


ePartner for Self-Management

Personal Computer Assistants for a Healthy Lifestyle



Olivier Blanson Henkemans

TNO

Applies scientific knowledge to strengthening the innovative power of industry and government

4500 employees

Governmental funding and contract assignments

Quality of Life - Prevention and Care

- Youth and health
- Activity and health
- Care innovation



2 Patient Empowerment Leiden

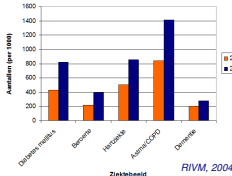
Healthy Lifestyle and Chronic Care

Demographic change

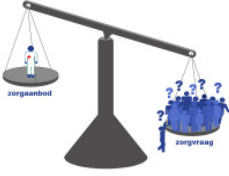
Increase in unhealthy and chronically ill people

Decrease in care givers

Imbalance in care demand and supply



Ziektebeeld RIVM, 2004

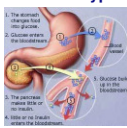


3 Patient Empowerment TNO Kwaliteit van Leven


Self-Management

John (58)

Diabetes Type II



Self-Management Activities



4 Patient Empowerment TNO Kwaliteit van Leven

Self-Management

Taking Health and Care in Own Hand


Insight in own health condition

Informed decisions about self-management

Developing self-management habits

Involving the environment in self-management

Good quality of life!



5 Patient Empowerment TNO Kwaliteit van Leven

eHealth

Information and Communication Technology in the Care Domain



Contributes to care quality and self-management stimulation

6 Patient Empowerment TNO Kwaliteit van Leven

eHealth Users



Varying user requirements in various setting



7

Patient Empowerment

TNO Kwaliteit van Leven

ePartner: Personal Computer Assistant for Self-Management

How can eHealth services contribute to self-management?

Personal Computer Assistants that help adhere to self-management goals

User friendly coaching

- Coaching Model
- eCoaching

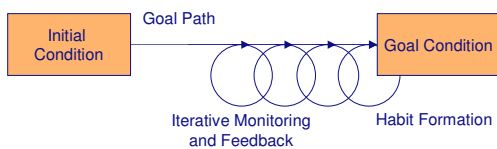


8

Patient Empowerment

TNO Kwaliteit van Leven

Coaching Coach Model



9

Patient Empowerment

TNO Kwaliteit van Leven

Coaching Coaching Stadia

1. Pre-diagnosis
 - Diagnosis en medical history
 - Health literacy and preferences
2. Anamnesis, diagnosis en treatment
3. Assessing patient perspective on diagnosis
 - Understanding diagnosis
 - Valuing diagnosis

Education

10

Patient Empowerment

TNO Kwaliteit van Leven

Coaching Coaching Stadia (2)

4. Setting goal and goal path
 - Strategy: Preferences and intention
 - Tactics: Problem definition and contingency plan
 - Operationalization: SMART behavior
5. Goal realization
6. Goal maintenance and habit formation

Education

Iterative monitoring and feedback

- Empathy
- Self-efficacy
- Independently overcoming setbacks

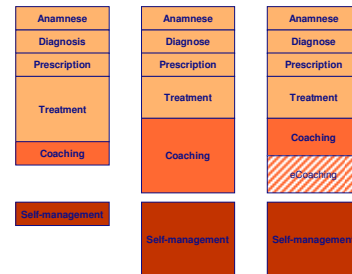
11

Patient Empowerment

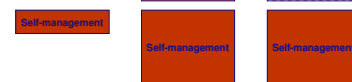
TNO Kwaliteit van Leven

Coaching ICT Support

Care Giver



Patient



12

Patient Empowerment

TNO Kwaliteit van Leven

ePartner: eCoach

eCoach prototype, based on Coach Model

- Self-monitoring
- Medication-intake
- Lifestyle (nutritional and physical activities)

www.DieetInzicht.nl: Lifestyle diary on internet

Overweight keep diary: diet and physical activities (4 weeks)

Setting personal goals

- Nutrition
- Exercise
- Diary use

Assistant monitors diary and provides coaching feedback

13

Patient Empowerment

TNO Kwaliteit van Leven



The screenshot displays the 'Voedingsdagboek' (Food Diary) interface. At the top, there's a 'Doelen overzicht' (Goal overview) section with buttons for 'Dagboek', 'Doel', and 'Doelstatus'. Below this is a summary for 'maandag 25 Augustus 2009'. The main part of the screen is a detailed food log table with columns for 'voeding' (nutrition) and 'producten' (products). The log includes items like 'witte brood-terre' and 'middel van' with their respective weights and categories.

14

Patient Empowerment

TNO Kwaliteit van Leven



ePartner Feedback

*You have achieved your goal for today. Congratulations!
Try to maintain it the coming days.*



15

Patient Empowerment

TNO Kwaliteit van Leven



ePartner Feedback

*You have achieved your goal for today. Congratulations!
Try to maintain it the coming days.*



*You did not achieve your goal for today. This is
unfortunate, but do not let it discourage you. It goes step
by step. Try again the coming days. For information
about your goal, click [here](#).*



16

Patient Empowerment

TNO Kwaliteit van Leven



ePartner Results

Diary more user friendly
Better use of the diary
Healthier lifestyle
Stronger decrease in weight

Use of lifestyle diary increases health literacy

Variance in performance due to personal characteristics

17

Patient Empowerment

TNO Kwaliteit van Leven



ePartner Discussion

ePartner contributes to eHealth use for successful self-management

Further testing ePartner: Does it contribute to long term development of self-management habits?

Integrating in care system: ePartner is used by patient, but is it supported by care giver (care standard), insurance companies and government?

18

Patient Empowerment

TNO Kwaliteit van Leven



ePartner for BeweegKuur (NISB)

Aims at improving people's health with (increased chance of) diabetes mellitus type II

On referral of general practitioner, motivated patients receive support with their self-management

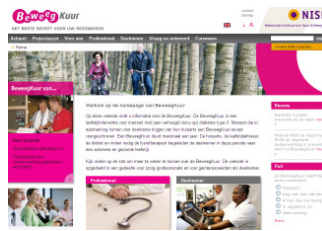
Lifestyle coach (1 year)

- Sport
- Activity
- Diet

Also

- Sport instructor
- Physiotherapist
- Dietician

Health insurance



19

Patient Empowerment

TNO Kwaliteit van Leven

ePartner for BeweegKuur

Issues

- The target group will be extended to overweight and obesity (increase of clients)
- After the course, people fall back in (unhealthy) habits

Assignment TNO: Develop eCoach, which address these issues

- Coach activities are reallocated to eCoach
- eCoach accessible after end of course

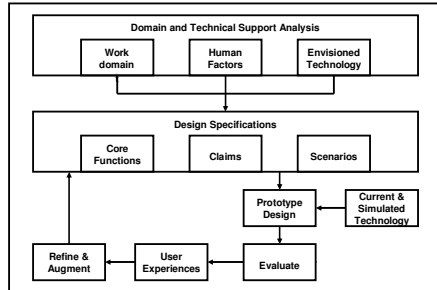
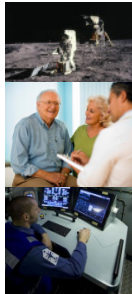
20

Patient Empowerment

TNO Kwaliteit van Leven

ePartner for BeweegKuur

Approach: Cognitive Engineering



Complex task environments with dynamic user requirements

21

Patient Empowerment

TNO Kwaliteit van Leven

ePartner for BeweegKuur

Phase I: Domain Analysis

Activities

- Literature review
- Studying existing initiatives
- Interviews and focus groups
- Observation (organizational structure)

Result

- Success factors in coaching of self-management, trade-offs
- User requirements (coaches, clients, specialists)
- Task analysis



22

Patient Empowerment

TNO Kwaliteit van Leven

ePartner for BeweegKuur

Phase I: Design Specifications – Core Functions

Assessing core functions:

- Medical encyclopedia
- Personalization of information
- Maintaining calendar and diary: Personal Health Record (PHR)
- Monitoring and feedback
- Connecting PHR with Electronic Patient Record (EPR)
- Community participation

23

Patient Empowerment

TNO Kwaliteit van Leven

ePartner for BeweegKuur

Phase I: Design Specifications - Claims

Core Functions	Features	Claims
Personalization of information	Creating account, logging in, adjusting medical information to user profile and goals	+ Information is geared to the patient's needs and will increase health literacy – Information is specialized and difficult to recycle for others
Maintaining calendar and diary	Keep personal self-care details chronically and in relation to daily life with the use of diary	+ Items in the diary can be used to determine behavioral patterns – Patient has to constantly maintain the diary for accurate and consistent overview, which may decrease the satisfaction
Community participation	Communicating with medical specialists and with peers, e.g., through forum	+ Patients can share experience with peers which can help increase self-care motivation – Erroneous information can easily be spread out, which decreases effectiveness

24

Patient Empowerment

TNO Kwaliteit van Leven

ePartner for BeweegKuur

Phase I: Design Specifications - Scenarios

Drawing out problem and user scenarios

- High level goal: Who is the story about and why did it take place?
- Low level goals: How do actors reach their goal by using specific technology in a specific context?

Breakfast

This morning you got up. You felt well and had breakfast with your family.

You had

- Toast with eggs,
- A glass of orange juice and
- A cup of coffee.

Afterwards, you took your medication.

Then, you go turn on your computer to fill in your diary.

Scenario for lab studies

25

Patient Empowerment

TNO Kwaliteit van Leven

ePartner for BeweegKuur

Phase II: Prototyping and Evaluation

Developing eCoach prototype covering core functions

Evaluating

- Piloting in Smart Home Lab (with scenarios)
- Longitudinal evaluation

Measurements

- User experience (clients, coaches, specialists)
- Increased number of clients and care quality
- Following course, clients continue maintaining healthy lifestyle
- Improved wellbeing and health condition



26

Patient Empowerment

TNO Kwaliteit van Leven

ePartner for BeweegKuur

Assignment for Master Student

Executing Phase II

Start: Directly, end of summer the latest

Master thesis (9 months):

- Domain analysis (3 months)
 - Research assignment
 - Focus groups
- Developing and evaluating eCoach prototype (6 months)

Collaborating with TNO and NISB

27

Patient Empowerment

TNO Kwaliteit van Leven

Questions?



Olivier.BlansonHenkemans@TNO.nl

28

Patient Empowerment

TNO Kwaliteit van Leven

The screenshot shows a web interface for a food diary. At the top, it says 'Voedingsdagboek' and 'Invoeren Voedingsdagboek - maandag 25 Augustus 2008'. Below this, there are sections for 'voeding' (food) and 'producten' (products). The 'voeding' section lists items like '1 snee brood tarwe (75 gr.)', '1 bolus (2x) Boter halfvet (8 gr.)', '1 broodje (120 gr.)', and '1 grote beker Thee zonder melk, 2 suiker (25 gr.)'. The 'producten' section lists items like '1 kopje gekookt', '1 Drumsticks beerd rz', '1 Drumsticks beerd rz', '1 Drumsticks rauw', '1 Ei gekookt rz', and '1 Ei gekookt rz'. There are also dropdown menus for 'Producten bewerken', 'Kies categorie', 'Ziek product', 'sensitivering', and 'hoeveelheid'. A sidebar on the left contains navigation links like 'Home', 'Invoeren', 'Rapport', 'Tabel', 'voedingsoverzicht', 'Dien', 'Handhaving', 'overzicht', 'Beveiliging', 'Invoeren', 'Invoeren', and 'Invoeren'.

29

Patient Empowerment

TNO Kwaliteit van Leven