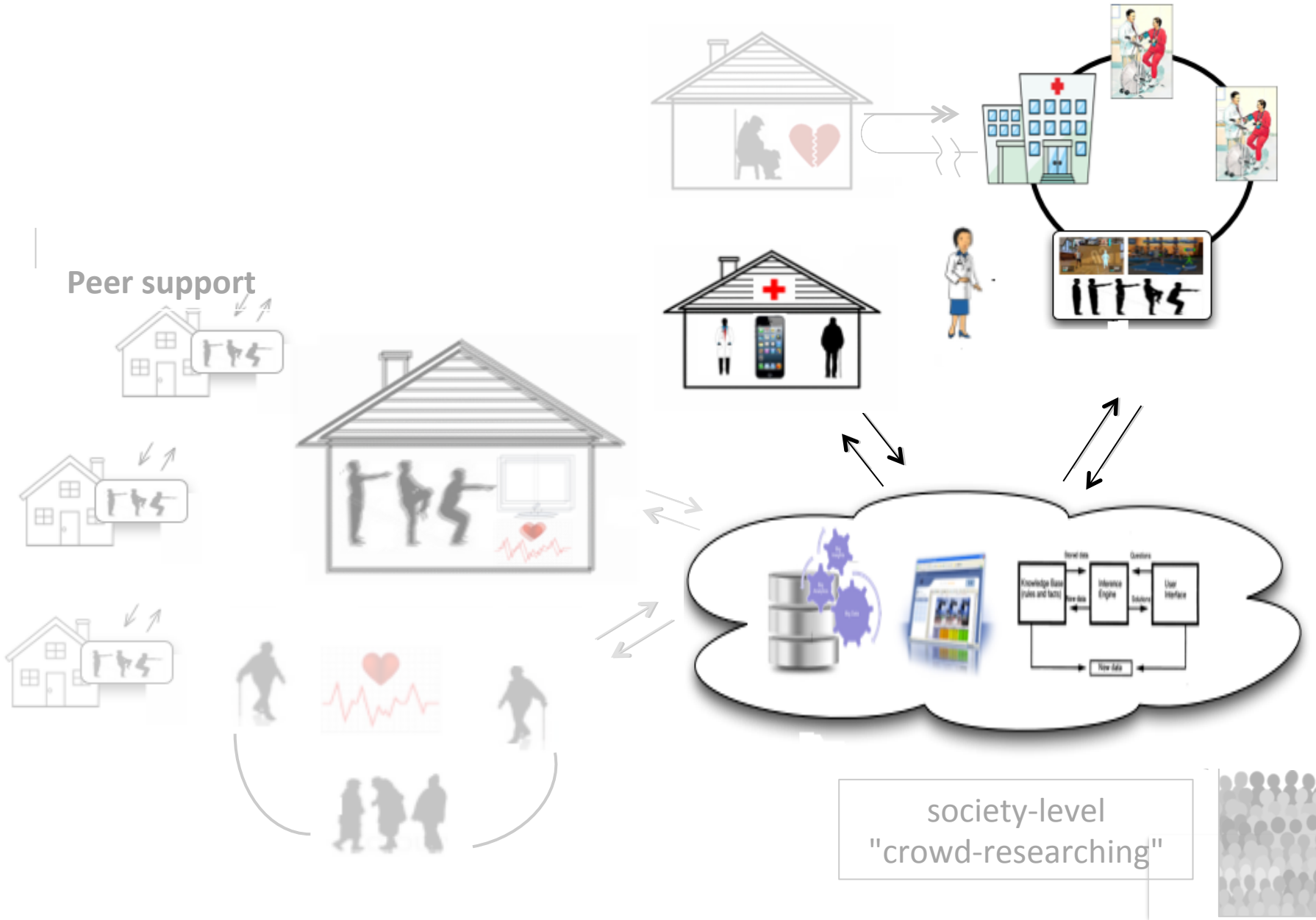
Summary:
Day, week, month, year



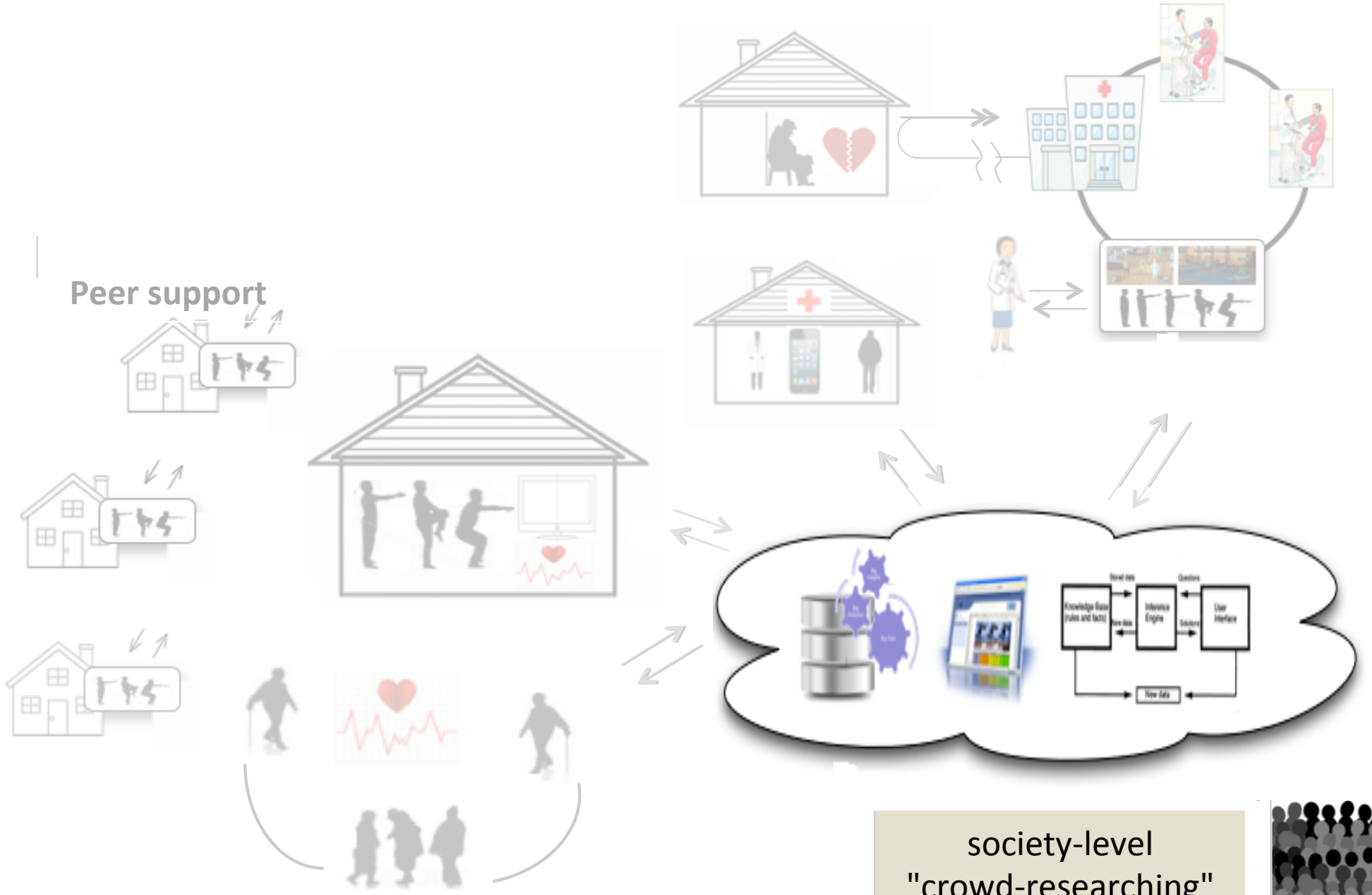
Tracking personal goals

Text notification

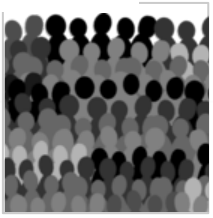
Information for the healthcare professionals



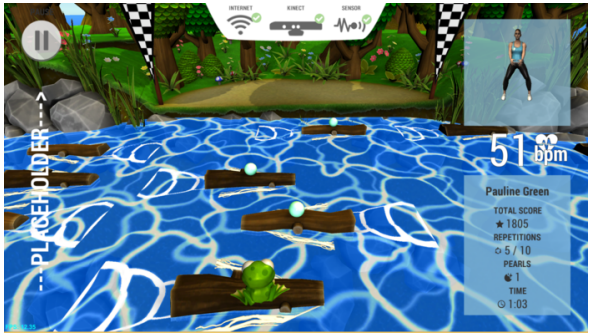
Society level crowd research



society-level
"crowd-researching"

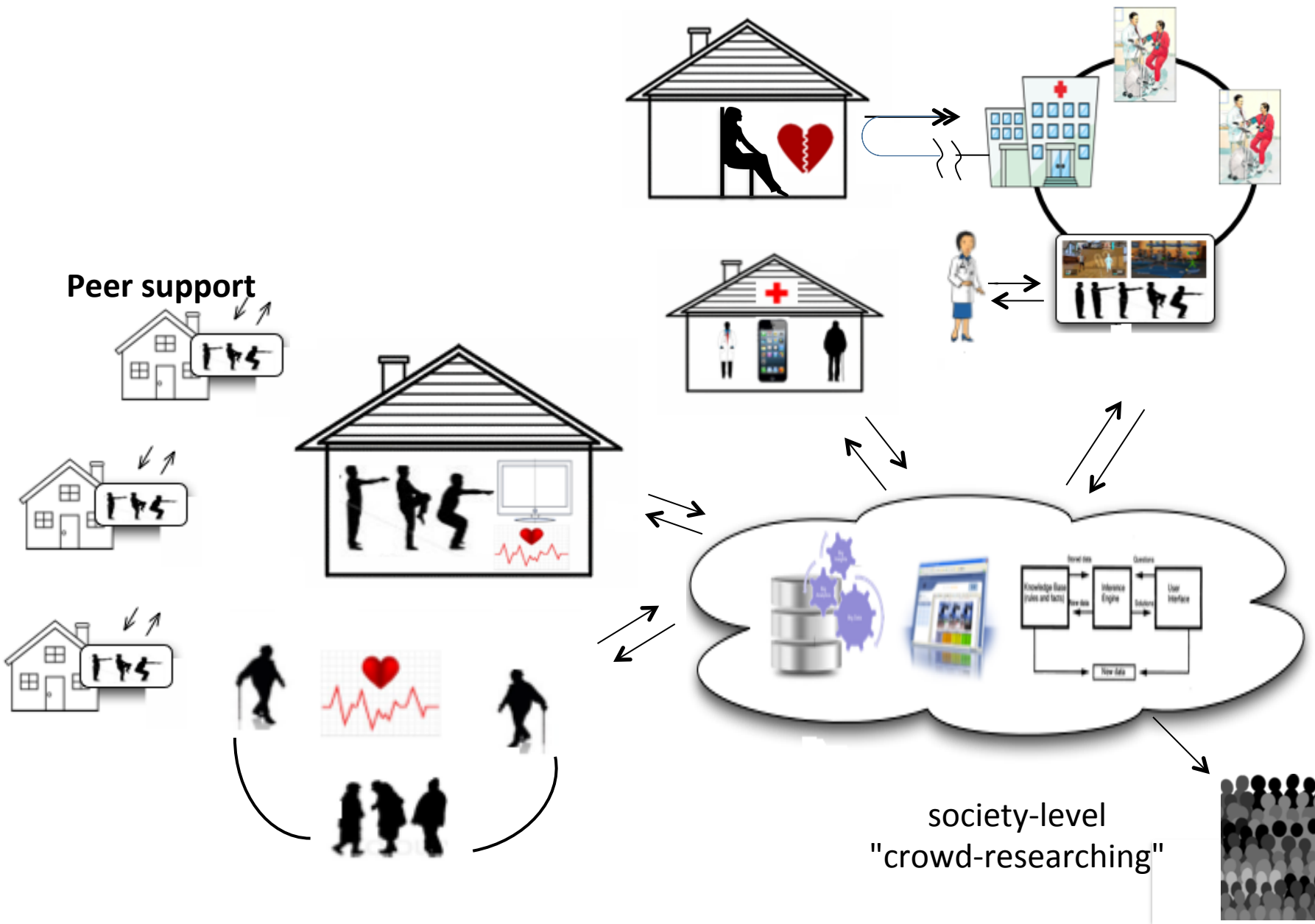


ExerClass



ExerGame

Technology enabled behavioural change as a PATHway towards better self-management of CVD



A Multidisciplinary Team

Thank you

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