Responsive Engagement of the Elderly
promoting Activity and Customized Healthcare

Results

Project Information

REACH2020
Grant agreement ID: 690425

Funded under
H2020-EU.3.1.4.

Overall budget
€ 6 078 657,50

EU contribution
€ 4 588 315

Closed project

Start date
1 February 2016

End date
31 January 2020

Coordinated by
TECHNISCHE UNIVERSITAET MUNCHEN
Germany

Deliverables

Documents, reports (19)

Detailed dissemination plan
Detailed dissemination plan: Presentation of a detailed dissemination plan coordinates and schedule dissemination activities planned by individual partners (associated with task T 9.8).

User acceptance and motivation strategies, including caregivers
User acceptance and motivation strategies, including caregivers: Presentation of the outcome of the Identification and detailing of user acceptance and motivation...
Formalised results of Final Testing and optimisation activities

Formalised results of final testing and optimisation activities: Summarisation of testing and evaluation of final testing of continuously improved system in the form of prototypes in real world environments and presentation of optimisation measures (associated with tasks T6.5, T6.6, T6.7, T6.8).

Business model proposals for the REACH system and sub-systems

Business model proposals for the REACH system and sub-systems: Presentation of the outcome of the detailing of business models for system and sub-systems (associated with task T8.4).

PSS concepts based on motivational strategies

PSS concepts based on motivational strategies: Presentation of intervention product service system development concepts based on user acceptance and motivation strategies (associated with task T4.2 and T4.3). Presentation in the form of schematics, visualisations and plans showing the relation to the Health Care Platform.

Formalised results of Pretesting I and II activities

Formalised results of pretesting I and II activities: Summarisation of testing and evaluation of pre-testing of mock-ups in laboratory and real-world environments (associated with tasks T6.3, T6.4).

Motivational strategies

Motivational strategies: Summarization of identifying user motivation to adopt new behavior and analyzing existing motivational system for behavior change (associated with tasks T4.1, T4.2). Presentation in the form of schematics, visualisations and plans showing the relation to the Health Care Platform.

Report on planned standardization strategy

Report on planned standardization strategy: Report on the planned standardisation strategy that would foster the development of guidelines and standards that allow an exploitation of the project results beyond the project’s duration (associated with task T9.4).

Collaboration network organization
Collaboration network organization: Summarisation of the outcome of the design and the stimulation of the collaboration network (associated with task T8.3).

**List of requirements and functions report**
List of requirements and functions report: Summarisation of the identification of general requirements and functionality for PI²Us with respect to REACH use-case (associated with task T5.1).

**Use case scenarios**
Use case scenarios: presentation of the outcome of an analysis (including on-site analyses) of the current use cases and practices at Lyngby, SK, Zuidzorg and SK, and formulation of concrete use scenarios (associated with task T 1.1)

**Innovative product service systems concepts**
Innovative product service systems concepts: Presentation of the outcome of the development of innovative product service systems concepts for the REACH system and the sub-systems and potential IP proposals (associated with task T8.2).

**PSS concepts**
PSS concepts: Summary of the development of and initial value proposition and product-service-system concept developed based on the involvement of stakeholders (associated with task T 1.3)

**System personalisation strategy**
System personalisation strategy: Summarisation of the outcome of the Identification and detailing of personalisation strategies and degrees of personalisation for all subsystems (associated with task T7.1). Presentation in the form of text and schematics/visualisations outlining the relation to the Health Care Platform.

**Detailed set of privacy guidelines and schemata**
Detailed set of privacy guidelines and schemata: Summarisation of the outcome of the development of necessary data privacy and security schemata to (1) protect sensed-data; (2) ascertain computational anonymity; (3) ensure privileged intervention access (associated with task T.7.5)

**Stakeholder networks and active user involvement/early trials**
Identification of requirements, benefits and risks in the context of a stakeholder analysis, active user involvement/early trials (associated with task T 1.2)

**Stakeholder management plan**
Stakeholder management plan: Outline of a stakeholder management strategy that allows the efficient implementation of PSS-concept and health platform
Applicable standards and best practice guidelines for all REACH related activities

Applicable standards and best practice guidelines for all REACH related activities: Summarisation of the outcome of the research and assessment of existing standards, of standards under development and the development of standardized cross-compatibility protocols (associated with task T6.1).

Code of Conduct

Code of conduct: Outline of the code of conduct related to the management of intellectual property rights in order to ensure an open atmosphere within the consortium as well as to foster efficient and fast exploitation of project results (associated with task T9.6).

Other (1)

Partly functional / functional mock-ups and prototypes of PI²Us

Partly functional / functional mock-ups and prototypes of PI²Us: Presentation of the outcome of the Building of PI²Us (mock-up/prototype) for testing and demonstration (associated with task T5.4). Presentation in the form of mock-ups and visualisations.

Demonstrators, pilots, prototypes (1)

Final mock-up version of REACH system

Final mock-up version of REACH system: Demonstration of the outcome of the Pre-integration integration to mock-up with other systems (associated with task T6.2).

Publications

Peer reviewed articles (24)

REACH: Responsive Engagement of the Elderly promoting Activity and Customized Healthcare

Author(s): Thomas Bock

Published in: Gerontechnology, Issue 16/3, 2017, Page(s) 125-128, ISSN 1569-1101

DOI: 10.4017/gt.2017.16.3.001.00
Determining design requirements for active aging: Personas, experience maps, and stakeholders

Author(s): Barbara Schäpers, Carmen Krewer, Mika Yasuoka, Daniela Becker, Silke Heller, Marcus Kaiser, Eberhard Koenig, Friedemann Müller
Published in: Gerontechnology, Issue 16/3, 2017, Page(s) 139-150, ISSN 1569-1101
DOI: 10.4017/gt.2017.16.3.003.00

Opportunities and challenges for self-monitoring technologies for healthy aging: An in-situ study

Author(s): Mirana Randriambelonoro, Yu Chen, Onur Yuruten, Pearl Pu
Published in: Gerontechnology, Issue 16/3, 2017, Page(s) 173-180, ISSN 1569-1101
DOI: 10.4017/gt.2017.16.3.006.00

Can technology adoption for older adults be co-created?

Author(s): Yuan Lu, Carlijn Valk, Jim Steenbakkers, Tilde Bekker, Thomas Visser, Gavin Proctor, Omna Toshniwal, Henning Langberg
Published in: Gerontechnology, Issue 16/3, 2017, Page(s) 151-159, ISSN 1569-1101
DOI: 10.4017/gt.2017.16.3.004.00

Business model innovation for value and technology based preventive health care

Author(s): Thomas Linner, Gabriela Solcanu, Camilla van den Boom, Hans Lingegard, Tifanny Istamto, Gavin Proctor, Yuan Lu, Jim Steebakkers
Published in: Gerontechnology, Issue 16/3, 2017, Page(s) 200-206, ISSN 1569-1101
DOI: 10.4017/gt.2017.16.3.010.00

Systems engineering for prevention oriented, assistive technology situated in a multidisciplinary context

Author(s): Thomas Linner, Rongbo Hu, Katja Pawlitza, Jörg Güttler
Published in: Gerontechnology, Issue 16/3, 2017, Page(s) 129-138, ISSN 1569-1101
DOI: 10.4017/gt.2017.16.3.002.00

Analysis of the effectiveness of ActivLife training in people over 60 years of age: A pilot study

Author(s): Anna Leś, Ewa Niedzielska, Joanna Piotrowska, Michał Staniszewski, Dominika Kozak
Published in: Gerontechnology, Issue 16/3, 2017, Page(s) 189-195, ISSN 1569-1101
DOI: 10.4017/gt.2017.16.3.008.00

A functionality, safety and validity study of innovative REACH devices

Author(s): Dominika Kozak, Simon Burgermeister, Jean De Buretel De Chassey, Adrien Naef, Alexandre Maringue, Damien Dietrich
Towards personalized persuasive strategies for active ageing

Author(s): Carlijn Valk, Yuan Lu, Xipei Ren, Marjolein Wintermans, Ivar Kraaijevanger, Jim Steenbakkers, Vincent Visser
Published in: Gerontechnology, Issue 16/3, 2017, Page(s) 181-188, ISSN 1569-1101
DOI: 10.4017/gt.2017.16.3.007.00

Standardization in REACH in the context of active and healthy ageing

Author(s): Christine Fuß, Ann-Morla Meyer
Published in: Gerontechnology, Issue 16/3, 2017, Page(s) 196-199, ISSN 1569-1101
DOI: 10.4017/gt.2017.16.3.009.00

A Bayesian Approach to Intervention-Based Clustering

Author(s): Kulev, I.; Pu, P.; Faltings, B.
Published in: ACM Transactions on Intelligent Systems and Technology (TIST), Issue 9(4), Jan. 2018, Page(s) 44:1-44:23, ISSN 2157-6904

Identifying factors for personalized strategies to motivate seniors to adopt a more active lifestyle

Author(s): C.A.L. Valk, M.C. Wintermans, Y. Lu, M.M. Bekker, R.G.A. Brankaert
Published in: Gerontechnology, Issue 17/s, 2018, Page(s) 63-63, ISSN 1569-1101
DOI: 10.4017/gt.2018.17.s.063.00

Physical activity monitors to enhance the daily amount of physical activity in elderly—a protocol for a systematic review and meta-analysis

Author(s): Rasmus Tolstrup Larsen, Jan Christensen, Carsten Bogh Juhl, Henning Boje Andersen, Henning Langberg
Published in: Systematic Reviews, Issue 7/1, 2018, ISSN 2046-4053
DOI: 10.1186/s13643-018-0733-6

Concerns and tradeoffs in privacy and safety of sensor-based monitoring of older people living at home

Author(s): H. Ehrari, C.J. Langberg, H.B. Andersen
Published in: Gerontechnology, Issue 17/s, 2018, Page(s) 110-110, ISSN 1569-1101
DOI: 10.4017/gt.2018.17.s.107.00
Feedback from physical activity monitors to enhance amount of physical activity in adults—a protocol for a systematic review and meta-analysis

**Author(s):** Rasmus Tolstrup Larsen, Vibeke Wagner, Camilla Keller, Carsten Bogh Juhl, Henning Langberg, Jan Christensen

**Published in:** Systematic Reviews, Issue 8/1, 2019, ISSN 2046-4053

**DOI:** 10.1186/s13643-019-0970-3

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REACH: Solutions for Technology-Based Prevention and Empowerment for Older People and their Caregivers

**Author(s):** Thomas Linner, Anja Seeliger, Lydia Vogt, Barbara Schäpers, Martina Steinböck, Carmen Krewer, Thomas Bock

**Published in:** Journal of Population Ageing, Issue Special Issue REACH, 2020, ISSN 1874-7884

**DOI:** 10.1007/s12062-020-09268-5

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Advanced Sensing and Human Activity Recognition in Early Intervention and Rehabilitation of Elderly People

**Author(s):** Lisa Schrader, Agustín Vargas Toro, Sebastian Konietzny, Stefan Rüping, Barbara Schäpers, Martina Steinböck, Carmen Krewer, Friedemann Müller, Jörg Güttler, Thomas Bock

**Published in:** Journal of Population Ageing, Issue Special Issue REACH, 2020, ISSN 1874-7884

**DOI:** 10.1007/s12062-020-09260-z

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Aspects Influencing Food Intake and Approaches towards Personalising Nutrition in the Elderly

**Author(s):** Alexandru Rusu, Mirana Randriambelonoro, Caroline Perrin, Carlijn Valk, Berta Álvarez, Ann-Kristin Schwarzé

**Published in:** Journal of Population Ageing, Issue Special Issue REACH, 2020, ISSN 1874-7884

**DOI:** 10.1007/s12062-019-09259-1

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Effects of Playful Exercise of Older Adults on Balance and Physical Activity: a Randomized Controlled Trial

**Author(s):** Humira Ehrari, Rasmus Tolstrup Larsen, Henning Langberg, Henning Boje Andersen

**Published in:** Journal of Population Ageing, Issue Special Issue REACH, 2020, ISSN 1874-7884

**DOI:** 10.1007/s12062-020-09273-8

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Criterion validity for step counting in four consumer-grade physical activity monitors among older adults with and without rollators

**Author(s):** Rasmus Tolstrup Larsen, Christoffer Brun Korfitsen, Carsten Bogh Juhl, Henning Boje Andersen, Henning Langberg, Jan Christensen

**Published in:** European Review of Aging and Physical Activity, Issue 17/1,
Hospital-to-Home Transition for Older Patients: Using Serious Games to Improve the Motivation for Rehabilitation – a Qualitative Study

**Author(s):** Mirana Randriambelonoro, Caroline Perrin, Alexandra Blocquet, Dominika Kozak, Julia Toyas Fernandez, Tiphaine Marfaing, Elisabeth Bolomey, Zineb Benhissen, Emilia Frangos, Antoine Geissbuhler, Christophe Graf

**Published in:** Journal of Population Ageing, Issue Special Issue REACH, 2020, ISSN 1874-7884

**DOI:** 10.1007/s12062-020-09274-7

Promoting Fall Prevention among Community Dwelling Older Adults through ActivLife: a Physical and Social Activation

**Author(s):** Yuan Lu, Yu-Shan Athena Chen, Dominika Kozak, Hubert Cornelis, Piotr Partyga

**Published in:** Journal of Population Ageing, Issue Special Issue REACH, 2020, ISSN 1874-7884

**DOI:** 10.1007/s12062-020-09261-y

Recommender System for Responsive Engagement of Senior Adults in Daily Activities

**Author(s):** Igor Kulev, Carlijn Valk, Yuan Lu, Pearl Pu

**Published in:** Journal of Population Ageing, Issue Special Issue REACH, 2020, ISSN 1874-7884

**DOI:** 10.1007/s12062-020-09263-w

Developing a Smart Home Solution Based on Personalized Intelligent Interior Units to Promote Activity and Customized Healthcare for Aging Society

**Author(s):** Rongbo Hu, Thomas Linner, Julian Trummer, Jörg Güttler, Amir Kabouteh, Katharina Langosch, Thomas Bock

**Published in:** Journal of Population Ageing, Issue Special Issue REACH, 2020, ISSN 1874-7884

**DOI:** 10.1007/s12062-020-09267-6

Co-creating product-service-system with and for the ageing society in different socio cultural contexts

**Author(s):** Lu, Y.; Valk, C.; Steenbakkers, J.; Bekker, T.; Gavin, P.; Omna, T.; Visser, T.

**Published in:** Conference of the Design Management Academy: research perspective on creative intersections, Issue DMA 2017, 2017, Page(s) 451-469,
Technical systems promoting customized activity in a rehabilitation setting

Author(s): Müller, F.
Published in: Proceedings of 10th World Conference of Gerontechnology, Issue 10th World Conference of Gerontechnology, 2016

Designing for technology acceptance of wearable and mobile technologies for senior citizen users

Author(s): Valk, C.A.L, Lu, Y. Randriambelonoro, M., Jessen, J.
Published in: 21st DMI: Academic Design Management Conference (ADMC 2018) - London, United Kingdom, 2018

Cross-domain integration for the development of technology-based detection-analytics-intervention chains in the REACH project.

Author(s): Linner, T.
Published in: Proceedings of CIB International Conference on Smart, Sustainable and Sensuous Settlements Transformation (3SSettlements) 2018, Issue CIB W119 (yearly symposium), 2018
DOI: 10.14459/2018md1482637

Development of a Non-Contact ECG Application Unobtrusively Embedded into a Bed

Author(s): Stefan Pehr, Daniel Zollitsch, Jörg Güttler, Thomas Bock

Design of a Multifunctional and Modular Bed System

Author(s): Pawlitza, K.
Published in: Proceedings of CIB International Conference on Smart, Sustainable and Sensuous Settlements Transformation (3SSettlements) 2018, Issue CIB W119 (yearly symposium), 2018
DOI: 10.14459/2018md1482638

Developing Personalized Intelligent Interior Units to Promote Activity and Customized Healthcare for Aging Society

Author(s): Hu, R.; Kabouleh, A.; Pawlitza, K.; Güttler, R.; Linner, T.; Bock, T.
Published in: ISARC 2019 proceedings, Issue 22, 2019
DOI: 10.14459/2019md1507566
Recommender Systems for Healthy Behavior Change

Author(s): Yürüten, O.
Published in: PHD Dissertation, 2017
DOI: 10.5075/epfl-thesis-7973

Development of an Ambient Health Monitoring System for a Self-Sufficient and Independent Life in Old Age

Author(s): J. Güttler
Published in: Dr.-Ing. Dissertation, 2019

Personalizable intervention systems to promote healthy behavior change

Author(s): Kulev, I.
Published in: PHD Dissertation, 2019
DOI: 10.5075/epfl-thesis-10008

Self-monitoring technologies to promote healthy behavior in the long term

Author(s): Randrinambeolnoro, M.
Published in: PHD Dissertation, 2020

Other (12)

Personalised Intelligent Interior Units (PI²Us): List of requirements and functions report

Author(s): H. B. Andersen, H. Ehrari, J. D. Jessen, M. Yasuoka; R. T. Larsen, H. Langberg; T. Linner, J. Güttler, A. Kabouteh, R. Hu., B. Schäpers, C. Krewer; G. v. Bakel; Y. Lu; M. Randriambelonoro
Published in: REACH2020 Deliverables, Issue REACH2020 Deliverable D21 (research report), 2017
DOI: 10.14459/2017md1482711

Design, Technology, and IP analysis + Management of intellectual property rights for efficient and fast exploitation of project results

Published in: REACH2020 Deliverables, Issue REACH2020 Deliverable D34 (research report), 2017
DOI: 10.14459/2017md1482713

Product-Service-System (PSS) concepts based on motivational strategies
IPR management - outline of the code of conduct related to the management of intellectual property rights (IPRs) in order to ensure an open atmosphere within the consortium as well as to foster efficient and fast exploitation of project results

Published in: REACH2020 Deliverables, Issue REACH2020 Deliverable D15 (research report), 2017
DOI: 10.14459/2017md1482712

Stakeholder management - outline of a stakeholder management strategy that allows the efficient implementation of PSS-concept and health platform

Author(s): T. Linner, M.M. Bekker, A. Groth, Y. Lu, G. Solcanu, E. Steinhardt, C.A.L. Valk
Published in: REACH2020 Deliverables, Issue REACH2020 Deliverable D40 (research report), 2017
DOI: 10.14459/2017md1482706

Product-Service-System (PSS) concepts - summary of the development of and initial value proposition and product-service-system concept developed based on the involvement of stakeholders

Published in: REACH2020 Deliverables, Issue REACH2020 Deliverable D41 (research report), 2017
DOI: 10.14459/2017md1482707

Identification and detailing of personalization strategies and degrees of personalization for all Subsystems

Published in: REACH2020 Deliverables, Issue REACH2020 Deliverable D29 (research report), 2017
DOI: 10.14459/2017md1482710

Stakeholder networks, motivational strategies (promoting physical health), sensor technologies for monitoring daily activity; early user involvement trials, outline of implications for and applicability in REACH
**Detailed dissemination plan** - presentation of a detailed dissemination plan that coordinates and schedules dissemination activities planned by individual partners


**Published in:** REACH2020 Deliverables, Issue REACH2020 Deliverable D2 (research report), 2017

**DOI:** 10.14459/2017md1482705

**Theory-based motivational behavior change strategies for the Responsive Engagement of the elderly promoting Activity and Customized Healthcare (REACH) project**


**Published in:** REACH2020 Deliverables, Issue REACH2020 Deliverable D14 (research report), 2017

**DOI:** 10.14459/2017md1482709

**Presentation of the outcome of an analysis (including on-site analyses) of the current use cases and practices at HUG, SK, ZZ, Lyngby and formulation of initial, concrete use scenarios**


**Published in:** REACH2020 Deliverables, Issue REACH2020 Deliverable D1 (research report), 2017

**DOI:** 10.14459/2016md1482702

**Systems engineering - coordination and best practice guidelines for REACH system integration activities and standards research**

**Author(s):** T. Linner, E. Steinhardt, J. Güttler; C. Fuß, A.-M. Meyer; H. B. Andersen

**Published in:** REACH2020 Deliverables, Issue REACH2020 Deliverable D25 (research report), 2017

**DOI:** 10.14459/2017md1482708