



MOBILE SERVICE AND EMERGENCY CALL SOLUTION

„MORE FREEDOM THROUGH INDEPENDENCE IN MOBILITY“

Value propositions

At the level of primary end-users

- ▶ Improvement of mobility and freedom of movement
- ▶ Subjective as well as objective safety
- ▶ Access to local-based information & services
- ▶ Ability to stay longer at home
- ▶ Enabling earlier discharge from clinics / rehabs

At the level of secondary end-users

- ▶ Reduction of emotional and psychological burden
- ▶ Higher level of service quality and security
- ▶ Optimisation of emergency processes / searching processes
- ▶ Improvement of the ability to act adequately and effective in critical situations (e.g. emergencies)

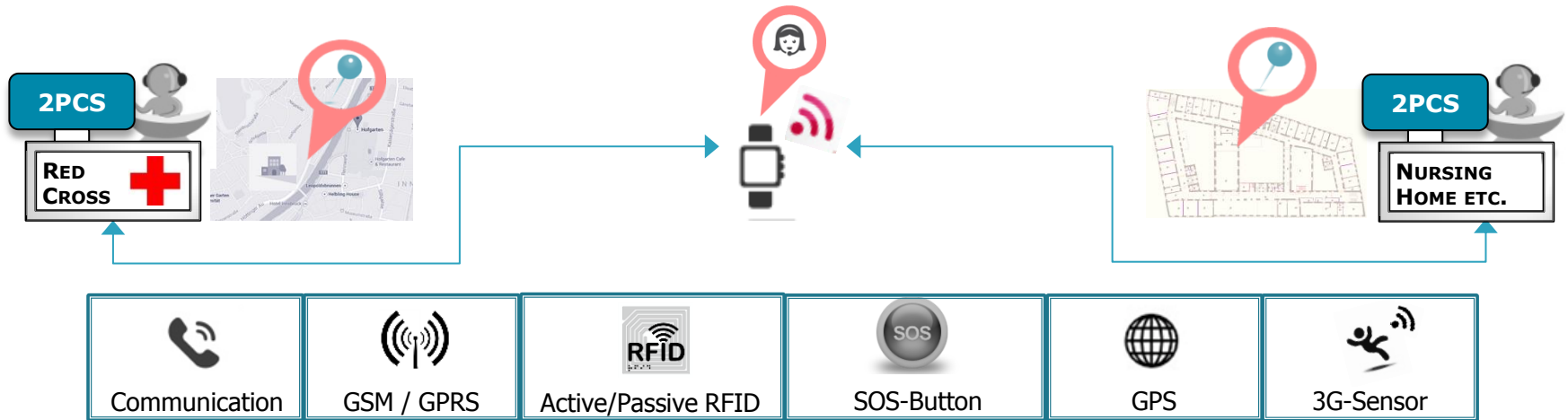
At the level of tertiary end-users

- ▶ Reduction of search costs and follow-up costs such as for surgery and special treatment

2PCS in 2015

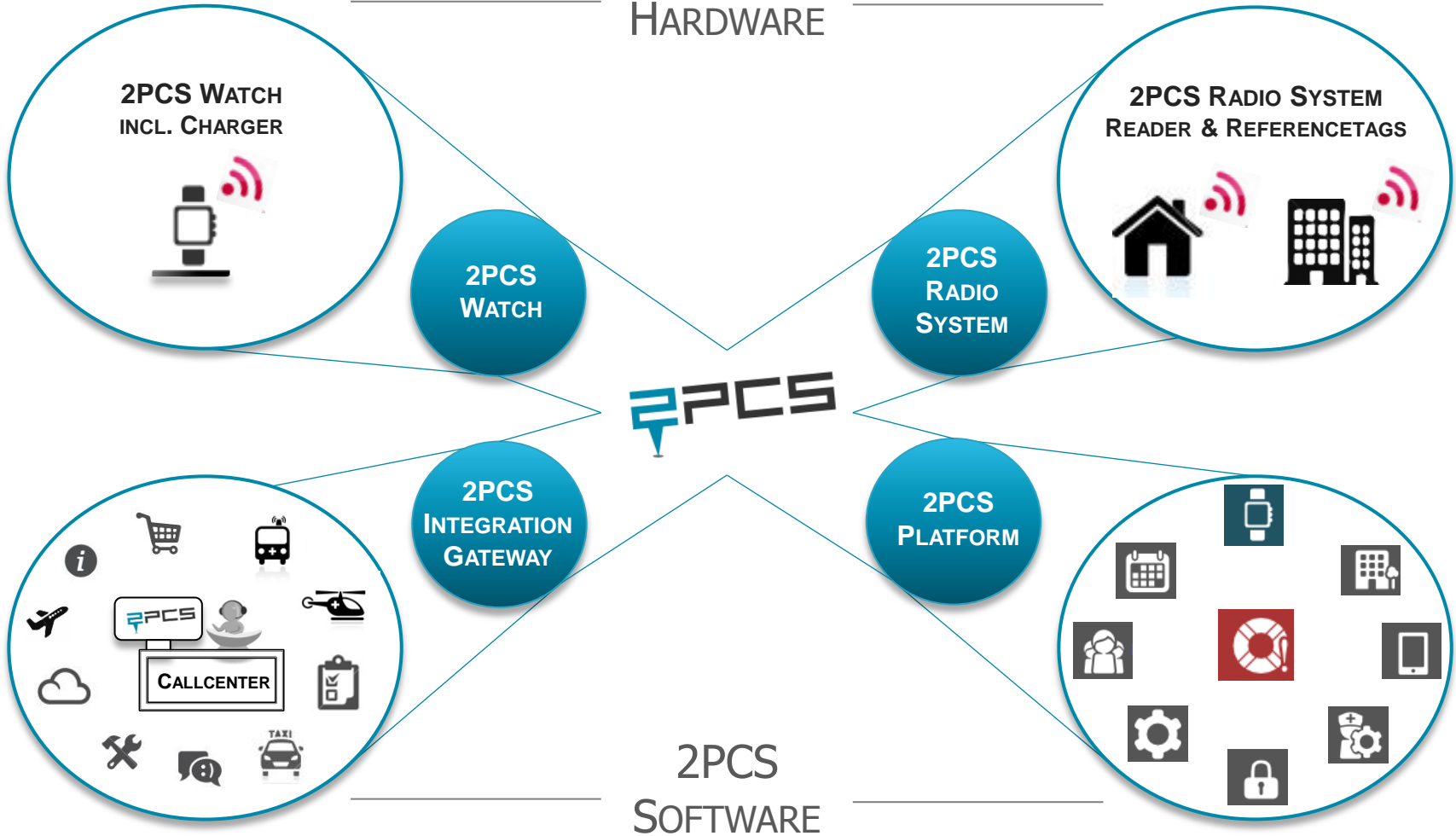
PROFESSIONAL HOME CARE

INSTITUTIONAL CARE



objective and subjective insecurity – isolation – missing access to services – anxiety – reduced mobility – falls – disorientation – uncontrolled wandering...

2PCS HARDWARE



2PCS SOFTWARE

Software



- ▶ December 2013
2PCS Delta V1

The image displays four screenshots of the 2PCS Delta V1 software interface, showing various modules and data.

Top Left Screenshot: Offene Notrufe

- URL: 80.109.153.107:8080/ppcs/emergency
- Left sidebar: Demo Einrichtung, Demo 'demo_admin' Admin, Super-Administrator, AKTIONEN & NOTRUF, 2PCS-GERÄT, ORGANISATION, EMPFANGSGERÄTE, PERSONENVERWALTUNG, GEBÄUDEVERWALTUNG, RECHTEVERWALTUNG.
- Main content:
 - NICHT ZUGEWIESENE NOTRUF:** Table with columns: Betrifft, Zeit, Typ. Keine Notrufe vorhanden.
 - ANGENOMMENENE NOTRUF:** Table with columns: Betrifft, Zeit, Typ, Abgängigkeit. Maria Musterfrau, 23. Januar 2014 - 10:18:39.
 - OFFENE WARNUNGEN:** Table with columns: Betrifft, Zeit, Typ. Keine Warnungen vorhanden.

Top Right Screenshot: Personen verwalten

- URL: 80.109.153.107:8080/ppcs/person
- Left sidebar: Demo Einrichtung, Demo 'demo_admin' Admin, Super-Administrator, AKTIONEN & NOTRUF, 2PCS-GERÄT, ORGANISATION.
- Main content:
 - PERSONENLISTE:** Table with columns: Suche, Suchbegriff, B. Wohnen, John Doe, Maria Musterfrau, Max Mustermann, Max van Mustermann.
 - Buttons: Person suchen, Offene Notrufe, Alle abgeschlossenen Notrufe, Offene Warnungen, Abgeschlossene Warnungen, Personen Check-Out.
 - Buttons: 2PCS-GERÄT, 2PCS-Geräte verwalten, ORGANISATION.

Bottom Left Screenshot: Personen verwalten

- URL: 80.109.153.107:8080/ppcs/person/463019
- Left sidebar: 2PCS-GERÄT, 2PCS-Geräte verwalten, ORGANISATION, EMPFANGSGERÄTE, PERSONENVERWALTUNG, Mitarbeiter verwalten, Personen verwalten, Kontakte verwalten, GEBÄUDEVERWALTUNG, Stockwerke verwalten, Räume verwalten, Antennen verwalten, Kalibrierungen verwalten, Referenztags, RECHTEVERWALTUNG, BENUTZEREINSTELLUNGEN, SYSTEMEINSTELLUNGEN.
- Main content:
 - PERSONEN VERWALTEN:** PERSON SUCHEN.
 - AKTIONSPLAN VORLAGEN:** Aktionsplan Vorlage verwenden, Aktionsplan Vorlage 'In-house Pflege'. Wenn Sie eine Vorlage verwenden, werden die darin gepflegten Aktionen auf diese Person kopiert. Spätere Änderungen an der Vorlage werden nicht auf diese Person übertragen. SPEICHERN.
 - AKTIONEN:** Table with columns: Aktions-Typ, Zeitraum, Stufe, Mitarbeiter. Notruf-Knopf, 00:00 - 23:59, Mo Di Mi Do Fr Sa So, Notruf, [Mieloo & Alexander].
 - CHECK-OUT EINTRÄGE:** Table with columns: Personen, Zeit des Verlassens, Erwartete Ankunftszeit, Stufe.
 - VERKNÜPFTES 2PCS-GERÄT:** RFID Code 0100003A.

Bottom Right Screenshot: Angenommener Notruf

- URL: 80.109.153.107:8080/ppcs/emergency/3373227/mode-view
- Left sidebar: Abgeschlossene Warnungen, Personen Check-Out, 2PCS-GERÄT, 2PCS-Geräte verwalten, ORGANISATION, EMPFANGSGERÄTE, PERSONENVERWALTUNG, Mitarbeiter verwalten, Personen verwalten, Kontakte verwalten, GEBÄUDEVERWALTUNG, Stockwerke verwalten, Räume verwalten, Antennen verwalten, Kalibrierungen verwalten, Referenztags, RECHTEVERWALTUNG.
- Main content:
 - ANGENOMMENER NOTRUF:** Notruf-Knopf, NOTRUF ANGENOMMEN: ANGELA 'LANGEVELD' LANGEVELD, Dokumentation, SOS - Notruf-Knopf: Max van Mustermann, .pdf Protokoll erstellen.
 - POSITIONEN:** Map showing location of Max van Mustermann (52.305523, 4.947562) near Karspeldreef. Includes a popup with 'Max van Mustermann' and '52.305523, 4.947562'. Map controls: Routenplaner, In der Nähe suchen, Mehr.
 - Größere Kartenansicht:** Outdoor Position: 09. Jan 2014 - 12:36:17 [52.305523° 4.947562°] (09. Jan 2014 - 11:35:01), Outdoor Position: 09. Jan 2014 - 12:36:17 [52.306493° 4.948312°] (09. Jan 2014 - 11:30:18).

Hardware

- ▶ January 2014
2PCS Delta V2



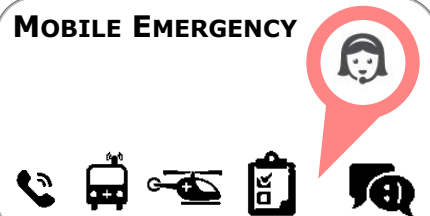
2PCS PROFESSIONAL HOME CARE



MOBILE SERVICE



MOBILE EMERGENCY



2PCS SYSTEM HOME EDITION

2PCS RADIO SYSTEM (OPTIONAL)
2PCS SOFTWARE
2PCS WATCH
2PCS CHARGER

2PCS CALL CENTER GATEWAY

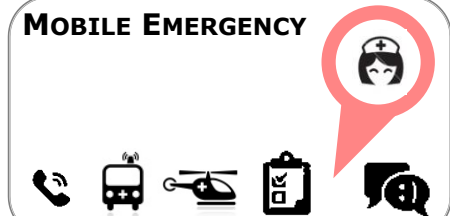
2PCS INSTITUTIONAL CARE



MOBILE SERVICE



MOBILE EMERGENCY



2PCS SYSTEM INSTITUTIONAL EDITION

2PCS RADIO SYSTEM
2PCS SOFTWARE
2PCS WATCH
2PCS CHARGER

OPTIONAL
2PCS ALARM SERVER GATEWAY
2PCS CALL CENTER GATEWAY

- ▶ 2PCS Consortium (01.07.2011 – 31.12.2013)



- ▶ 2PCS Solution Development: task force (01.01.2014...)

- ▶ 2PCS-Team RFE (privates Engagement)
- ▶ 2PCS-Team IBK (privates Engagement)
- ▶ 2PCS-Partner contec (Lieferantenengagement)
- ▶ 2PCS-Partner OKW (Lieferantenengagement)

- ▶ 2PCS Solution GmbH: task force (01.01.2014...)

- ▶ 2PCS-Team RFE
- ▶ 2PCS-Team IBK
- ▶ 2PCS-Partner Fawo GmbH
- ▶ 2PCS-Partner Hr. Wolfrum

2PCS ORG-Roadmap



- ▶ 2014-10: Final plan for ORG / 2PCS successfully audited
- ▶ 2015-02: BP turned in at CAST (Team: Köster/Detter)
- ▶ 2015-05: Founding 2PCS Solution GmbH
- ▶ 2015-06: Turning in FFG MarktStart

- ▶ Goal: Until 2017-06 no additional external investments

Story of 2PCS



- ▶ European Football Championships 2008
- ▶ Feasibility study 2009-2010

...AAL Call 2010

Proposal – Idea

- ▶ Challenges addressed:
 - ▶ Loss of mobility
 - ▶ Reduction of independence
 - ▶ Reduction of participation in the self-serve society
 - ▶ This is often caused by:
 - ▶ Subjective and objective insecurity
 - ▶ Individual fears
 - ▶ Temporary disorientation
 - ▶ Lack of ad-hoc information and services when needed
- ▶ Solution proposed:
 - ▶ “watch like” personal device with
 - ▶ Localisation technologies (indoor & outdoor)
 - ▶ Audio communication
 - ▶ Fall detection
 - ▶ Call centre services
 - ▶ Advanced energy management
 - ▶ ...
 - ▶ Specific RFID infrastructure
 - ▶ Unique web 2.0 internet platform

Aimed value propositions

At the level of primary end-users

- ▶ Improvement of mobility and freedom of movement
- ▶ Subjective as well as objective safety
- ▶ Access to local-based information & services
- ▶ Ability to stay longer at home
- ▶ Enabling earlier discharge from clinics / rehabs

At the level of secondary end-users

- ▶ Reduction of emotional and psychological burden
- ▶ Higher level of service quality and security
- ▶ Optimisation of emergency processes / searching processes
- ▶ Improvement of the ability to act adequately and effective in critical situations (e.g. emergencies)

At the level of tertiary end-users

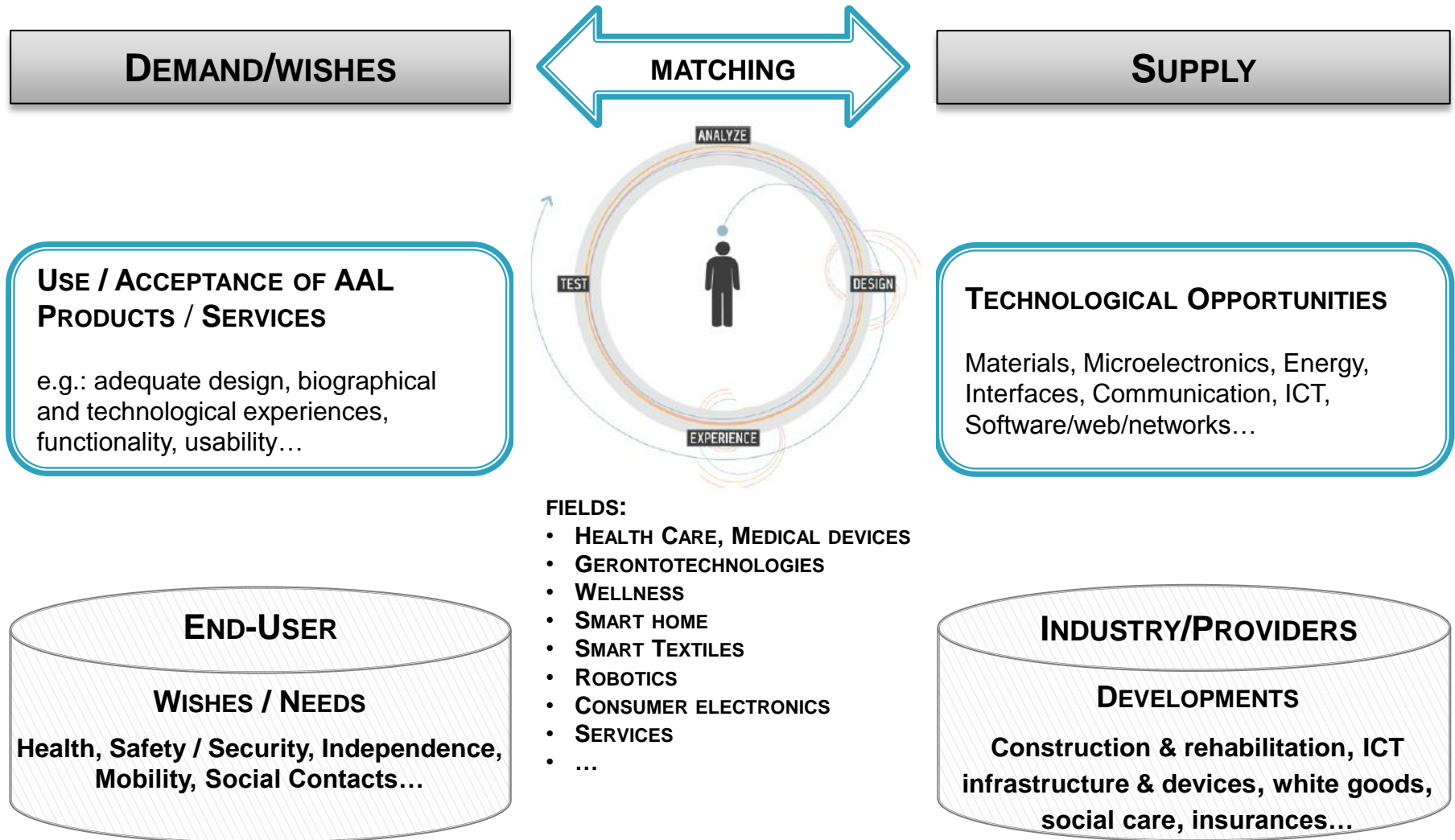
- ▶ Reduction of search costs and follow-up costs such as for surgery and special treatment

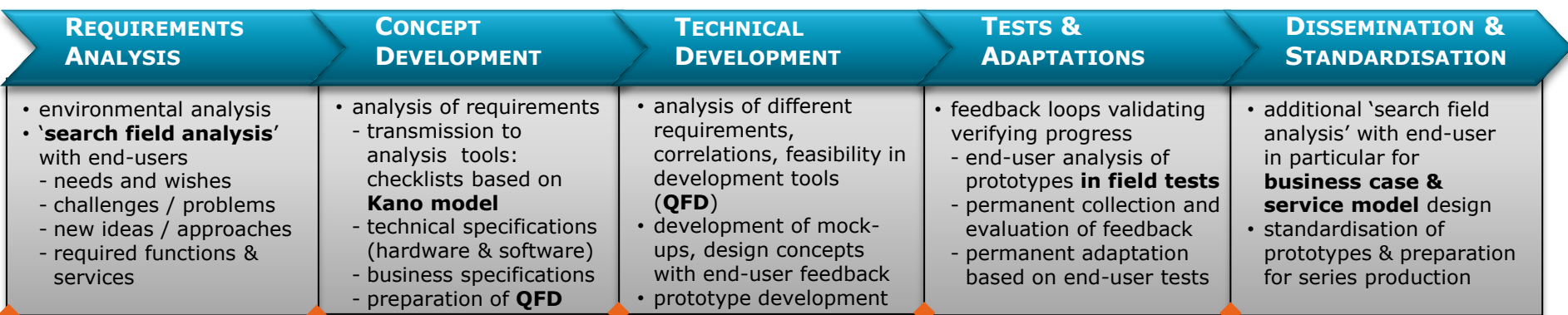
Market- & user-oriented approach



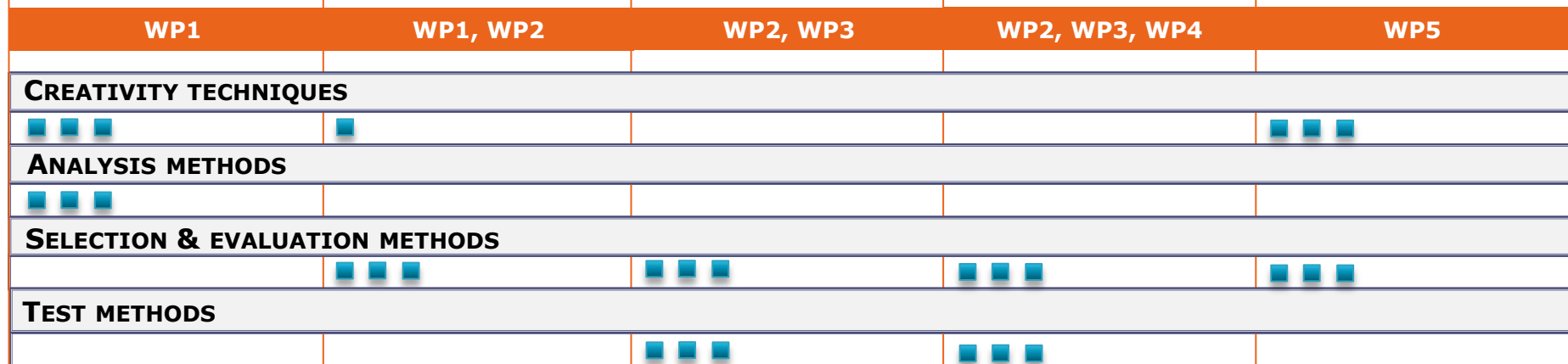
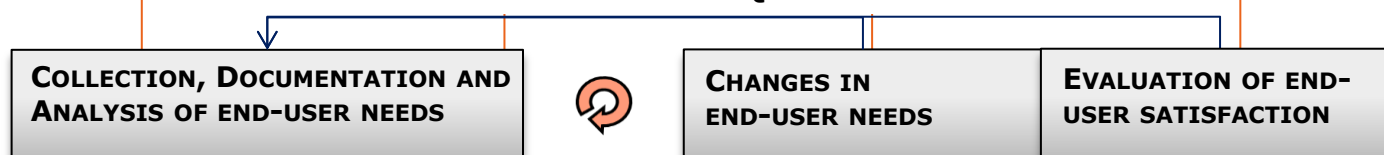
- ▶ Market orientation during the innovation process
 - ▶ End-user involvement throughout the whole development phase
 - ▶ Stakeholder involvement via crowdsourcing (open innovation)
 - ▶ Business model canvas – for internal alignment
 - ▶ Creation of a holistic business plan for the time-to-market phase
 - ▶ Dissemination of project results
- ▶ Single-Device-Approach
- ▶ Size-/Energy-Optimization
- ▶ Securing:
availability, accessibility, scalability & legal compliance
- ▶ Usability and Design
- ▶ Service orientated usage of IT to increase the subjective and objective security
- ▶ Technology in the background -> services in the foreground
- ▶ Increased end-user acceptance through a life phase orientated solution and involvement of lead-users during the innovation process

AAL Innovation Model





USER INTEGRATION WITH EQUID-DESIGN PROCESS

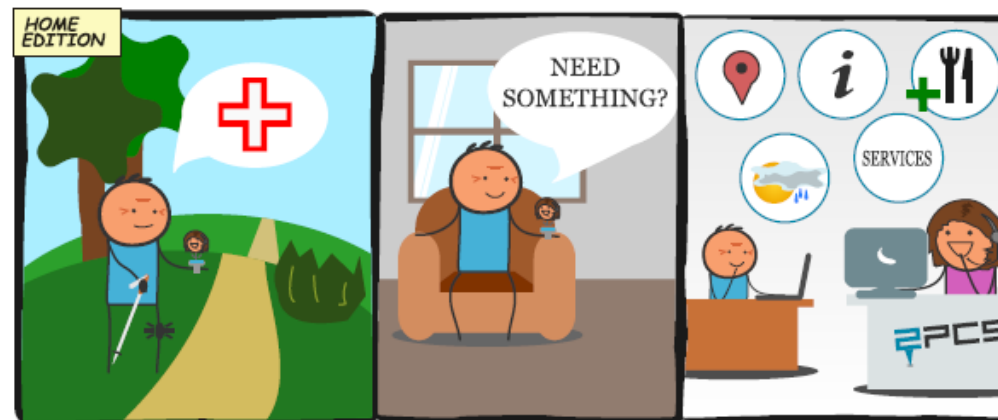


■ ■ ■ Relevance of method: for user-integration in 2PCS project (3-stage-likert-scale)



2PCS PRIVATE EDITION

- ▶ High activity and mobility level
- ▶ Focus on outdoor-usage
- ▶ Access to need- / local-based information and services
- ▶ Geo-tracking / data transfer to 2PCS platform



2PCS HOME EDITION

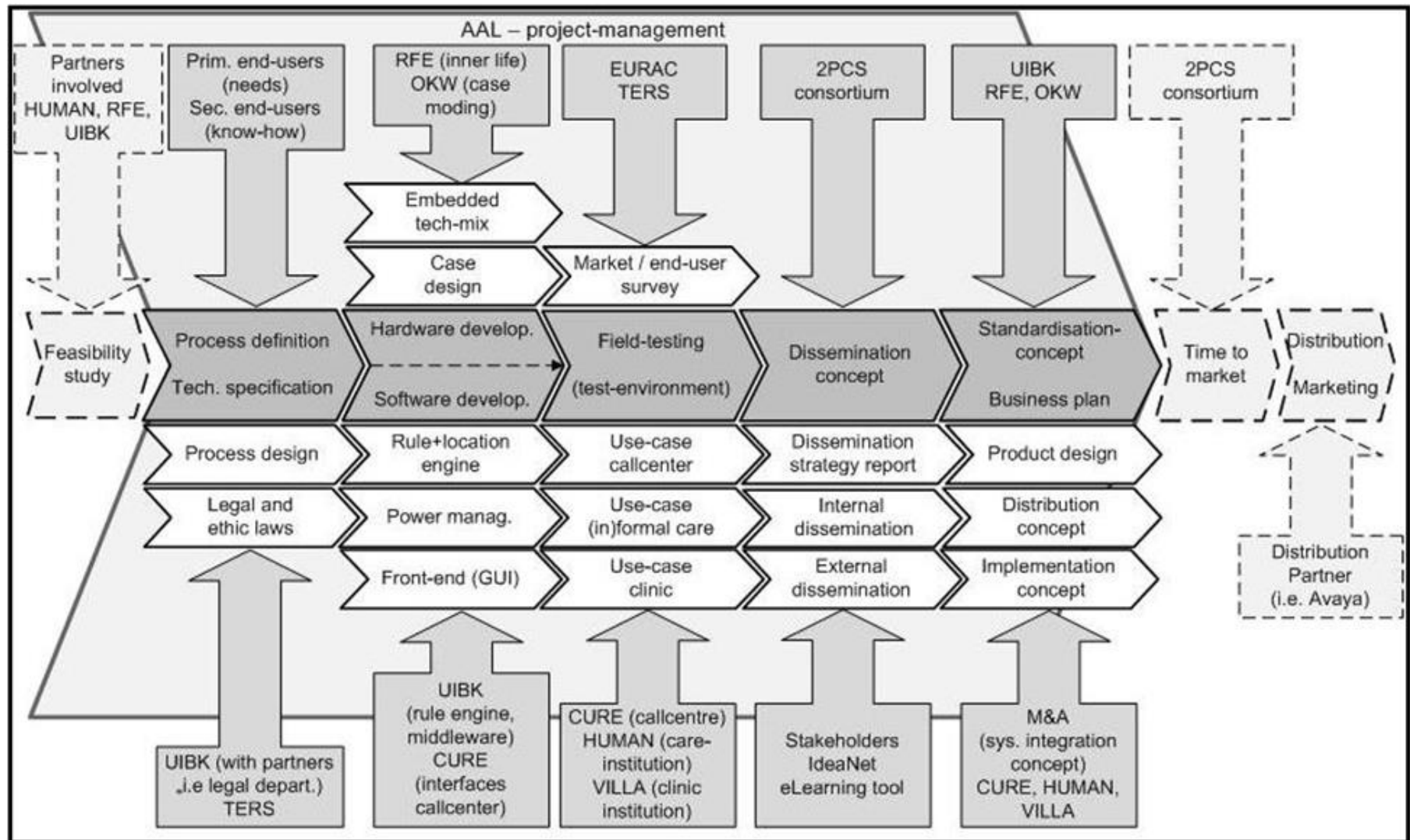
- ▶ Reduced activity and mobility level caused by falls, cognitive and / or physical impairment
- ▶ Additional access to home and nursing services
- ▶ Integration of informal & formal care processes / caregivers



2PCS BUSINESS EDITION

- ▶ Embedment of 2PCS system into to formal care structures / systems / processes
- ▶ Optimization of searching and emergency processes (missing / lost persons, falls, alarms, etc.)

2PCS value chain (during project)



Warum 2PCS anders ist?



► COMPLETED USER INTEGRATION – QUANTITATIVE ANALYSIS

	Edition	User	Methodology	Facility	Participants
QUANTITATIVE ANALYSIS	Business & Home¹	SE	Online questionnaire with 5 categories; 138 questions – depending on given responses	From AT, GER, IT, CH, NL ~ 29.000 contacted facilities in total	1263 participants 469 completed questionnaires
	Home	PE	Questionnaire via seniorweb.ch	Private persons CH	77
		PE	Questionnaire via clients of SRK	Private persons CH	176
	Private	PE	Online questionnaire focus on active and mobile persons; leisure activities, needs, design, needed functions & services...	Private Persons ²	864 participants 502 completed questionnaires

2380

PARTICIPANTS

¹ **Business Edition - Organization types**

- Residential care and / or assisted living (e.g. inpatient care, residential facility)
- Rehabilitation and / or clinic (ambulant, semi-residential und residential)

¹ **Home Edition - Organization types**

- Professional home care and home assistance / Nursing services – non-profit-organizations or service providers

² **Private Edition – Channels**

Sports clubs, travel agencies, tourist information, senior citizens' associations, students, social media platforms

Warum 2PCS anders ist?



► COMPLETED USER INTEGRATION – QUALITATIVE ANALYSIS

	Edition	User	Methodology	Facility	Participants
QUALITATIVE ANALYSIS	Business	PE	10 Workshops • Search field analysis • Look & Feel Tests with existing products	7 Facilities	36 participants
		SE	3 Focus group discussions 2 Workshops - Look & Feel Tests 5 Expert interviews 1 environmental analysis	16 Facilities	40 participants
	Home	PE	5 Workshops	3 Facilities	13 participants
		SE	11 Expert interviews	8 Facilities	11 participants
	Private	PE	1 Workshop	Private Persons	5 participants
		SE	5 Expert interviews	4 Facilities	5 participants

110
PARTICIPANTS

2PCS Impressionen



2PCS Impressionen



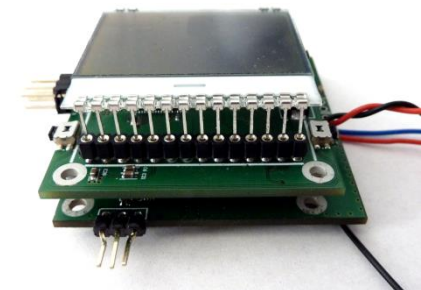
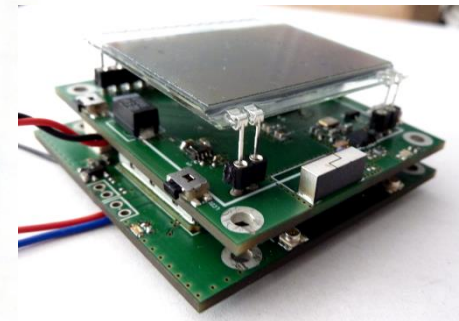
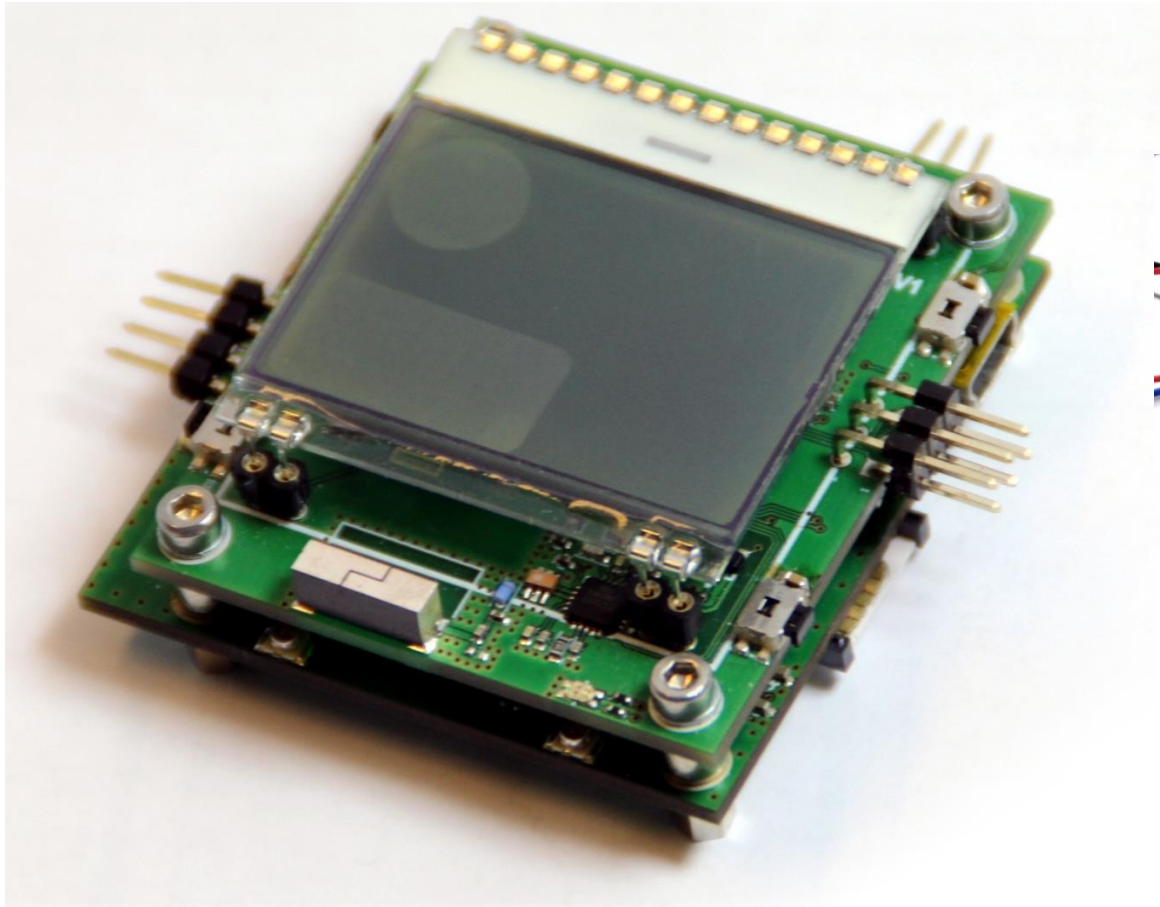
2PCS test plan



Country	Edition	Target Group	Target Group Size	Test periods	Resources	Call Center
Austria	BUSINESS	Residents & staff of Sozialzentrum Münster	5-10 people	Integration: 19.11.2012 – 04.01.2013 Field test: 04.02.2013 – 01.03.2013	Antennen x 30 Beta 1 x 3, Beta 2 x 7	Independent
Italy	BUSINESS	REHAB patients Villa Mellita	5-10 people	Integration: 01.05.2013 – 31.05.2013 Field test: 03.06.2013 – 28.06.2013 (18.07.2013)	Antennen x 30 Beta 2 x 8 Gamma x 10	Independent
Austria	PRIVATE	Private people	5 people	Field test: 29.07.2013 – 09.08.2013	Gamma x 6	ZHAW
Switzerland	PRIVATE	Students and staff members of ZHAW	20 people	Field test: 29.07.2013 – 09.08.2013	Antennen x 3 WLAN-Router x 3 USB-Stick mit SIM x 3 Gamma x 23	ZHAW
Italy	PRIVATE	Private people	5 people	Field test: 29.07.2013 – 09.08.2013	Gamma x 6	ZHAW
Italy	HOME	Ambulant REHAB patients / staff	5 people	Field test: 09.09.2013 – 04.10.2013	Gamma x 6	Curena
Italy	HOME	Mobile care clients	5 people	Field test: 09.09.2013 – 04.10.2013	Gamma x 6	Curena
Switzerland	HOME	Elderly active people	5 people	Field test: 09.09.2013 – 04.10.2013	Gamma x 11	Curena
Austria	HOME	Mobile care clients, Sozialsprengl Rum	5 people	Field test: 09.09.2013 – 04.10.2013	Gamma x 6	Curena
Switzerland	BUSINESS	Residents of Perlavita Rosenau	5 people	Integration: 01.08.2013 – 31.08.2013 Field test: 09.09.2013 – 04.10.2013	Antennen x 15 WLAN-Router x 8 Gamma x 6 Beta x 3	Curena

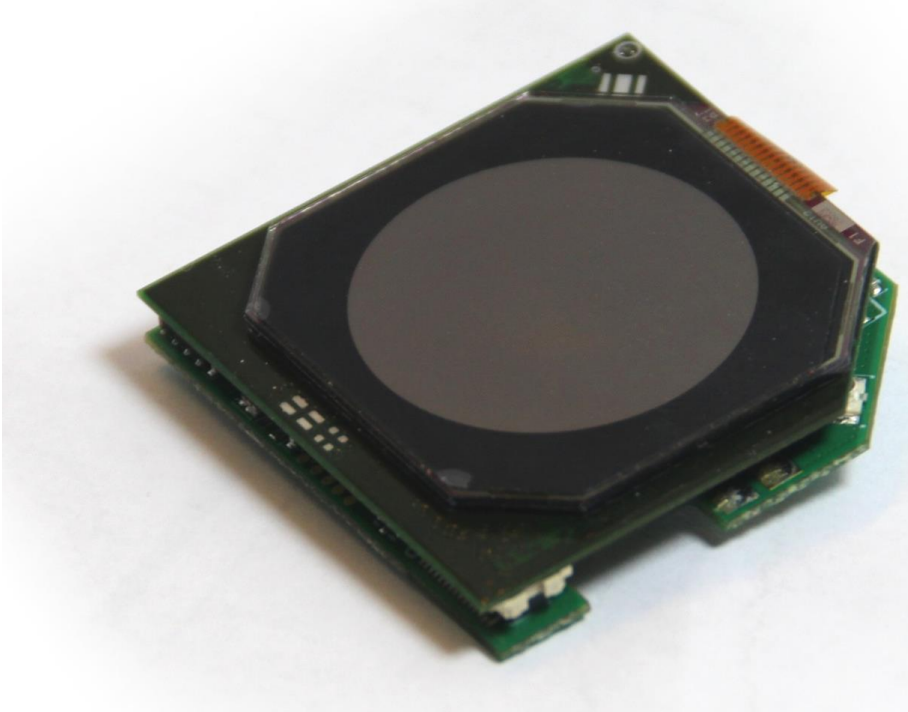
Hardware

► Prototype 1



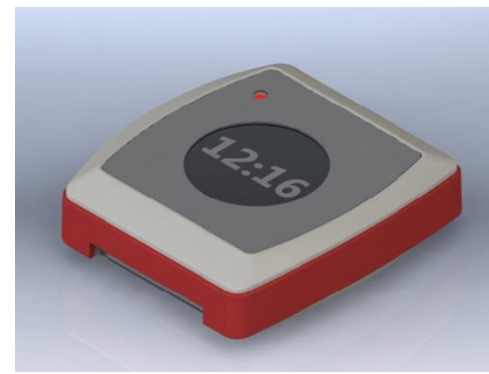
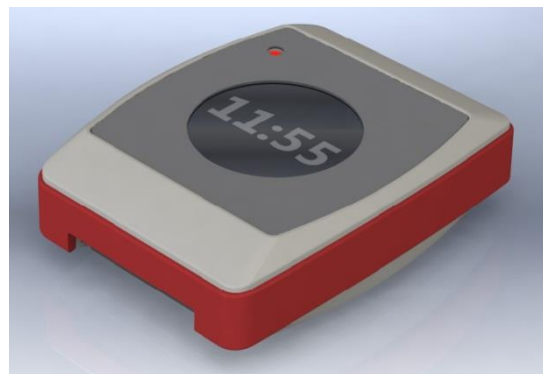
Hardware

► Prototype 2



Hardware

- ▶ Casing presented at the AAL Forum 2012 in Eindhoven
2PCS Alpha



Software: Web-based (Java)



- ▶ Front-end presented at the AAL Forum 2012 in Eindhoven

Testumgebung

Max Mustermann [IT-ADMIN]
☒ IT-Administrator

AKTIONEN & NOTRUFE

EINRICHTUNG

2PCS-GERÄT

INFO-EMPFANGSGERÄT

GEBÄUDEVERWALTUNG

BENUTZEREINSTELLUNGEN

RECHTEVERWALTUNG

SYSTEMEINSTELLUNGEN

NOTRUFE

NICHT ZUGEWIESENE NOTRUFE

Betrifft	Zeit	Typ
Keine Notrufe vorhanden		

ANGENOMMENENE NOTRUFE

Betrifft	Zeit	Typ
Keine Notrufe vorhanden		

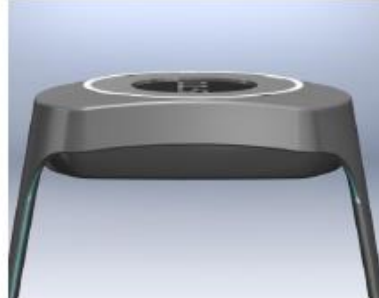
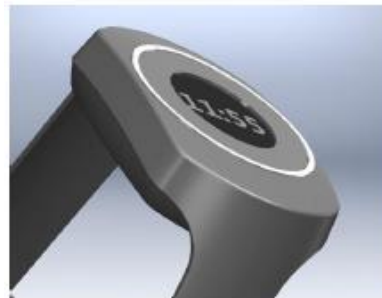
Hardware

- ▶ Casing November 2012
2PCS Beta



Hardware

- ▶ Casing January 2013
2PCS Gamma

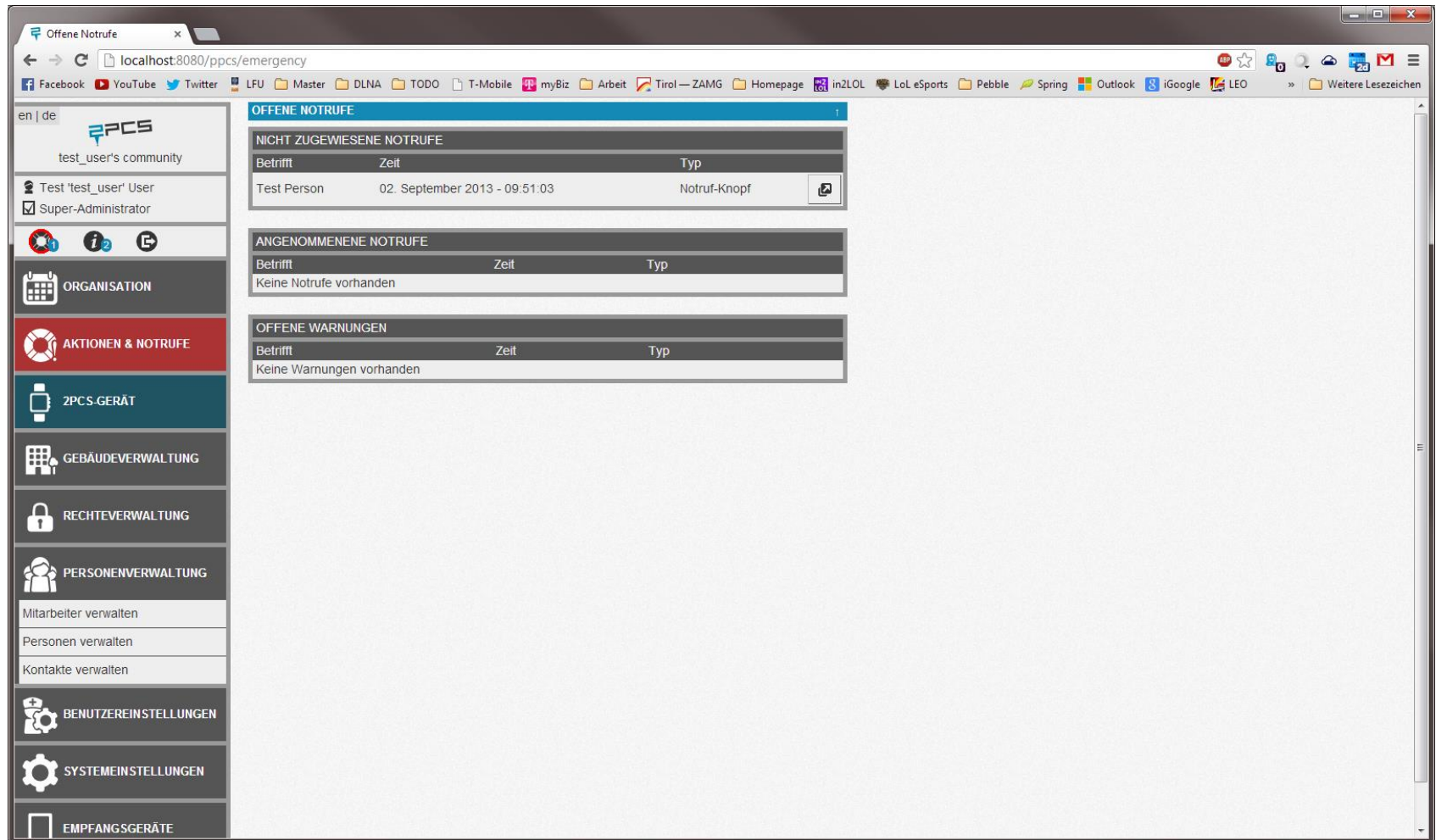


Hardware

- ▶ August 2013
2PCS Gamma



► August 2013



The screenshot shows the 2PCS emergency management software interface running in a web browser. The browser address bar shows the URL `localhost:8080/ppcs/emergency`. The interface is divided into a left sidebar and a main content area.

Left Sidebar:

- Language: en | de
- 2PCS logo
- test_user's community
- User: Test 'test_user' User
- Super-Administrator (checked)
- Navigation icons: Home, Help, Logout
- ORGANISATION (calendar icon)
- AKTIONEN & NOTRUFEN (lifebuoy icon)
- 2PCS-GERÄT (mobile phone icon)
- GEBÄUDEVERWALTUNG (building icon)
- RECHTEVERWALTUNG (lock icon)
- PERSONENVERWALTUNG (people icon)
 - Mitarbeiter verwalten
 - Personen verwalten
 - Kontakte verwalten
- BENUTZEREINSTELLUNGEN (gear icon)
- SYSTEMEINSTELLUNGEN (gear icon)
- EMPFANGSGERÄTE (antenna icon)

Main Content Area:

OFFENE NOTRUFEN

NICHT ZUGEWIESENE NOTRUFEN

Betrifft	Zeit	Typ
Test Person	02. September 2013 - 09:51:03	Notruf-Knopf

ANGENOMMENENE NOTRUFEN

Betrifft	Zeit	Typ
Keine Notrufe vorhanden		

OFFENE WARNUNGEN

Betrifft	Zeit	Typ
Keine Warnungen vorhanden		

► August 2013

en | de



test_user's community

 Test 'test_user' User

☒ Super-Administrator









ORGANISATION



AKTIONEN & NOTRUF



2PCS-GERÄT

OFFENE NOTRUF

NICHT ZUGEWIESENE NOTRUF

Betrifft	Zeit	Typ
Keine Notrufe vorhanden		

ANGENOMMENENE NOTRUF

Betrifft	Zeit	Typ
Test Person	02. September 2013 - 09:51:03	Notruf-Knopf

OFFENE WARNUNGEN

Betrifft	Zeit	Typ
Keine Warnungen vorhanden		

Hardware

- ▶ November 2013
2PCS Delta V1



Software



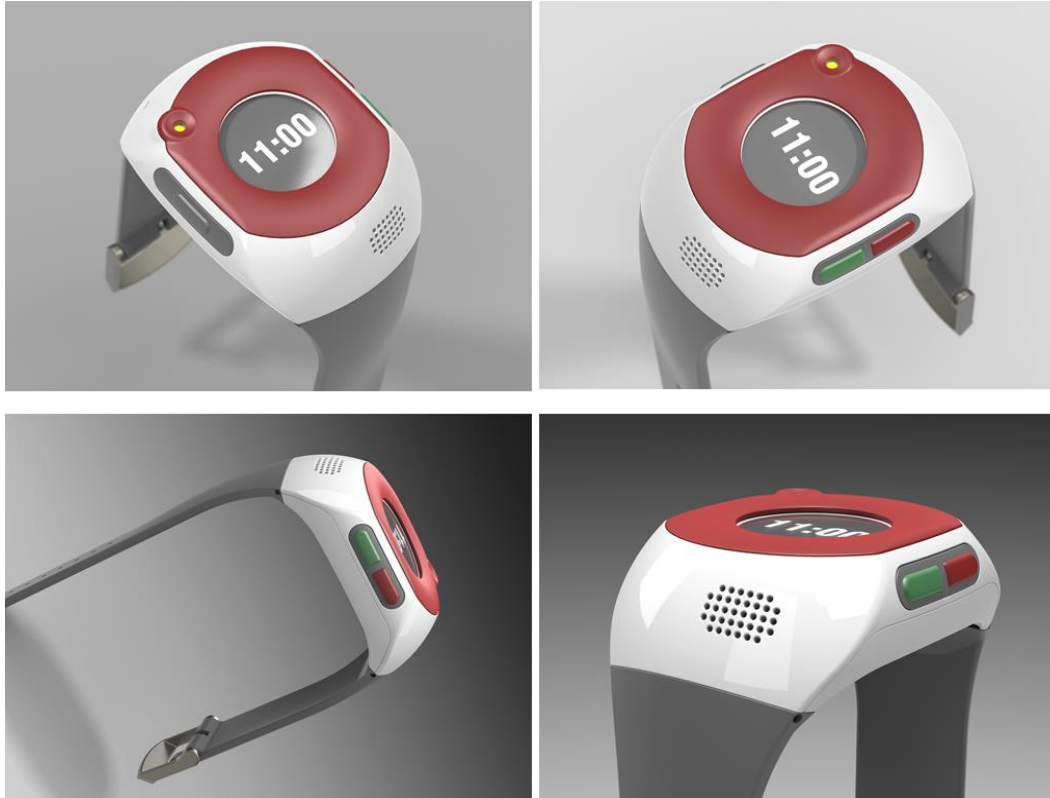
- ▶ December 2013
2PCS Delta V1

The screenshots display the 2PCS Delta V1 software interface, which is a web-based system for managing emergency calls and personnel. The interface is divided into several sections:

- Offene Notrufe (Emergency Calls):** Shows a list of open emergency calls with columns for 'Beitrag' (Contribution), 'Zeit' (Time), and 'Typ' (Type). It also includes a section for 'ANGENOMMENNE NOTRUF' (Accepted Calls) and 'OFFENE WARNUNGEN' (Open Warnings).
- Personen verwalten (Manage Personnel):** Displays a list of personnel with columns for 'Suche' (Search), 'Suchbegriff' (Search Term), and 'Status'. It includes a 'Person suchen' (Search Person) button and a 'Personen Check-Out' button.
- Aktionsplan Vorlagen (Action Plan Templates):** Shows a list of action plan templates with columns for 'Aktions-Typ' (Action Type), 'Zeitraum' (Time Period), 'Stufe' (Level), and 'Mitarbeiter' (Employee). It includes a 'SPEICHERN' (Save) button and a 'CHECK-OUT EINTRÄGE' (Check-out Entries) section.
- Angenommener Notruf (Accepted Call):** Displays details for an accepted call, including the 'Notruf-Knopf' (Call Button), 'Notruf-Angekommen: ANGELA 'LANGEVELD' LANGEVELD', and 'SOS - Notruf-Knopf: Max van Mustermann'. It includes a 'Dokumentation' (Documentation) section and a 'Größere Kartenansicht' (Larger Map View) section.

Hardware

- ▶ January 2014
2PCS Delta V2



Partners / Funding

Partner



curena



MIELOO & ALEXANDER
Business Integrators



HUMANOCARE



Funding Agencies



FFG



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra



ZonMw

Co-Funded by



Thank you for your attention



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