



Mobile monitoring of vital parameters: the first m-Health projects in Russia

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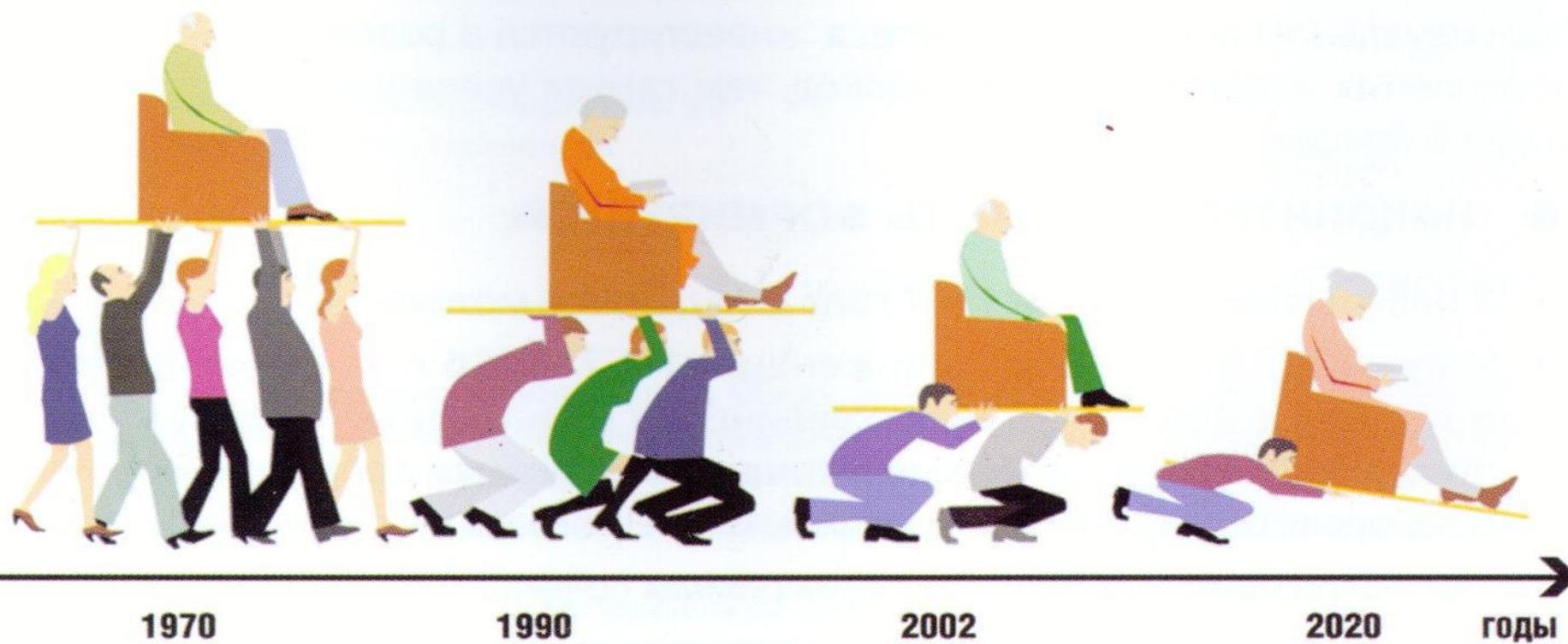
Eindhoven, 2012



**approximately
1.8 times the
size of the US**

largest country in the world in terms of area but unfavourably located in relation to major sea lanes of the world; despite its size, much of the country lacks proper soils and climates (either too cold or too dry) for agriculture

Number of Working-Age Workers per Older Adults in Russia



THE NEED

- There are **14 million** of people 70+ in Russia. 20% or **2,76 million** elderly people in Russia need constant care
- Many of them are in need of constant monitoring of physical condition, care and psychological support
- Now these people are taken care of by their younger relatives, but the relatives often have no time to be around and feel **guilty**
- So, caregivers are interested in a tool for constant remote health monitoring of their elderly relatives
- **250 000** caregivers can afford to buy a supporting gadget (\$200) and pay a monthly fee for the service (\$20)





Mobile Cardiac Monitoring

Bluetooth® ECG and Activity Monitor

Applications

- Cardiac Rehab
- Cardiovascular Screening
- Home Monitoring
- Disease Management
- Atrial Fibrillation Screening
- Mobile Telemedicine
- Activity Monitoring
- Falls Monitoring
- Fitness Monitoring
- Sports Training



ECG analysis on the smartphone

Analysis of ECG on a Smartphone



CardioView

Иванов Иван Иванович...
14:26, 28.08.08

Иванов Иван Иванович...
14:16, 28.08.08

Байбаков Иван

Кардиограмма

Статистика

- Длитель... 59 сек.
- Средн.... 77 уд./мин.
- Мин. RR 0.695 сек.
- Макс. RR 0.870 сек.
- СК.О. 48 мсек.
- RMSSD 37 мсек.

Назад



Кардиограмма

25 мм/сек. 20 мм/мВ

Кардиограмма

Ритмограмма

263

131

0

Функции

Выйти



AliveECG :: Acceleration

00:00:42 bpm

25mm/s, 10mm/mV

Кардиограмма

Вар. пульсограмма

100

50

0

300 900 1500

Функции

Выйти

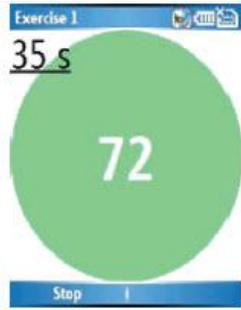
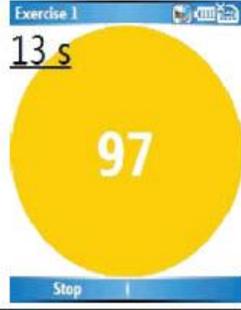
Research Article

Use of a Smartphone for Improved Self-Management of Pulmonary Rehabilitation

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² Faculty of Basic Medicine, Lomonosov Moscow State University, Moscow, Russia

Status	Screen shot	Other details
<ul style="list-style-type: none"> – Normal physiological conditions – Heart rate within acceptable range specified by clinical professional 		<ul style="list-style-type: none"> – Heart rate shown – Time remaining in seconds shown – Green background
<ul style="list-style-type: none"> – Normal physiological conditions, but near acceptable limits – Heart rate higher or lower than normal, but still within acceptable range 		<ul style="list-style-type: none"> – Heart rate shown – Time remaining in seconds shown – Amber background
<ul style="list-style-type: none"> – Dangerous physiological conditions – Heart rate excessively high or low – Exercise should cease now 		<ul style="list-style-type: none"> – LOUD AUDIBLE WARNING SIGNAL – Heart rate shown – Red background – STOP displayed – Display freezes and remains in this state until the Stop button is pressed

Общая схема решения



A SECOND SOLUTION

- Okkolo is a bracelet controlling user's health condition
- It will inform a caregiver automatically and immediately on user's health change: pulse rate, temperature, falls



True mobile monitoring

- We develop a server software and communication channels to provide caregivers with full information, so that they could be always confident that their relatives feel fine
- Hotline, web site, mobile apps and SMS deliver data to caregivers. The server software analyses the data for deeper insight into a user's condition.
- We will inform caregivers on their relative's condition both in case if he/she is ok and if something has happened. The caregiver will take his/her own decision on the best way to help the person in need
- Sensor readings will be transferred to the server automatically, no user interference like pressing a button is needed
- Phase I device will enable geo-positioning via cellular network, GPS/GLONASS – in Phase II



Conclusion:

- 1. Russia is badly covered with bandwidth (TCP/IP)
But nearly every Russian has a mobile phone
(but little numbers with data traffic)**
- 2. Russia is beginning its way on the m- health field**
- 3. We are interested in cooperative projects with
Western partners**
- 4. We are interested to learn a lot to avoid your mistakes
on our way (we have no time, no money enough)**
- 5. We can provide skills/talents in software development,
our clinical expertise for testing m-health is available**