



PROJECT ValueCare

Value-based methodology for
integrated care supported by ICT



medri



Ministarstvo
znanosti i
obrazovanja



AGENCIJA ZA
MOBILNOST I
PROGRAME EU

Zdravstvena skrb temeljena na vrijednostima

izv. prof. dr. sc. Vanja Vasiljev
Denis Juraga, sanit. ing.

Sveučilište u Rijeci, Medicinski fakultet, Katedra za socijalnu medicinu i epidemiologiju

Obzor Europa – Nacionalni informativni dan

KLASTER 1 - ZDRAVLJE

23. studenog 2021.

Kako je sve počelo?

- 2014.-2017. UHCE projekt (Urban Health Centre Europe 2.0: Integrated health and social care pathways, early detection of frailty, management of polypharmacy and prevention of falls for active and healthy ageing in European cities) - *European Union's Health Programme (2014-2020)*, No. 20131201
- 2017.- 2020. SEFAC (Social Engagement Framework for Addressing the Chronic-disease-challenge) *European Union's Health Programme (2014-2020)*, No. 738202
- **2019.-2024. ValueCare** (*Value-based methodology supported by ICT*) Horizon2020 No. 875215



Project ValueCare

Value-based methodology supported by ICT solution H2020

- Cilj projekta je isporučiti integriranu na (zdravstvenim i socijalnim) ishodima temeljenu skrb za osobe starije dobi s kroničnim bolestima i stanjima, te učiniti zdravstveni i socijalni sustav održivim u Europi.
- Četiri ciljne skupine
- 7 pilot gradova

THE VALUECARE PILOT SITES



Ciljne skupine ValueCare projekta

- Osobe starije dobi s nekom kroničnom bolesti (ovisno o pilot gradu)
120 intervencijska skupina i 120 kontrolna
- Neformalni negovatelji (50-70)
- Zdrasvtveni i socijalni profesionalci (30-40)
- Organizacijski i IT stručnjaci (5-10)



Pilot site	Chronic disease/condition
Athens, Greece	Older people with diabetes and co-morbidities (65+)
Coimbra, Portugal	Older people with none to mild cognitive impairment with co-morbidities and lack of social support
Cork/Kerry, Ireland	Older people (75+) with mild to moderate frailty
Rijeka, Croatia	Older people with myocardial infarction after rehabilitation (65+)
Rotterdam, The Netherlands	Older people that suffered stroke (acute brain infarction)
Treviso, Italy	Older people with mild cognitive impairment
Valencia, Spain	Older people with mild to moderate frailty and their families



Metodologija

- I Faza

Kodizajn (1. krug) – fokus grupe i intervjuji s ciljnim skupinama projekta o nezadovoljenim zdravstvenim potrebama

Kodizajn (2. krug) – fokus grupe i intervjuji s ciljnim skupinama o ValueCare konceptu i ValueCare tehnološkom rješenju

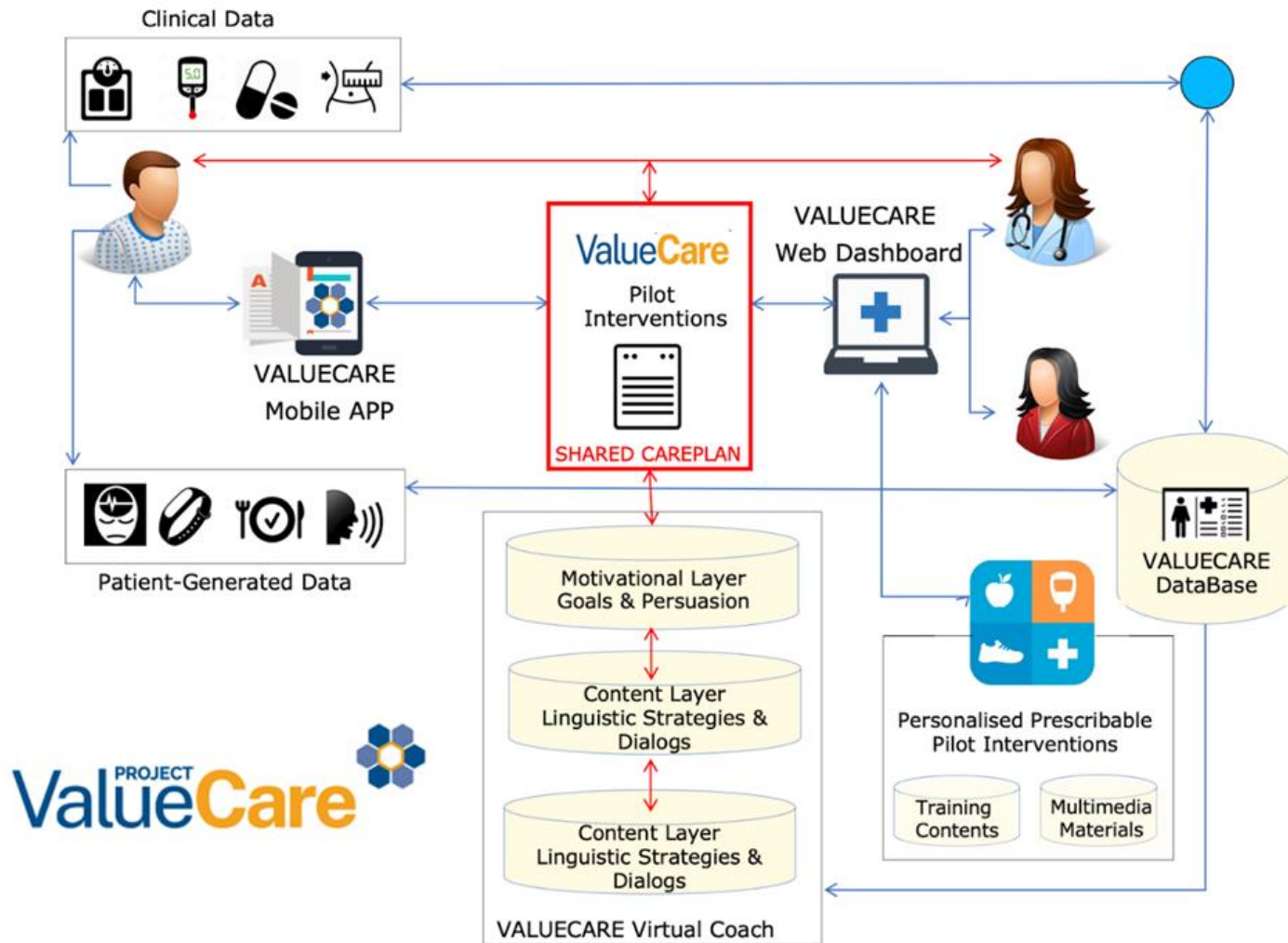


Metodologija ValueCare projekta

Kodizajn aktivnosti i stvaranje vrijednosti u suradnji s ciljnim skupinama



II. Faza ValueCare tehnološko rješenje



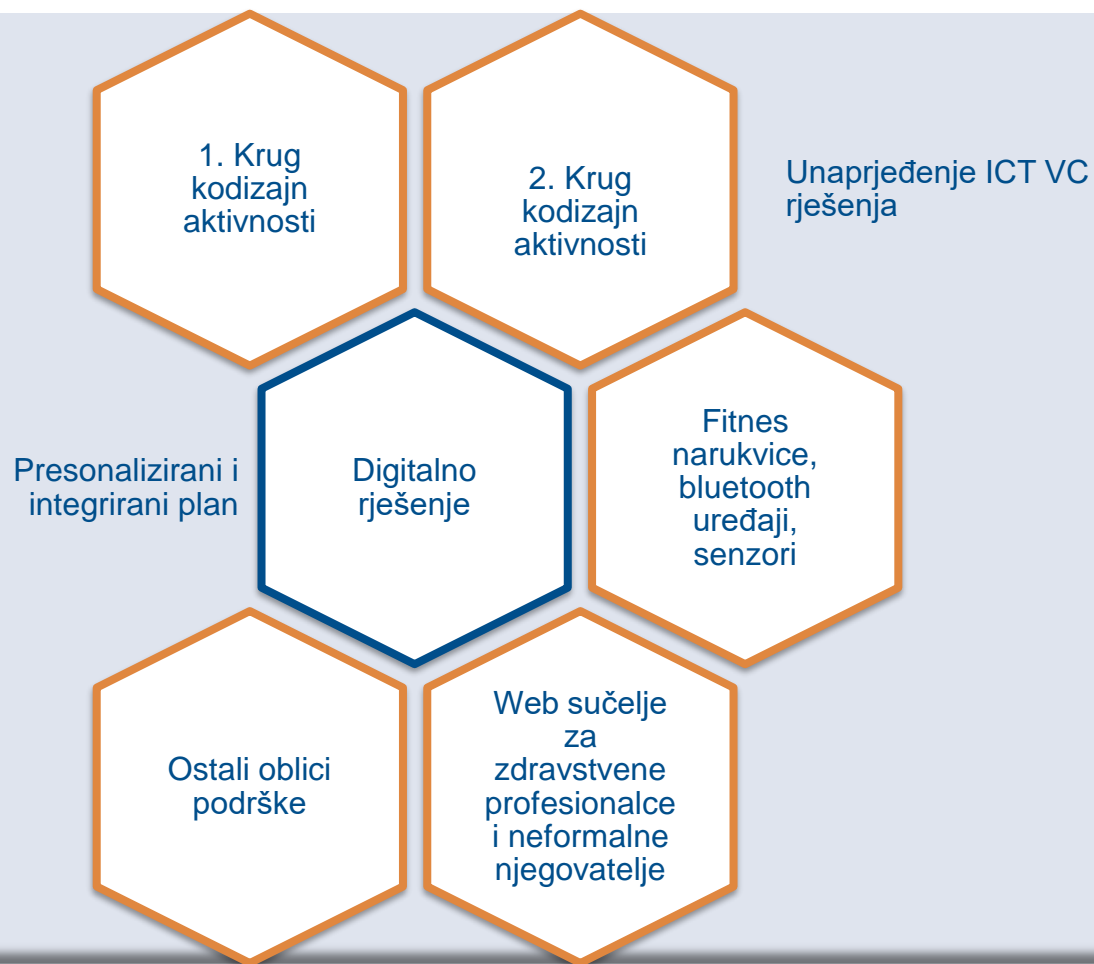
PROJECT
ValueCare



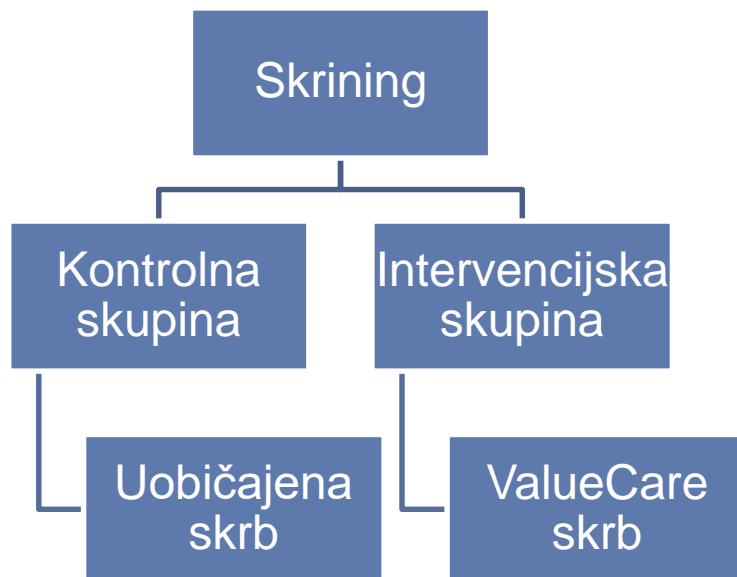
III. Faza Implementacija ValueCare koncepta i ValueCare digitalnog rješenja



12 mjeseci



III. Faza



T0
M?



T1
M12



T2
M18



ZDRAVSTVENI ISHODI (T0,T1,T2)

Value-based methodology supported by ICT solution H2020

partner code



ValueCare

Baseline questionnaire older people/patients
Value-based methodology for integrated care supported by ICT (ValueCare)



ValueCare-baseline

Part D

Quality of life

Please select one box per line.

In general...

	Excel- lent	Very good	Good	Fair	Poor
D1 ... would you say your health is:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D2 ... would you say your quality of life is:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D3 ... how would you rate your physical health?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D4 ... how would you rate your mental health, including your mood and your ability to think?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D5 ... how would you rate your satisfaction with your social activities and relationships?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D6 ... please rate how well you carry out your usual social activities and roles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D7 To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?

Completely	Mostly	Moderately	A little	Not at all
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D8 In the past 7 days, how often have you been bothered by emotional problems such as feeling anxious, depressed or irritable?

Never	Rarely	Sometimes	Often	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D9 What would you rate your fatigue on average?

None	Mild	Moderate	Severe	Very severe
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D10 What would you rate your pain on average?

No pain						Worst imaginable pain
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D11 Please tick *one* box that best describes your health today.

<input type="checkbox"/> I have no problems in walking about
<input type="checkbox"/> I have slight problems in walking about
<input type="checkbox"/> I have moderate problems in walking about
<input type="checkbox"/> I have severe problems in walking about
<input type="checkbox"/> I am unable to walk about

ValueCare-baseline



HYPERTENSION IN LOW- AND MIDDLE-INCOME COUNTRIES

COMPLETED & HARMONIZED

The ICHOM Standard Set for Hypertension in Low- and Middle-Income Countries is the result of hard work by a group of leading physicians, measurement experts and patients. It is our recommendation of the outcomes that matter most to patients with Hypertension in Low- and Middle-Income Countries. We urge all providers around the world to start measuring these outcomes to better understand how to improve the lives of their patients.

1. Recorded via the Beliefs about Medicine Questionnaire (BMQ [BMQ-Specific section]).
2. Includes physical activity (recommended to track via the International Physical Activity Questionnaire [IPAQ-Short Form]), medication adherence (recommended to track via the Hill-Bone Compliance to High Blood Pressure Therapy Scale – South Africa Version [Medication taking sub-scale]) and salt intake (recommended to track via the WHO STEPS Instrument).
3. Includes survival (overall and cardiovascular), blood pressure control, hypertensive urgencies and hypertensive emergencies, and erectile function (recommended to track via PROMIS single question).
4. Includes hospitalization, peripheral artery disease, hypertensive crisis, heart failure, ischaemic heart disease, cerebrovascular disease, atrial fibrillation, and renal disease
5. Recommended to track via the EQ-5D.



RESOURCE DOCUMENTS

Hypertension Reference Guide	DOWNLOAD
Hypertension Data Dictionary	DOWNLOAD
Hypertension Protocol	DOWNLOAD
Hypertension in Low- and Middle-Income Countries – Improving Hypertension Outcome Measurement in Low- and Middle-Income Countries	DOWNLOAD
Hypertension Flyer	DOWNLOAD



HYPERTENSION IN LOW- AND MIDDLE-INCOME COUNTRIES COMMUNITY GROUP

The ICHOM Standard Set for Hypertension in Low- and Middle-Income Countries is the result of hard work by a group of leading physicians, measurement experts and patients.

<https://www.ichom.org/why-measure-outcomes/>

ValueCare T0 upitnik

Part A. Zdravlje, padovi, korištenje lijekova	Part B. Životni stil	Part C. Fizičko funkcioniranje	Part D. Kvaliteta života	Part E. Korištenje zdravstvene zaštite	Part F. Sociodemografski podaci
<ul style="list-style-type: none"> ❖ Tilburg Frailty Indicator (TFI) ❖ Visual Analogue Scale for Fear of Falling (VAS-FOF) ❖ Falls Efficacy Scale-International (FES-I) ❖ Medication Risk Questionnaire (MRQ-10)* 	<ul style="list-style-type: none"> ❖ Short Nutritional Assessment Questionnaire (SNAQ) ❖ ICHOM elderly set – Alcohol* ❖ ICHOM elderly set – Smoking* ❖ International Physical Activity Questionnaire (IPAQ)* ❖ UHCE questionnaire (PhyAct)* 	<ul style="list-style-type: none"> ❖ ICHOM elderly set – BMI ❖ ICHOM elderly set – Health conditions ❖ Barthel scale 	<ul style="list-style-type: none"> ❖ Patient-Reported Outcomes Measurement Information System (PROMIS-10) ❖ European Quality of Life Five Dimension questionnaire (EQ-5D-5L) ❖ UCLA Loneliness scale* 	<ul style="list-style-type: none"> ❖ SMRC Health Care Utilization questionnaire 	<ul style="list-style-type: none"> ❖ based on the UHCE questionnaire & the ICHOM elderly set: <ul style="list-style-type: none"> ✓ age ✓ sex ✓ country of birth ✓ education ✓ income (type and amount) ✓ marital status ✓ living arrangement



Kodizajjn aktivnosti



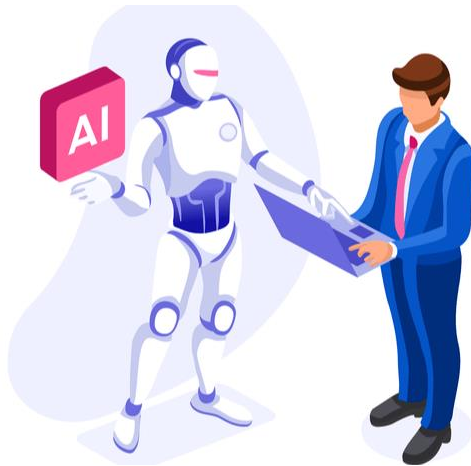
ValueCare digitalno rješenje



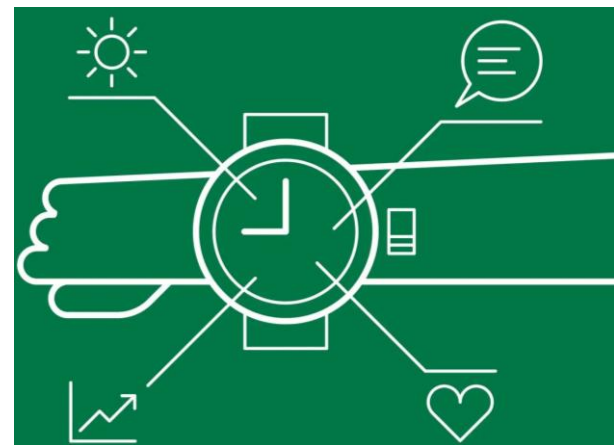
Izvor: Image by [Yvette W](#) from [Pixabay](#)



Izvor: <https://www.altf3.com/index.php/mobile-application-development/>



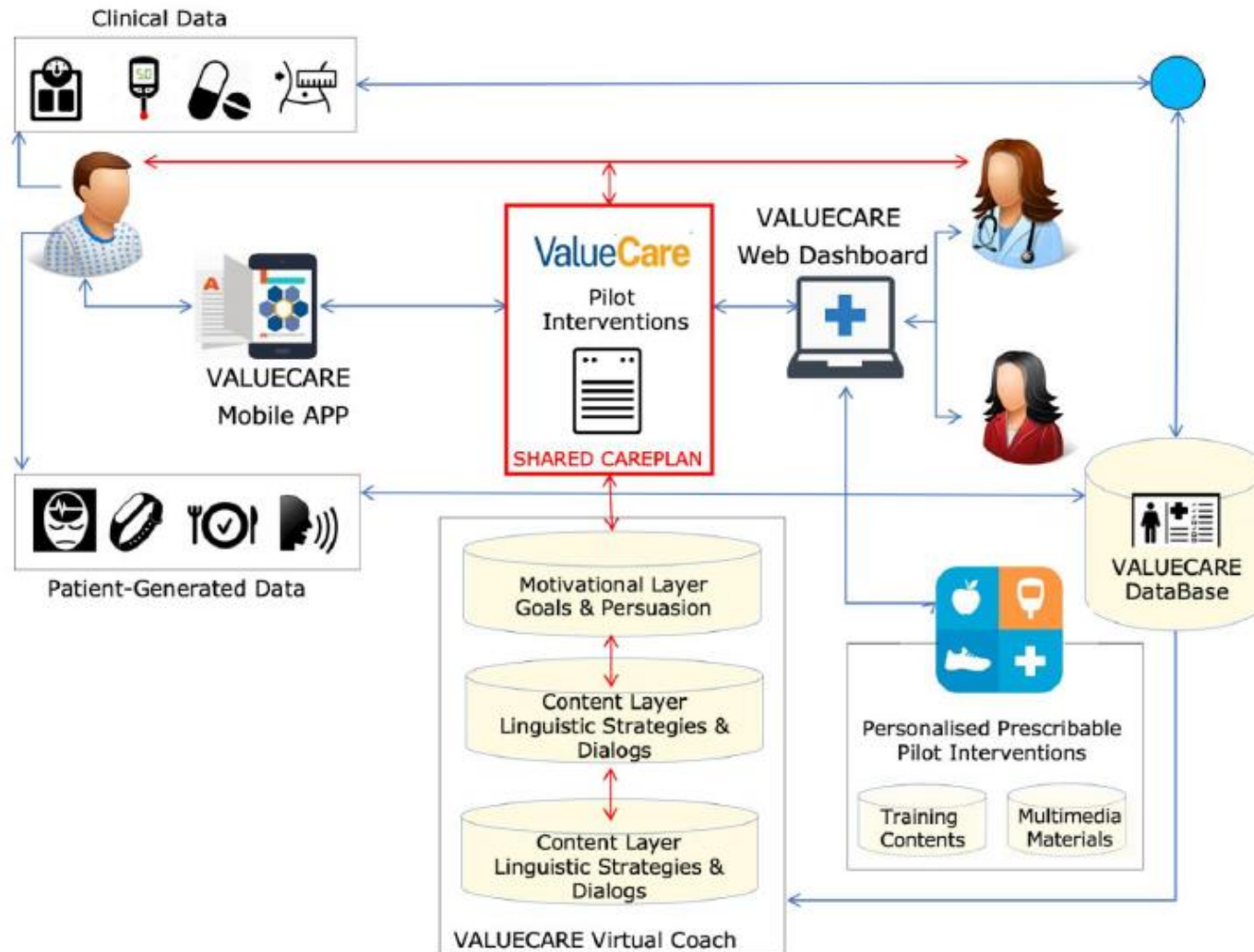
Izvor: <https://elearningindustry.com/cultivating-learning-culture-with-ai-powered-virtual-coach>



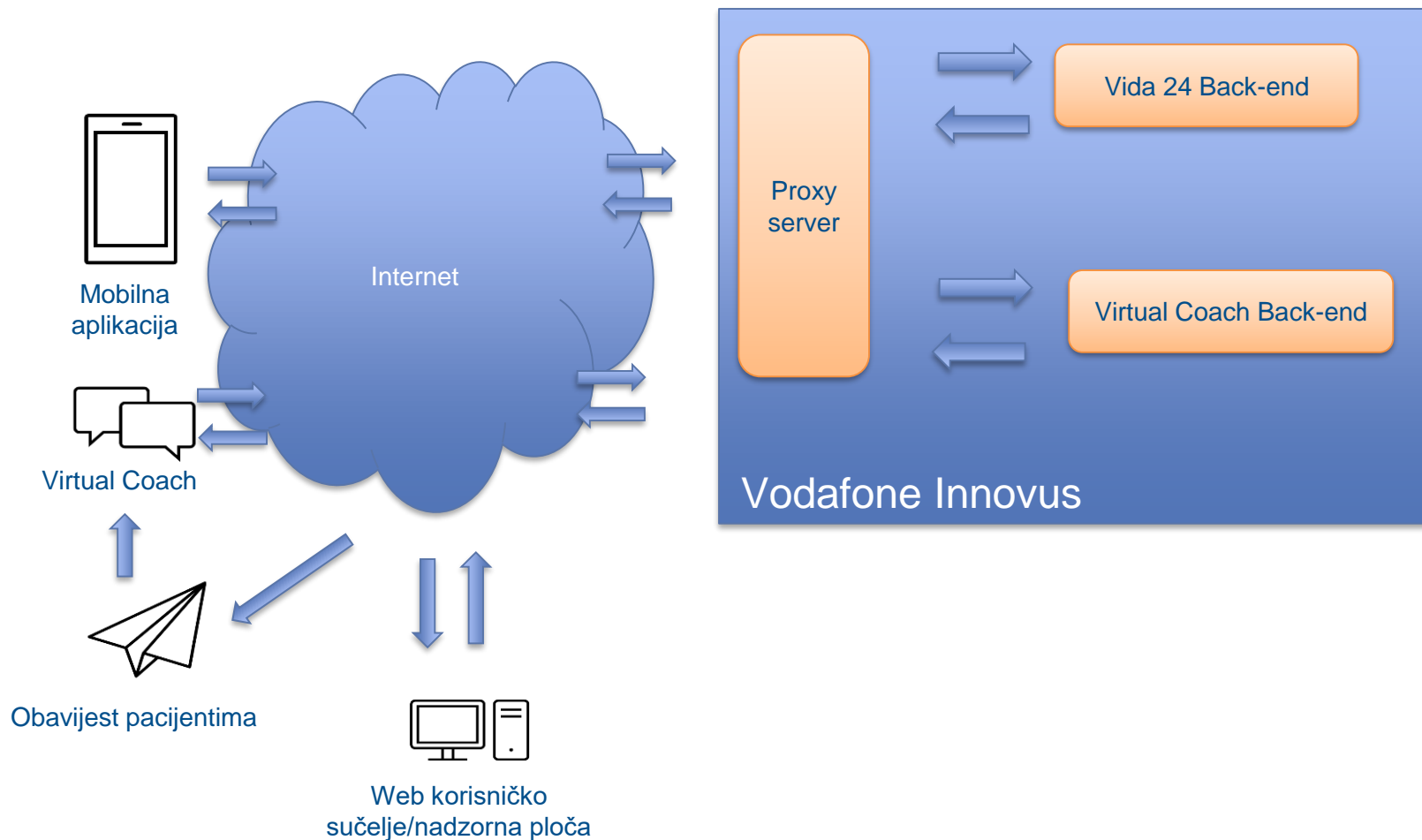
Izvor: <https://time.com/4233813/wearable-gadgets/>



Koncept ValueCare digitalnog rješenja



Konceptualni dizajn arhitekture digitalnog rješenja



ValueCare dashboard

ValueCare PROJECT

179:42

New user

Fields marked with an * are required.

User Profile

Firstname*	<input type="text" value="Firstname"/>	Lastname*	<input type="text" value="Lastname"/>	Email*	<input type="text" value="Email"/>
Language	<input type="text" value="Greek"/>	Role*	<input type="text"/>		
Country	<input type="text"/>	Town	<input type="text"/>		
Username	<input type="text" value="Username"/>	Active	<input type="text" value="Deactivated"/>		

Send activation mail

Care team

Informal Caregiver	<input type="text"/>	Doctor	<input type="text"/>	Formal caregiver	<input type="text"/>
Informal Caregiver	<input type="text"/>	Doctor	<input type="text"/>	Formal caregiver	<input type="text"/>

Close Save



ValueCare dashboard

The screenshot displays the ValueCare dashboard interface. At the top left is the 'vid24' logo. The top right corner shows the time '179:18' and a notification icon. A progress bar at the top indicates the current step: 1 CREATE CAREPLAN, 2 SELECT GOAL, 2.1 SELECT VITAL, 2.2 SET GOAL, 2.3 OVERVIEW, and 3 ACTIVATE. The user's name, Stavros Dimitropoulos, is visible in the top right. The main content area is titled 'Create careplan' and contains three form fields: 'Careplan's Name' (a text input field with a 'Required field' error message), 'Disease Type' (a dropdown menu with 'Diabetes' selected), and 'Disease Name' (a dropdown menu with 'Diabetes Type I' selected). A 'Next' button is located at the bottom right of the form. The footer of the dashboard includes a 'Privacy policy' link and a copyright notice for 2021.

vid24

179:18

1 CREATE CAREPLAN 2 SELECT GOAL 2.1 SELECT VITAL 2.2 SET GOAL 2.3 OVERVIEW 3 ACTIVATE

Stavros Dimitropoulos

Create careplan

Careplan's Name

Disease Type

Disease Name

Next

Privacy policy | Copyright © 2021, Vid24



ValueCare dashboard

The screenshot displays the ValueCare dashboard interface. At the top left is the 'vidocare' logo. The top right corner shows the time '179:18' and a user profile icon. A progress bar at the top indicates the current step: '2 SELECT GOAL', with other steps being '1 CREATE CAREPLAN', '2.1 SET GOAL', '2.2 OVERVIEW', and '3 ACTIVATE'. The user's name, 'Stavros Dimitropoulos', is visible in the top right. The main content area is titled 'Select goal' and features five goal categories, each with an icon: 'Medical Goal' (stethoscope), 'Medication Goal' (pill bottle), 'Nutrition Goal' (apple), 'Physical Activity Goal' (gym weights), and 'Wellbeing Goal' (heart with pulse line). A 'Next' button is located at the bottom right of the goal selection area. A sidebar on the left contains navigation options: 'Vidocare Expert', 'Online', 'Home', 'Users', and 'Diagns'. At the bottom right of the dashboard, there is a link for 'Privacy policy | Copyright © 2021, Vidocare'.






ValueCare dashboard

The screenshot displays the ValueCare dashboard interface. At the top left is the 'vido24' logo. The top right corner shows the time '179:18' and a notification icon. A progress bar at the top indicates the current step: '1 CREATE CAREPLAN', '2 SELECT GOAL', '2.1 SET GOAL', '2.2 OVERVIEW', and '3 ACTIVATE'. The main content area features a user profile for 'Stavros Dimitropoulos' with a profile picture, birth date '09/03/1960', phone number '+30695555555', ID '15481', and address 'Ermou 5, Omonoia 10635'. Below the profile is a 'Physical activity goal' configuration form. The form includes a 'Goal' section with 'Physical Activity' (Walking) and 'Duration' (30 min) dropdowns. A 'Frequency' section has a 'One time event' checkbox (unchecked) and a 'Repeat' dropdown (Daily). A 'Time' field is set to '08:00 am'. A 'Start date' section has a 'Start date' toggle (checked) and 'From' (10/05/2021) and 'To' (30/05/2021) date pickers. A 'Save' button is located at the bottom right of the form. The footer contains 'Privacy policy | Copyright © 2021, Vidam'.



ValueCare dashboard


179:18




Vida24 Expert
Online

Home

Users

Exams

Test Careplan for Stavros

Today 22 Mar 2021

2021-03-22 - 2021-03-22

Medication

Overview
Blood Glucose
Blood Pressure
Medication

Latest Medications

Paracetamol 1 tablet

Taken 24/03/21 08:00 am Paracetamol 1 tablet daily 08:00 am End Date 23/03/21

Paracetamol 1 tablet

Not taken Paracetamol 1 tablet daily 08:00 am End Date 23/03/21

Goal	Target	Status	Frequency	Valid until	Tracked Date & Time
Paracetamol 1 tablet	Paracetamol 1 tablet	Taken	Daily at 10:00 am	2 weeks	25/03/21 10:00 am
Paracetamol 1 tablet	Paracetamol 1 tablet	Not taken	Daily at 10:00 am	3 weeks	-
Paracetamol 1 tablet	Paracetamol 1 tablet	Taken	Daily at 10:00 am	Once	24/03/21 10:00 am

[Add new goal](#)

Stavros Dimitropoulos

09/03/1960 +3069555555

ID: 15481 Ermou 5, Omonoia 10635

Timeline


● Medical Goal ● Medication Goal

Today

- **Before meal glucose**
 Daily at 09:00 am
 80 - 130 mg/dL 130 mg/dL
COMPLETED
- **Paracetamol Medication**
 Daily at 09:30 am
 1 tablet
COMPLETED
- **Diastolic Blood Pressure**
 Daily at 15:00 pm
 80 - 130 mmHg
PENDING
- **Systolic Blood Pressure**
 Daily at 15:00 pm
 80 - 130 mmHg
PENDING
- **Heart Rate**
 Daily at 15:00 pm
 90 bpm
PENDING
- **Triglycerides**
 Once at 15:00 pm
 < 150 mg/dL 130 mg/dL
COMPLETED



ValueCare dashboard



179:18

VIDA21 USER

Online

Home

Users

Exams

Test Careplan for Stavros

Today 22 Mar 2021

2021-03-22 - 2021-03-22

Blood Glucose

Overview
Blood Glucose
Blood Pressure
Medication

Latest Measurements

After meal blood glucose

135 mg/dL 24/03/21 08:00 am < 130 mg/dL 08:00 am

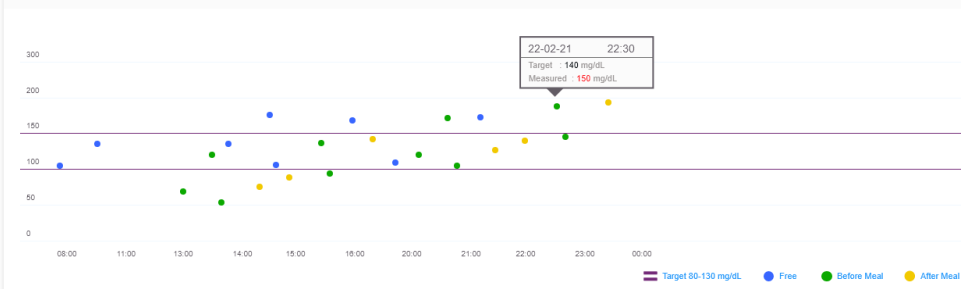
Before meal blood glucose

80 - 130 mg/dL 24/03/21 14:00 pm 80-130 mg/dL 14:00 pm

Daily Glucose Results

Glucose Diagram
Scatter Diagram

Day
Week
Month



Goal	Target	Average	Frequency	Valid until	Tracked Date & Time
After meal blood glucose	80-130 mg/dL	140 mg/dL	Daily at 08:00 am	2 weeks	24/03/21 08:00 am
After meal blood glucose	80-130 mg/dL	140 mg/dL	Daily at 13:00 pm	Once	23/03/21 14:00 pm
After meal blood glucose	80-130 mg/dL	140 mg/dL	Daily at 15:00 pm	3 weeks	23/03/21 15:00 pm

Add new goal

Stavros Dimitropoulos

09/03/1960 +30695555555

ID: 15481 Ermou 5, Omonoia 10635

Timeline

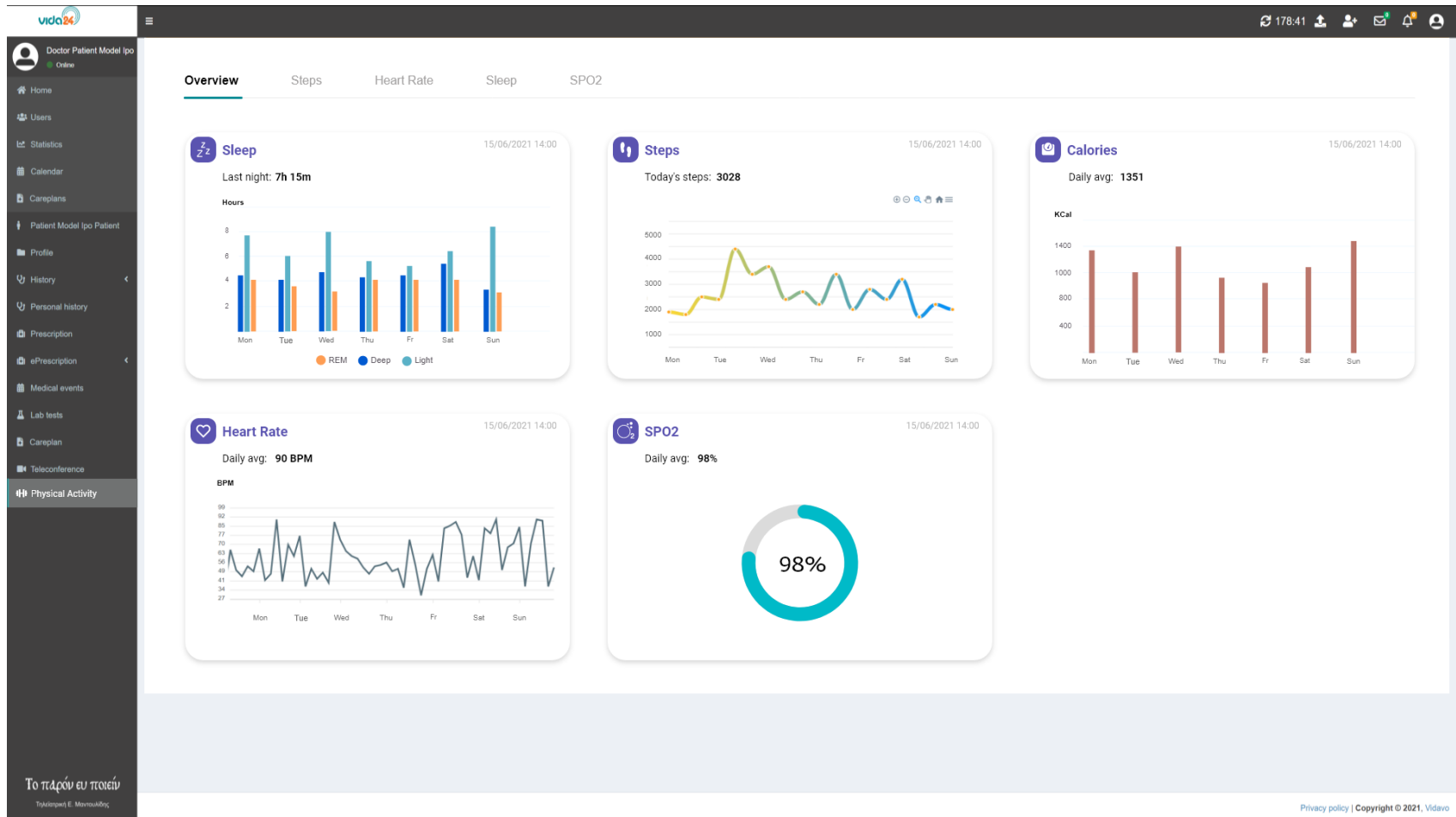
● Medical Goal ● Medication Goal

Today

- **Before meal glucose**
Daily at 09:00 am
80 - 130 mg/dL
130 mg/dL
COMPLETED
- **Paracetamol Medication**
Daily at 09:30 am
1 tablet
COMPLETED
- **Diastolic Blood Pressure**
Daily at 09:00 pm
80 - 130 mmHg
PENDING
- **Systolic Blood Pressure**
Daily at 15:00 pm
80 - 130 mmHg
PENDING
- **Heart Rate**
Daily at 15:00 pm
90 bpm
PENDING
- **Triglycerides**
Once at 15:00 pm
< 150 mg/dL
130 mg/dL
COMPLETED



ValueCare dashboard



ValueCare dashboard

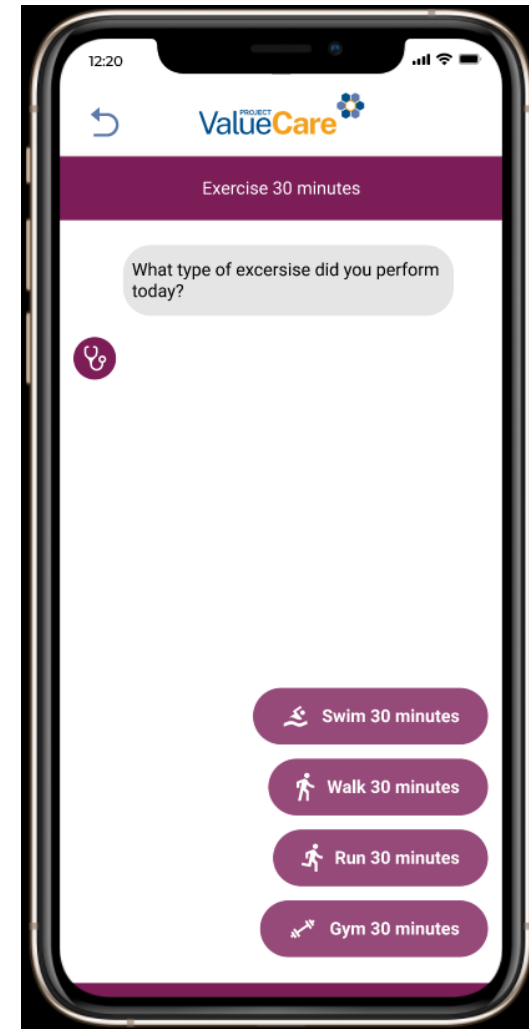
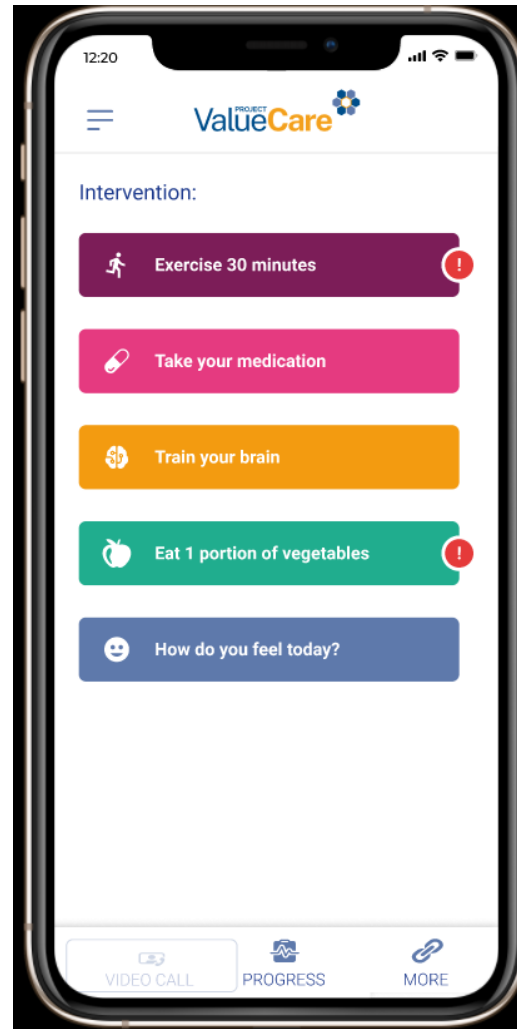
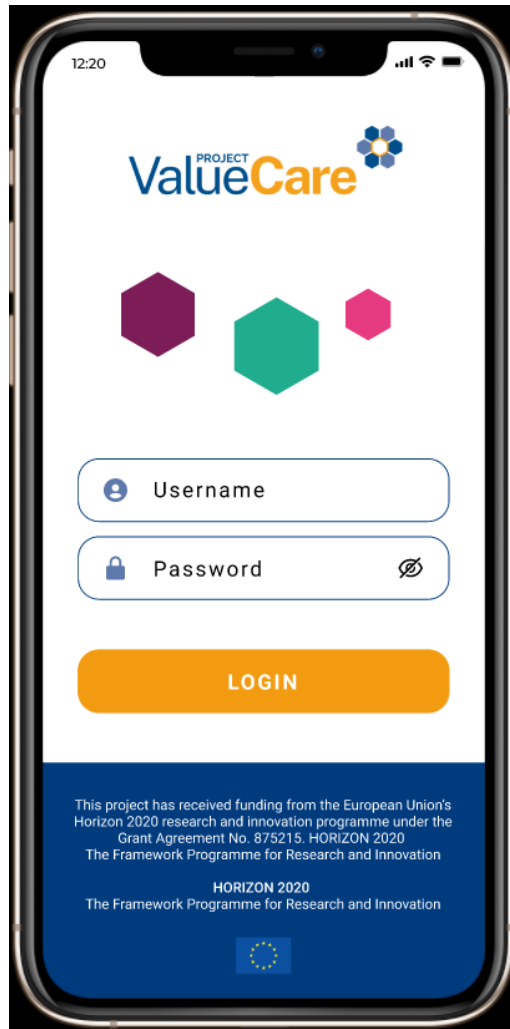
The screenshot displays the ValueCare dashboard interface, which is divided into several functional areas:

- Header:** Features the 'vida24' logo on the left and user information for 'Alexander Pierce' (Online) on the right, including notification icons for messages, alerts, and calendar events.
- Left Sidebar:** A dark navigation menu with options such as Home, John Latshaw, Profile, Medical treatment, Medical history, Diet history, Reports, Nutrition plan, Tests, Appointments, **Teleconference** (highlighted), Care team, and DEMO.
- Teleconference Panel:** Shows a video call in progress with a timer at 00:00:44. It includes a 'You' label and a 'ValueCare' logo.
- Chat Panel:** Displays a conversation history with messages from Alexander Pierce ('Hello') and Clay Dock ('hi').
- Mailbox Panel:** Shows a 'Compose' screen for a new email. The 'To' field is set to '9773, Test patient' and the 'Subject' is 'Reminder'. The body text is empty. A 'Send' button is visible at the bottom right.
- Bottom Panel:** Contains a 'Share files' section with a file named 'Clay Dock' and a 'MONDAY' meal plan section listing items like 'Special K® Fruit and Yogurt cereal with fruit' and 'Peanut Butter & Banana Sandwich'.

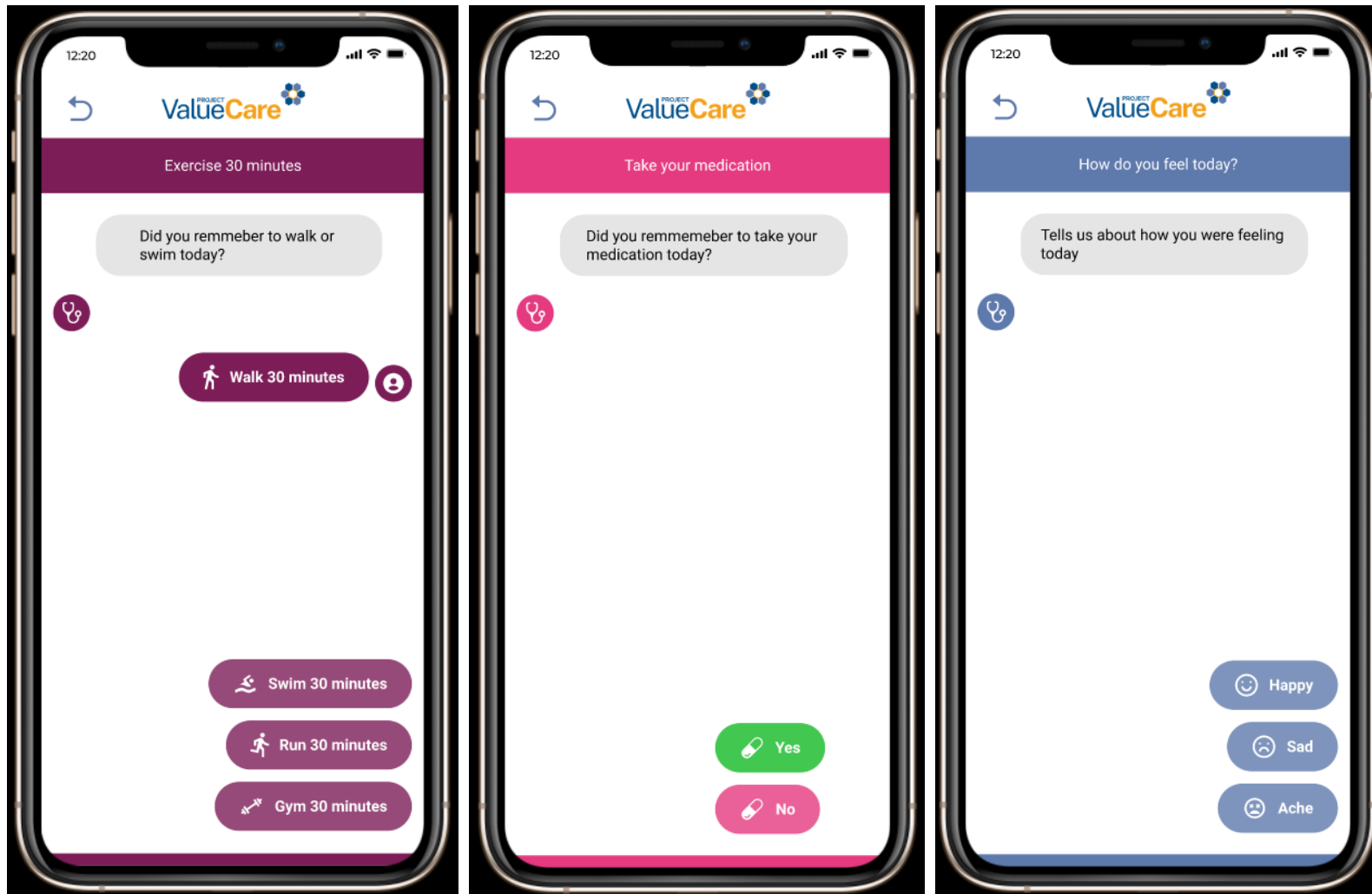
At the bottom right of the dashboard, there is a link for 'Privacy policy' and a copyright notice: 'Copyright © 2021, Vidavo'.



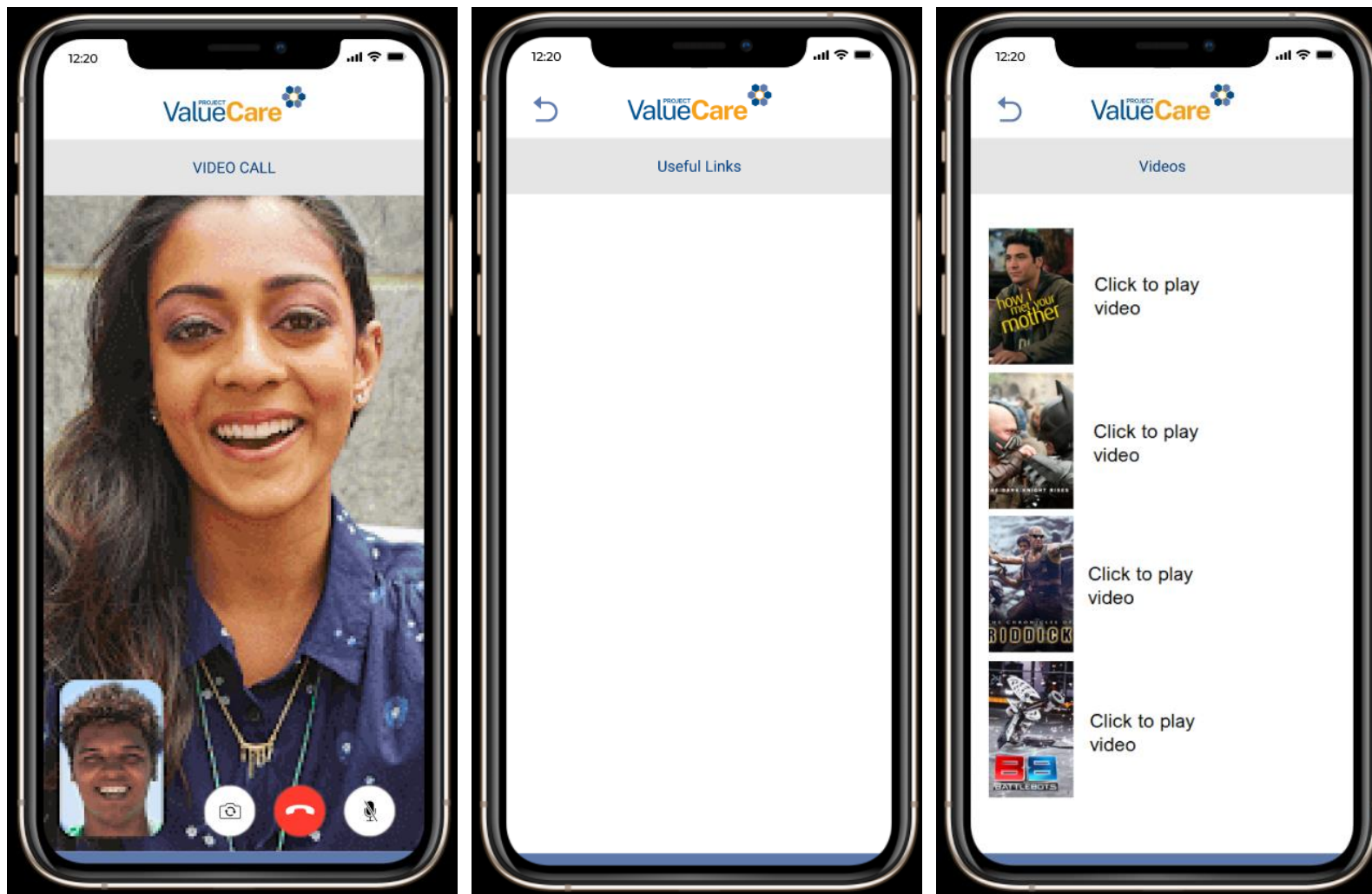
ValueCare mobilna aplikacija



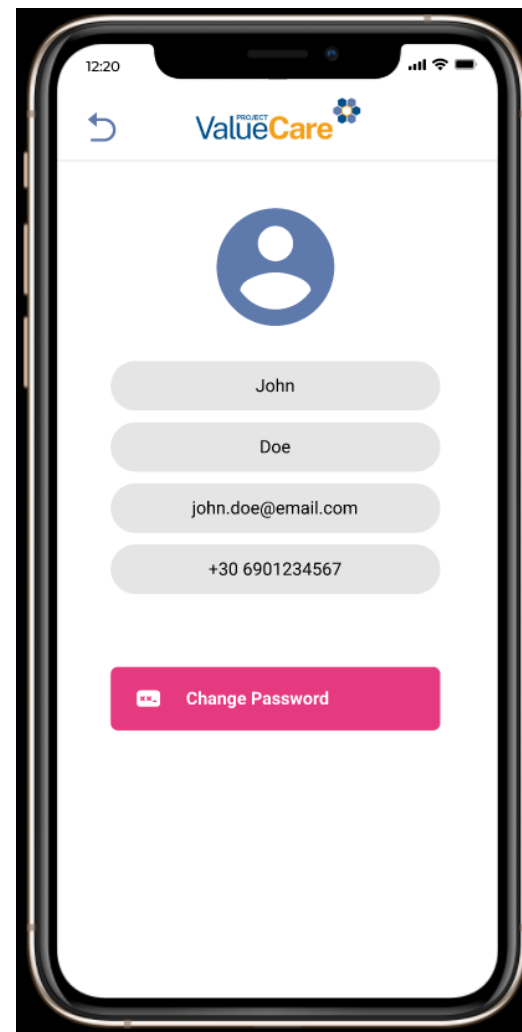
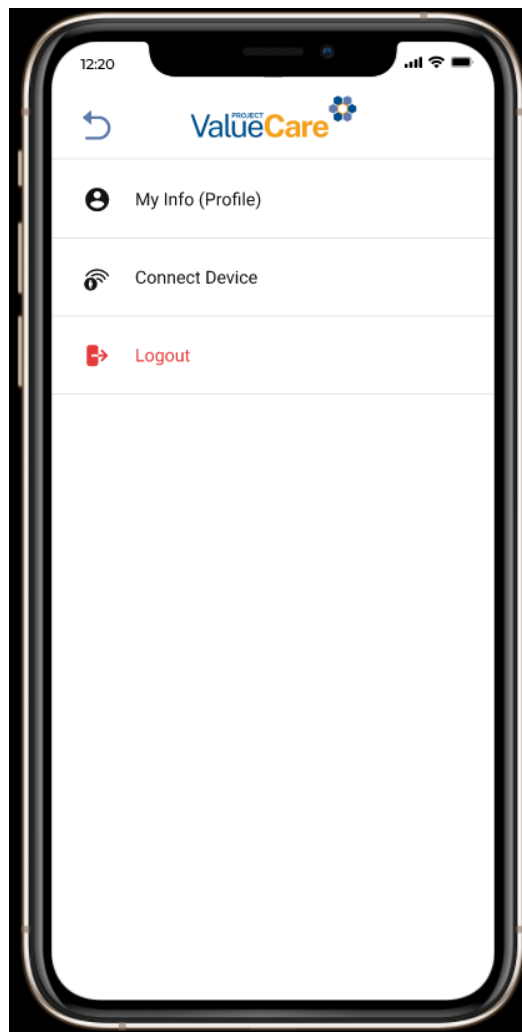
ValueCare mobilna aplikacija



ValueCare mobilna aplikacija



ValueCare mobilna aplikacija



Virtual Coach



Izvor: Foto von [Karolina Grabowska](#) von [Pexels](#)



Izvor: Foto von [Anna Shvets](#) von [Pexels](#)



Izvor: Foto von [Any Lane](#) von [Pexels](#)

Pametne narukvice & pametni telefoni



Izvor:
https://commons.wikimedia.org/wiki/File:Man_Walking_Cartoon_Vector.svg



Izvor: https://www.washingtonpost.com/lifestyle/wellness/study-to-get-enough-exercise-try-engaging-in-three-different-activities-a-week/2020/07/13/c168aeb0-c538-11ea-99f-3bbdff1af38_story.html



Izvor:
https://medium.com/@kunal_gohrani/different-types-of-distance-metrics-used-in-machine-learning-e9928c5e26c7



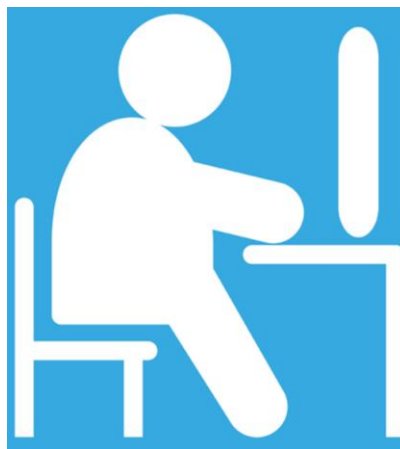
Izvor:
https://www.kindpng.com/imgv/iRTohRw_transparent-holy-spirit-png-calories-icon-vector-png/



Pametne narukvice & pametni telefoni



Izvor: <https://www.health.harvard.edu/blog/strategies-to-promote-better-sleep-in-these-uncertain-times-2020032719333>



Izvor: <https://insightplus.mja.com.au/2017/37/is-sitting-the-new-smoking-or-isnt-it/>



Izvor: <https://scopeblog.stanford.edu/2018/10/25/understanding-afib-how-to-measure-your-own-heart-rate-and-rhythm/>



Izvor: <https://medvisit.io/how-to-manage-stress/>



Izvor: <https://www.inc.com/minda-zetlin/talent-mastery-hard-work-deliberate-practice-10000-hours-rule.html>



ISTRAŽIVAČKI TIM S MEDICINSKOG FAKULTETA U RIJECI



Prof. dr. sc. Tomislav Rukavina, dr. med., izv. prof. dr. sc. Vanja Vasiljev, doc. dr. sc. Lovorka Bilajac, doc. dr. sc. Sven Maričić, Mihaela Marinović Glavić, mag. sanit. ing. & Denis Juraga, mag. sanit. ing.



Projektni partneri



Projekt je financiran sredstvima Europske Unije - Horizon 2020 Research and Innovation Program ugovorom broj No. 875215.



PROJECT ValueCare



Value-based methodology for
integrated care supported by ICT



projectvaluecare.eu



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