COMMODITY12 TELEMEDICINE SYSTEM IS EFFECTIVE IN PRIMARY CARE SETTING IN PATIENTS WITH TYPE 2 DIABETES (DM2)

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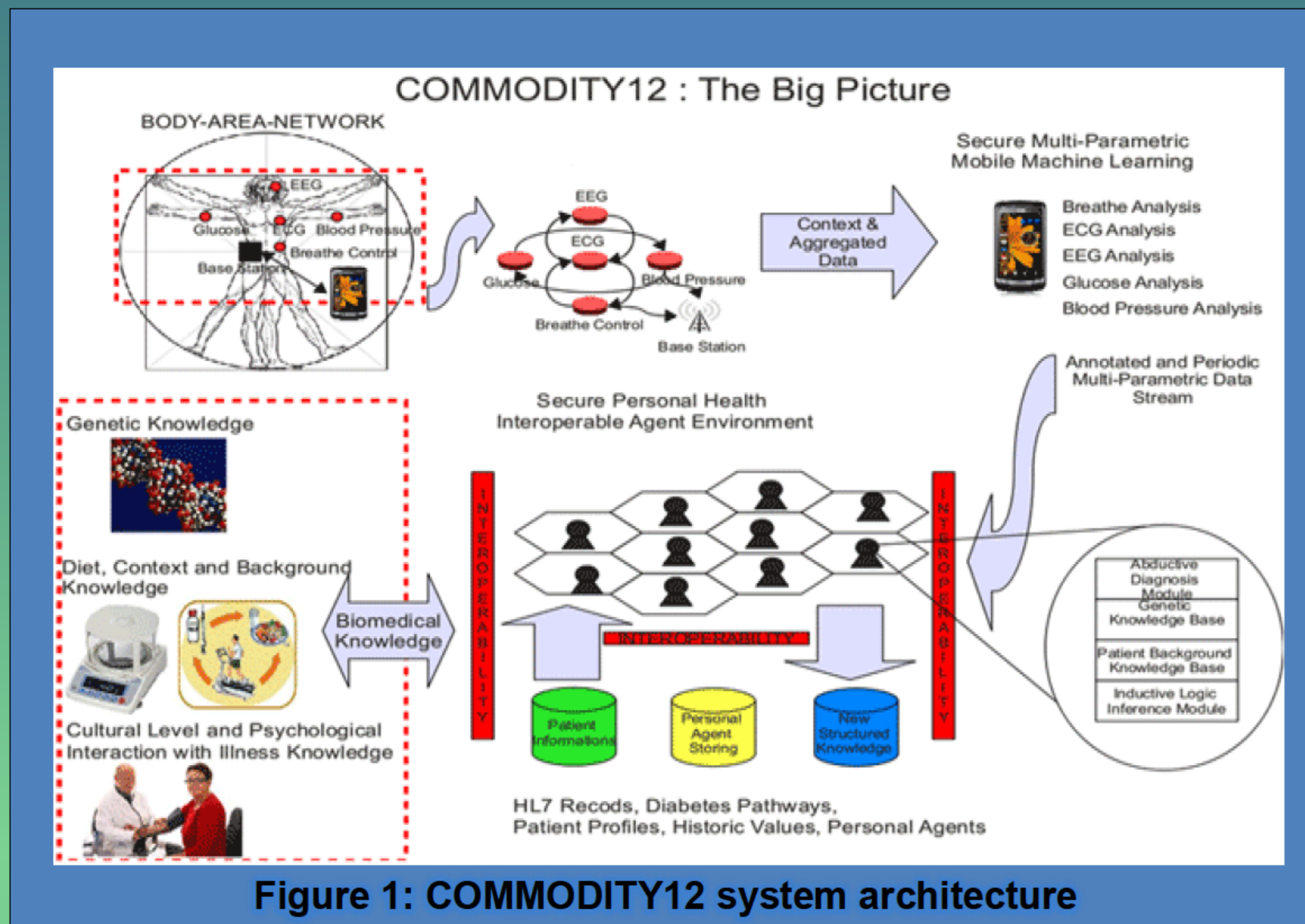[3] www.COMMODITY12.eu

Figure 1: COMMODITY12 system architecture

Background & Aim

The COMMODITY12 is a telemedicine system designed for continuous monitoring of diabetes type 1 and 2, as well as the cardiovascular comorbidities (Figure 1). The system has been created in collaboration of 9 European academic and industrial partners under FP7 [1] (Figure 2).

The aim of this study was to assess clinical utility of the COMMODITY12 system in DM2 patients, under a design of a mini feasibility trial.
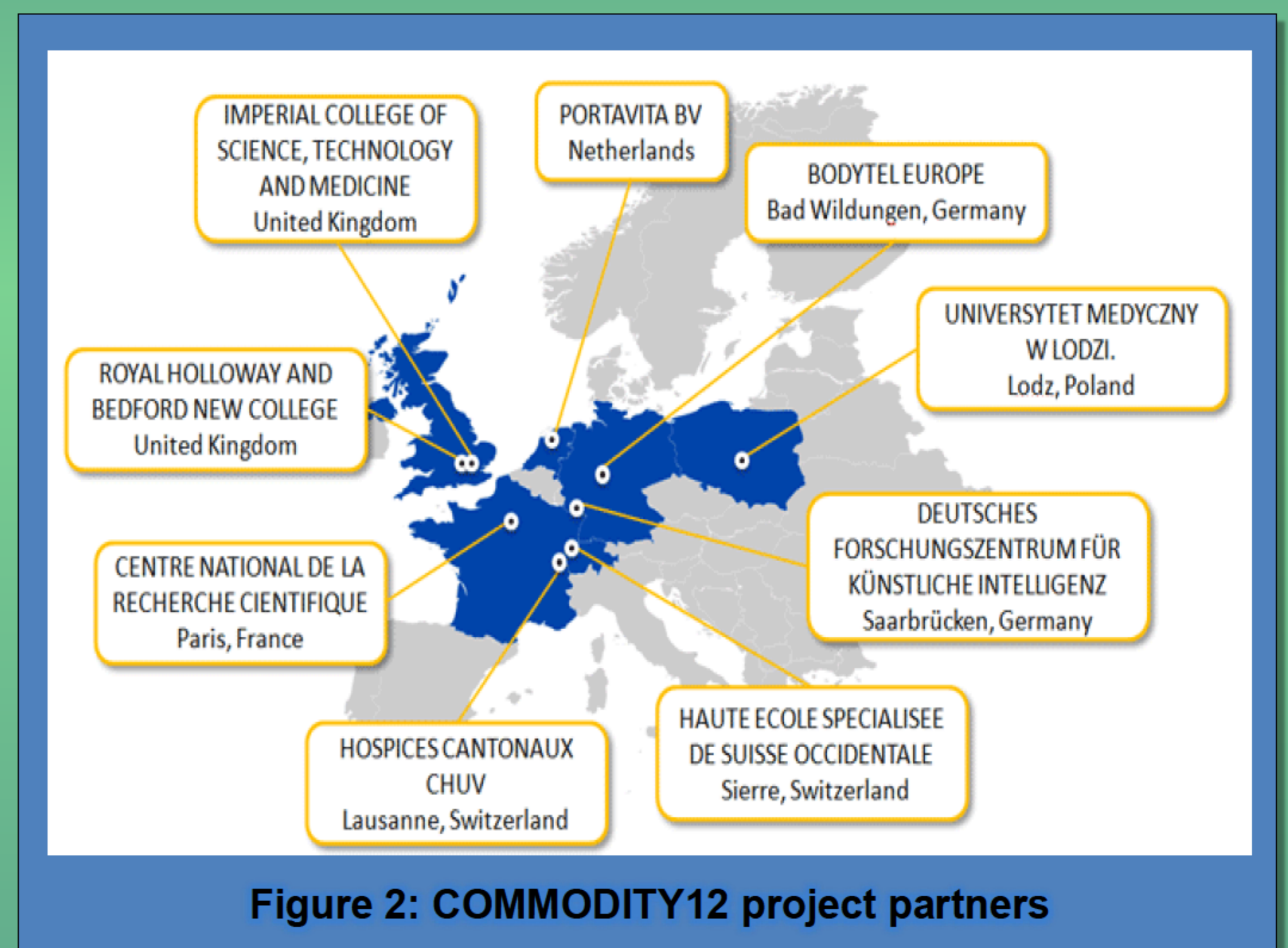
Methods

Outpatients from Lodz region (central Poland) with DM2 were randomly ascribed for a period of six weeks to either control arm, in which they received standard care, or intervention arm in which they used COMMODITY12 system for daily monitoring of their diabetes-related parameters (glucose level, blood pressure, weight, ECG, heart rate, mobility, a range of lab tests, and adherence to medication). Primary outcome measures was system operability and whole trial feasibility, defined as harmonic technical functioning of all layers of the system, and appropriateness of the PHS (personal health system) for patient use, respectively. Patients' experience with COMODITY12 system use was assessed with 7-item questionnaire, assessing different aspects of system use with 5-level Likert scales.

Figure 2: COMMODITY12 project partners

Results

As many as 60 patients completed the study per protocol (of which, 30 in both control, and intervention arm).

In general, all the layers (Figure 3) of the COMMODITY12 system functioned well, with only some problems with transmission of the data from ECG sensor to the hub. Patients accepted telemedicine system well, and found it to be helpful in self-management of diabetes (Table 1). System users asked for its strengths provided most often their comments in terms of: 'the system being fast' (5 patients), 'system enabled them systematic self-monitoring' (5 patients), 'system was easy to use' (5 patients).

Less than half of users (14 in total) provided their comments on weaknesses of the system, pointing to 'frequent need to recharge' (2 patients), and problems with glucometer strips (2 patients). System was effective in collecting and analysing data related to both diabetes, and comorbidities (such as hypertension, arrhythmias, or sleep apnoea). Artificial intelligence of the system effectively processed data, and produced clinically valid alerts.

Dimension*	x	SD
General assessment	4.43	0.82
Clearness of instructions (both written, and oral)	4.80	0.41
Ease of use	4.63	0.61
Time spent on system use daily	4.37	0.67
Reliability of results	4.33	0.66

Table 1: Patients' assessment of the COMMODITY12 system use.

x – mean, SD – standard deviation.
* - dimensions have been assessed with 5-level Likert scales, 5 represents max value, 1 – min value

Figure 3: Representation of different layers of the COMODITY12 system

Conclusion

These results point at the usefulness of COMMODITY12 system in diabetes care. Further studies on larger groups are warranted to determine the effect of the system on clinical outcomes, as well as its cost-effectiveness.

References:
1. www.COMMODITY12.eu

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