Project Number:	**297178**
Acronym:	**FATE**
Title:	**Fall Detector for the Elder**
Call (part) identifier:	CIP-ICT-PSP-2011-5
Start date:	01/03/2012
Duration:	36 months

D6.4 FATE Printed dissemination material Brochures and leaflets

Nature[1]: O
Dissemination level[2]: PU
Due date: Month 25
Date of delivery: Month 29
Partners involved (leader in bold): **TICSALUT**, UPC, TER, COOSS, ATEK, HCPB, FLOW
Authors: Enric Llopis (TICSALUT)

[1] R = Report, P = Prototype, D = Demonstrator, O = Other

[2] PU = Public, PP = Restricted to other programme participants (including the Commission Services), RE= Restricted to a group specified by the consortium (including the Commission Services), CO = Confidential, only for members of the consortium (including the Commission Services)

DISCLAIMER

The work associated with this report has been carried out in accordance with the highest technical standards and the FATE partners have endeavoured to achieve the degree of accuracy and reliability appropriate to the work in question. However since the partners have no control over the use to which the information contained within the report is to be put by any other party, any other such party shall be deemed to have satisfied itself as to the suitability and reliability of the information in relation to any particular use, purpose or application.

Under no circumstances will any of the partners, their servants, employees or agents accept any liability whatsoever arising out of any error or inaccuracy contained in this report (or any further consolidation, summary, publication or dissemination of the information contained within this report) and/or the connected work and disclaim all liability for any loss, damage, expenses, claims or infringement of third party rights.

Revision history

Date	Partner	Name	Description
17/7/2014	TICSALUT	Enric Llopis	Initial release
18/7/2014	TER, FLOW, ATEK, HCPB	Responsibles	Contributing and updating material2
22/7/2014	UPC	J. Cabestany	Revision and final acceptance

List of figures

Table of contents

1. Introduction

1.1 Project overview and purpose of this document

FATE "Fall Detector for the Elder" is a project with a very well identified objective: the correct detection of the falls occurring with elderly people. Additionally, FATE complementary main objectives are the contribution to the reduction of the fear of falling and the prevention of the long lie syndrome.

The FATE system, constituted by a highly sensitive fall detector based in accelerometers complemented by a telecommunications layer based in wireless technologies, will be able to detect falls both at home and outside. Detected falls will be automatically communicated to relatives or health providers (112) through the specific call centers. If the user is outside home, the mobile phone will also send the location using localization services based on GSM triangulation and GPS.

In persons suffering the biggest gait difficulties, the system will be also complemented by the i-Walker, an intelligent walker designed to minimize the risk of falls of those elders with greatest gait difficulties.

The aim of this document is the presentation and description of the printed dissemination material prepared by the project partners that is going to be used during all the project life time to guarantee a good dissemination.

The present Deliverable 6.4 shows diverse printed material prepared to be used with dissemination purposes that all partners who attending workshops and other events can use. As it will be explain and show, each pilot site has developed specific material to hand to the stakeholders, and especially to that one involved in the pilot development. The reason to develop different brochures and/or leaflets is due to the necessity to adapt the explanation of FATE project and other information to the casuistry of each particular country.

2. Printed dissemination material

2.1 Brochure description

FATE has designed and produced one project brochure, edited in three languages: English, Italian, and Hungarian (Figure 1, 2 and 3) to increase the project dissemination using regional and national languages that all stakeholders can understand. The aim of this guide is to be used as a dissemination element to distribute in the events and also to introduce the project to potential pilot patients and interested groups.

Due to the aim and the target of these brochures, the tone used varies according on the brochure explanations/information and which stakeholder group could be more interested in that specific part. In any case, if the predominant tone should be defined, it is the neutral one, where deep technical explanations about how the system works is avoided, but obviously, some mechanical aspects had been described.

Once the brochure is folded, the first thing that the reader sees in the front side is the name and the logo of the project. It is important mentioned that the palette of colour used to edit the brochures, follow the line style of the project, and use shades of pink, purple mixed with blue tones.

At the back side of the brochure appear the details of the Project coordinator partner (Universitat Politècnica de Catalunya-CETpD) and its main contact person: Dr. Joan Cabestany Monousi. Also in this side the project web site is mentioned http://www.project-fate.eu, and the Competitiveness and Innovation Framework Programme (CIP) logo behind the EU flag.

After open the first page, the audience can see (at the right side) the locations where the three pilots are taking place: Ireland, Spain and Italy, as well as the name and country of all the members of the consortium: *Universitat Politècnica de Catalunya (Spain), Emergency Response Limited (Ireland), Cooperative Sociale COOSS Marche Onlus Societa Cooperativa Per Azione (Italy), ATEKNEA Solutions Hungary Limited Liability Company (Hungary), National University of Ireland (Ireland), FlowLab Proyectos de Innovación S.L. (Spain), Hospital Clínic i Provincial de Barcelona (Spain), Fundació TicSalut (Spain), Fondazione Santa Lucia (Italy), Sistema d'Emergencies Mèdiques (Spain)*.

At the other side (left one) the scope and the objective of the project are disclosed. Below the text, as a visual support, there is a pictogram of the FATE system.

The scope defined FATE as a more complete and well integrated ICT solution and also a care model focused on strengthening Public and Private collaboration to reach a reliable service.

The FATE objective outline in the brochure is to widely validate an innovative and efficient ICT-based solution focused on improving the elder's quality of life by an accurate detection of falls, both at home and outdoors. Additionally the project aims to demonstrate the integration feasibility of the detection solution into actual care solutions.

Finally, when the last sheet is opened, it is possible to see the explanation of the FATE Solution in the middle, as well as its contribution, at the right side.

The central part of the opened brochure describes briefly the FATE Solution, naming the main and secondary elements.

Main elements described are:

- A highly sensitive fall detector incorporating accelerometers, capable of running a complex, specific fall detection algorithm in order to provide accurate fall detection.
- The telecommunications layer based in wireless technologies consists of an indoor Zigbee network, a central computer and a mobile phone communicated with the central computer and the fall sensor via Bluetooth. All incidences and measures will be stored in a server to be used as a monitoring data for the carers/doctors improving patient fall prevention and treatment. Once detected and confirmed, fall events will be communicated to relatives or health service providers (112) through the specific call centres set in every country.

Secondary elements described are:

- A bed presence sensor to dismiss false fall positives, detect potential health problems or behaviour anomalies and detect falls from the bed.
- As an optional element, for persons suffering the significant gait difficulties, the system will be also complemented by the i-Walker, an intelligent walker designed to support elders with significant gait difficulties.

At the Contributions side, the big problem of falls in ageing people and the factors contributing a great majority of falls is pointed up. The factors referred to are the aging process itself, chronic health problems (diseases of heart, problems in eyes, poor vision, muscle weakness, dementia, arthritis, …), physical and functional impairments (lower extremity weakness, balance disorders), medications and alcohol abuse, and hazards and obstacles in the home (poor lighting, lack of bathroom safety equipment, loose carpets). Moreover, it emphasizes the system proposed and tested in FATE is a solution for the correct detection of falls. The complete solution will improve the prevention of falls in affected ageing people for the following reasons:

- The automatic detection of a fall with very low error rate.
- The localization of where the fall occurred, facilitating the intervention.
- The improvement of the fear of falling (FOF) effect.
- The use of the iWalker when necessary for mobility improvement and its eventual contribution to rehabilitation.
- The definitive improvement of the "long-lie" syndrome.
- The precise detection of falls for people with low cognitive problems like memory loses is a critical factor for the prescription of a rehabilitation program.

As it was mentioned above, the brochure is translated to Italian and Hungarian languages to disseminate the FATE message over the cross border.

Figure 1a. Side A of FATE Brochure in English

Figure 1b. Side B of FATE Brochure in English

Figure 2a. Side A of FATE Brochure in Italian.

Figure 2b. Side B of FATE Brochure in Italian

Figure 3a. Side A of FATE brochure in Hungarian

Figure 3b. Side B of FATE Brochure in Hungarian

2.2 Leaflet description

The Universitat Politècnica de Catalunya (UPC) and Fundacio TicSalut partner have developed different leaflets to distribute to the pilot patients. The aim of those leaflets is to give some guideline and good practice to use the FATE system. These leaflets describe FATE project and show all system equipment (cell phone, sensor, computer, detector, routers and bed sensor).

The first leaflet (Figure 4a and 4b) explains the FATE project and describes briefly the FATE project, the stakeholders and the study. Also the leaflet shows through several pictures all the system parts (cell phone, computer, detector, routers and bed sensor) and explain to the users and relatives the meaning of light indicator sensor (pink, green, blue, and red) by pictures and words.

Moreover, the leaflet includes three use system tips to remain to the final users:

- Charge the cell phone and the sensor every night before going to sleep
- Do not wear the sensor when you are going to take a shower, not for yourself instead for do not damage the sensor
- Do not install an app since could interfere with its normal working

El detector de caigudes

Utilització del sistema

- Fora de casa s'haurà de portar sempre el telèfon mòbil, en cas contrari el detector produirà un so d'alarma.
- Dins de casa el telèfon mòbil s'haurà de deixar connectat al carregador.
- Si es detecta una caiguda el detector produirà un senyal acústic d'alarma, i després d'uns moments el telèfon mòbil mostrarà un avís.
- Si la caiguda detectada és autèntica no cal fer res, el telèfon mòbil s'encarregarà de contactar automàticament amb el serveis d'emergències i aquest contactarà amb vostè poc després.
- Si es detecta una caiguda però aquesta no és autèntica es pot cancel·lar l'enviament de l'alarma al servei d'emergències polsant el botó de pànic o polsant sobre el botó que mostrarà la pantalla del telèfon mòbil.
- Encara que vostè no hagi tingut una caiguda, en cas d'emergència pot enviar un missatge d'alarma al centre d'emergències polsant el botó de pànic.

Indicador lluminós del sensor

Període de cortesia, 5 minuts mentre s'està vestint.

El sistema funciona correctament.

Fix: El sensor s'està carregant.

Intermitent: el sistema funciona correctament.

Amb so d'alarma: Caiguda o mòbil oblidat a casa.

Sense so: La bateria del sensor s'està esgotant.

Important

- El mòbil i el detector de caigudes s'han de posar a carregar cada nit abans d'anar a dormir.
- No porti el detector de caigudes posat si s'ha de banyar o prendre una dutxa. Tot i que no és perillós per vostè, això podria malmetre el sensor.
- No instal·li cap aplicació amb el telèfon mòbil, doncs això podria interferir amb el seu normal funcionament.

Competitiveness and Innovation Framework Programme
CIP-Pilot actions 2007-2013 297178
Fall Detector for the Elder

Informació del projecte FATE

Projecte FATE: Detector de caigudes per a la gent gran

Què és el projecte FATE?

FATE és un projecte finançat per la Comissió Europea que té com a objectiu principal el desenvolupament d'un sistema de detecció precisa i automàtica de caigudes en persones. En el moment en que es decteta una caiguda el sistema genera automàticament un missatge d'alarma adreçat a un servei d'emerències. El sistema detecta caigudes que es produeixin tant a casa com al carrer.
Per tal de comprovar el correcte funcionament del sistema s'està fent un estudi que implica la participació de potencials usuaris reals del sistema.

A qui s'adreça?

A persones més grans de 64 anys amb risc de patir caigudes.

Quina és la durada de l'estudi?

La durada total de l'estudi és de 16 mesos, dividida en tres períodes:

- **Intervenció (6 mesos):** L'usuari utilitza el sistema FATE i rep una trucada setmanal i una visita mensual on haurà de respondre una sèrie de qüestionaris d'avaluació.
- **Descans (4 mesos):** L'usuari no té cap relació amb l'estudi.
- **Control (6 mesos):** L'usuari no utilitza el sistema FATE, però rep una trucada setmanal i una visita mensual on haurà de respondre una sèrie de qüestionaris d'avaluació.

La seqüència de períodes per a un usuari pot ser intervenció-descans-control o control-descans-intervenció. Aquesta seqüència li serà comunicada per la seva infermera referent.

El sistema FATE

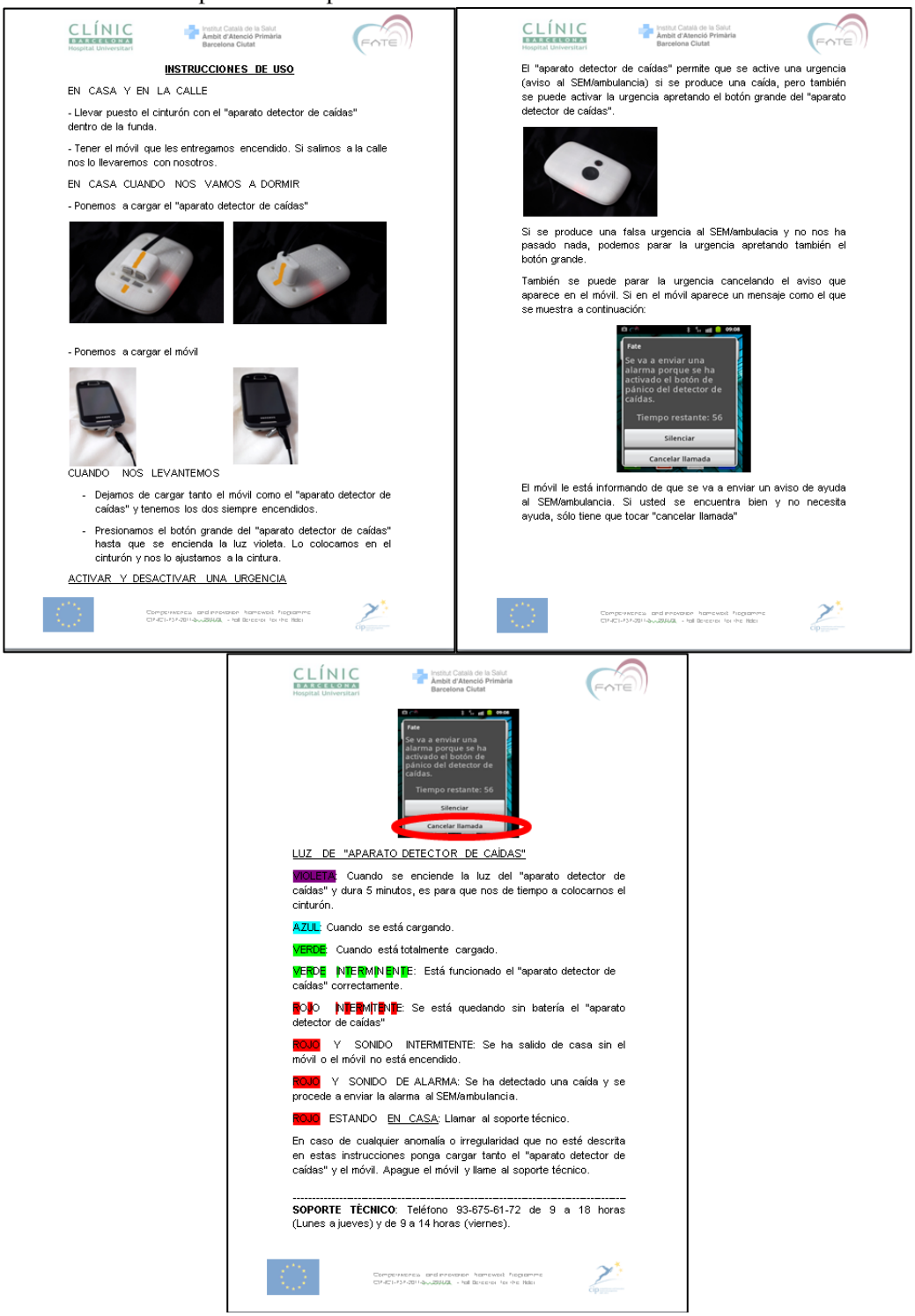
- Tots el materials del sistema FATE li seran subministrats a l'usuari durant el període d'intervenció.
- Els materials del sistema FATE és per a ús personal seu, i és intransferible a altres persones (parella, veïns, familiars, etc.).
- El sistema FATE serà instal·lat i provat a casa de l'usuari per personal tècnic qualificat.
- El dia en que es faci la instal·lació l'usuari rebrà un entrenament en la utilització del sistema.
- Per participar a l'estudi és necessari que al dormitori hi hagi cobertura mòbil de dades.

Figure 4a and 4b. Catalan FATE Pilot leaflet (side a and b)

The second leaflet, in addition to the previous information, describes a guideline in the case of fall (Figure 5a and 5b). This second leaflet is more focused to the final user, and the tone used in it is more simple and clear. In it is described step by step what the users have to do in case of fall.

Figure 5a and 5b. Catalan FATE Pilot leaflet (II) (side a and b)

The third one (Figure 6) was developed with the aim to give to the final users who participate in the pilots one very simple and clear document that help them understand what they have to do and who they use the whole FATE system. The explanation include if they stay at home or they go outside and when they go to sleep or wake up. The second part of the document explain how active or stop an alarm and the color code used by the system. It's important note the all explanations are accompanied with pictures.



INSTRUCCIONES DE USO

EN CASA Y EN LA CALLE

- Llevar puesto el cinturón con el "aparato detector de caídas" dentro de la funda.

- Tener el móvil que les entregamos encendido. Si salimos a la calle nos lo llevaremos con nosotros.

EN CASA CUANDO NOS VAMOS A DORMIR

- Ponemos a cargar el "aparato detector de caídas"

- Ponemos a cargar el móvil

CUANDO NOS LEVANTEMOS

- Dejamos de cargar tanto el móvil como el "aparato detector de caídas" y tenemos los dos siempre encendidos.
- Presionamos el botón grande del "aparato detector de caídas" hasta que se encienda la luz violeta. Lo colocamos en el cinturón y nos lo ajustamos a la cintura.

ACTIVAR Y DESACTIVAR UNA URGENCIA

El "aparato detector de caídas" permite que se active una urgencia (aviso al SEM/ambulancia) si se produce una caída, pero también se puede activar la urgencia apretando el botón grande del "aparato detector de caídas".

Si se produce una falsa urgencia al SEM/ambulacia y no nos ha pasado nada, podemos parar la urgencia apretando también el botón grande.

También se puede parar la urgencia cancelando el aviso que aparece en el móvil. Si en el móvil aparece un mensaje como el que se muestra a continuación:

El móvil le está informando de que se va a enviar un aviso de ayuda al SEM/ambulancia. Si usted se encuentra bien y no necesita ayuda, sólo tiene que tocar "cancelar llamada"

LUZ DE "APARATO DETECTOR DE CAÍDAS"

VIOLETA: Cuando se enciende la luz del "aparato detector de caídas" y dura 5 minutos, es para que nos de tiempo a colocarnos el cinturón.

AZUL: Cuando se está cargando.

VERDE: Cuando está totalmente cargado.

VERDE INTERMINENTE: Está funcionado el "aparato detector de caídas" correctamente.

ROJO INTERMITENTE: Se está quedando sin batería el "aparato detector de caídas"

ROJO Y SONIDO INTERMITENTE: Se ha salido de casa sin el móvil o el móvil no está encendido.

ROJO Y SONIDO DE ALARMA: Se ha detectado una caída y se procede a enviar la alarma al SEM/ambulancia.

ROJO ESTANDO EN CASA: Llamar al soporte técnico.

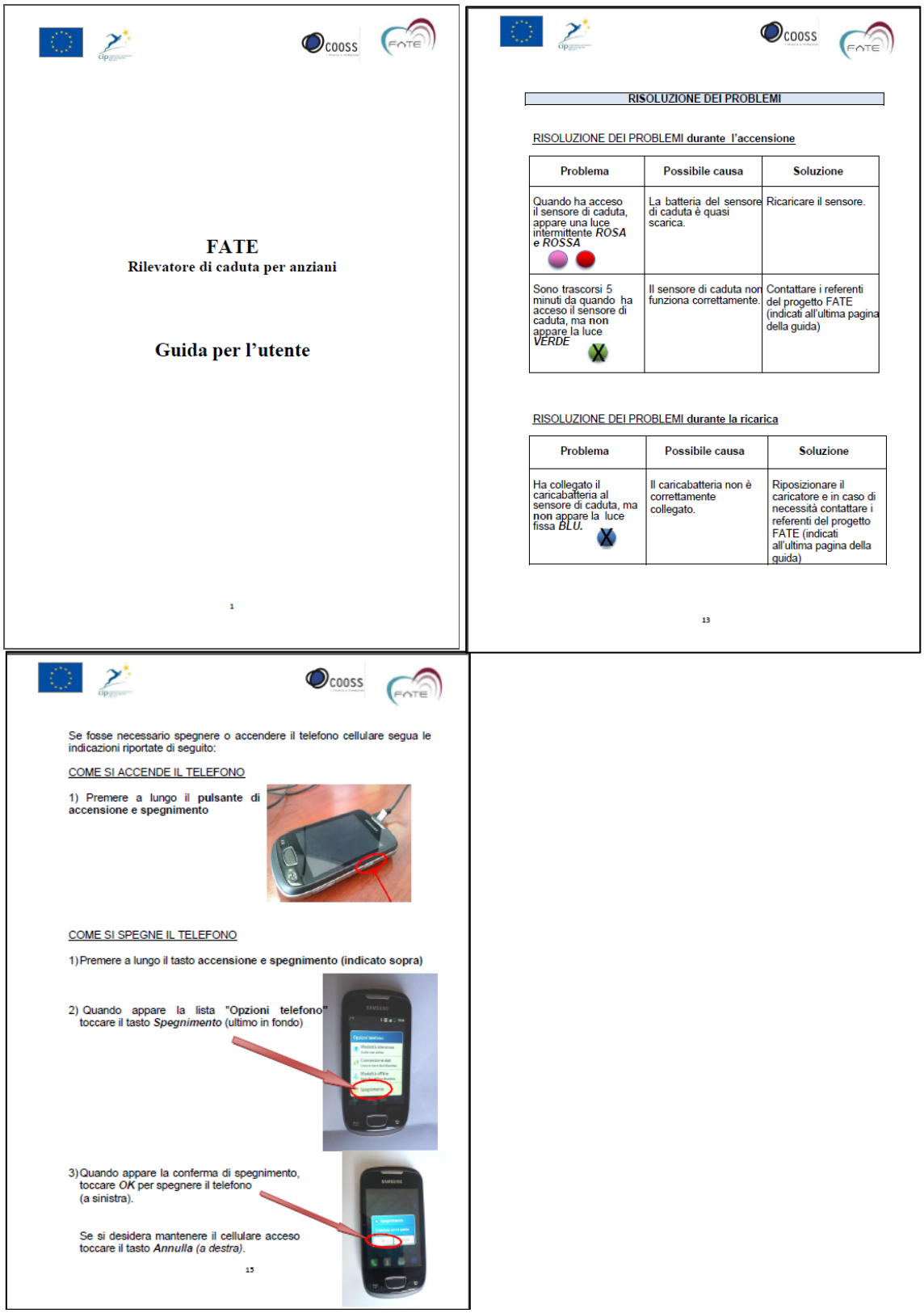
En caso de cualquier anomalía o irregularidad que no esté descrita en estas instrucciones ponga cargar tanto el "aparato detector de caídas" y el móvil. Apague el móvil y llame al soporte técnico.

SOPORTE TÉCNICO: Teléfono 93-675-61-72 de 9 a 18 horas (Lunes a jueves) y de 9 a 14 horas (viernes).

Figure 6. Catalan user guide

Similar to the Catalan pilot, COOSS partner that is in charge of the Italian pilot has designed a simplified user guide (Figure 7) (Annex 1) to inform end users and relatives about the use of the FATE technology. This guide, 24 pages long, includes a wide explanation of the whole FATE system explaining it step by step. Combined with the explanations photos and colour code pictograms are used in order to give the main indications for correct operation, and a brief explanation of the pilot implementation process.

The guide, that was upgraded during the project life, according to the users' feedbacks and requests, is composed by two main chapters. The first one is related with the Fate system, and an explanation about how it is used, the alarms, the cell phone messages and the call center assistance is included.
The second part of the document is relates with the components of the FATE system. The firsts component described is the fall sensor, followed by the cell phone, the bed sensor, the router and, finally, the computer.
To close the guide, there is an explanation of the colors used by the system.



FATE
Rilevatore di caduta per anziani

Guida per l'utente

1

RISOLUZIONE DEI PROBLEMI

RISOLUZIONE DEI PROBLEMI **durante l'accensione**

Problema	Possibile causa	Soluzione
Quando ha acceso il sensore di caduta, appare una luce intermittente *ROSA e ROSSA*	La batteria del sensore di caduta è quasi scarica.	Ricaricare il sensore.
Sono trascorsi 5 minuti da quando ha acceso il sensore di caduta, ma **non** appare la luce *VERDE*	Il sensore di caduta non funziona correttamente.	Contattare i referenti del progetto FATE (indicati all'ultima pagina della guida)

RISOLUZIONE DEI PROBLEMI **durante la ricarica**

Problema	Possibile causa	Soluzione
Ha collegato il caricabatteria al sensore di caduta, ma **non** appare la luce fissa *BLU.*	Il caricabatteria non è correttamente collegato.	Riposizionare il caricatore e in caso di necessità contattare i referenti del progetto FATE (indicati all'ultima pagina della guida)

13

Se fosse necessario spegnere o accendere il telefono cellulare segua le indicazioni riportate di seguito:

COME SI ACCENDE IL TELEFONO

1) Premere a lungo il **pulsante di accensione e spegnimento**

COME SI SPEGNE IL TELEFONO

1) Premere a lungo il tasto **accensione e spegnimento (indicato sopra)**

2) Quando appare la lista "**Opzioni telefono**" toccare il tasto *Spegnimento* (ultimo in fondo)

3) Quando appare la conferma di spegnimento, toccare *OK* per spegnere il telefono (a sinistra).

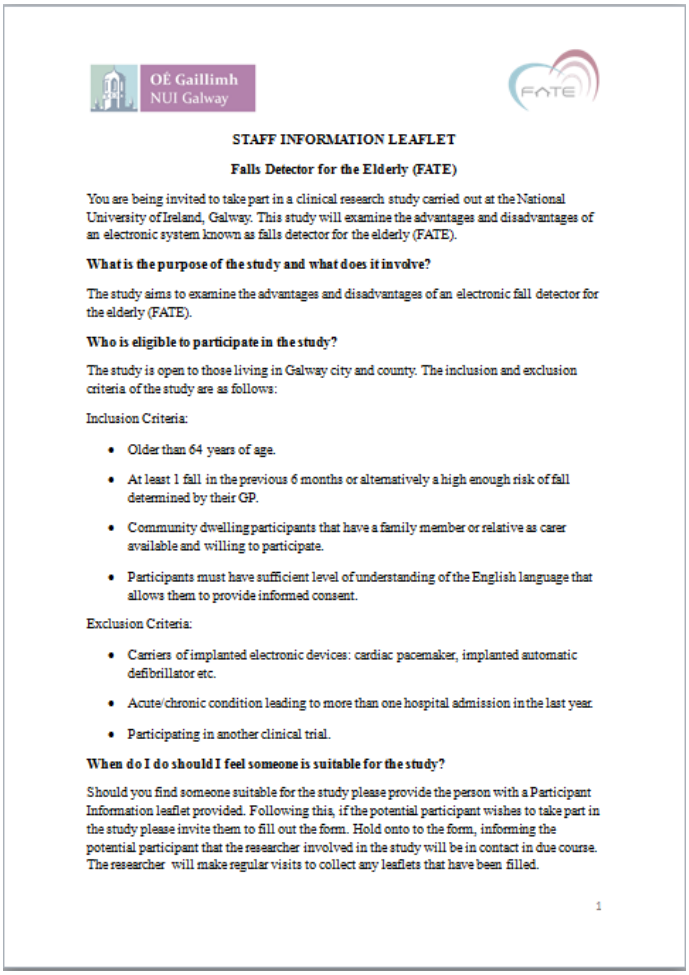
Se si desidera mantenere il cellulare acceso toccare il tasto *Annulla (a destra).*

15

Figure 7. Italian user guide.

The partner in charge of the third pilot site, NUIG from Ireland, prepared and developed different leaflets to handed to different stakeholders in different moments of the project life time. At the beginning of the project, NUIG had developed four information leaflets: two (one brief and one long) to the participants and another two (one brief and one long) to the staff.

The staff brief info leaflet (Figure 8) was used at the first moment to inform to the University staff about the study. This document put the attention in explain the aim of the project, the purpose of the study, and also the eligible criteria to select the participants (end users) and the some tips to enrol them. Once the staff identified one potential study participant, they give to them the participant brief leaflet to inform about the project and capture they interest in participate.
In the case of the staff did not completely sure if they can help or collaborate with the study, they had more information in to the extended leaflet (Figure 9 and Annex 2). In it the same information as the brief one is written, but little more enlarged, also when is it happening. Finally, they had the option to gave their detail to had further information.



OÉ Gaillimh
NUI Galway

STAFF INFORMATION LEAFLET

Falls Detector for the Elderly (FATE)

You are being invited to take part in a clinical research study carried out at the National University of Ireland, Galway. This study will examine the advantages and disadvantages of an electronic system known as falls detector for the elderly (FATE).

What is the purpose of the study and what does it involve?

The study aims to examine the advantages and disadvantages of an electronic fall detector for the elderly (FATE).

Who is eligible to participate in the study?

The study is open to those living in Galway city and county. The inclusion and exclusion criteria of the study are as follows:

Inclusion Criteria:

- Older than 64 years of age.
- At least 1 fall in the previous 6 months or alternatively a high enough risk of fall determined by their GP.
- Community dwelling participants that have a family member or relative as carer available and willing to participate.
- Participants must have sufficient level of understanding of the English language that allows them to provide informed consent.

Exclusion Criteria:

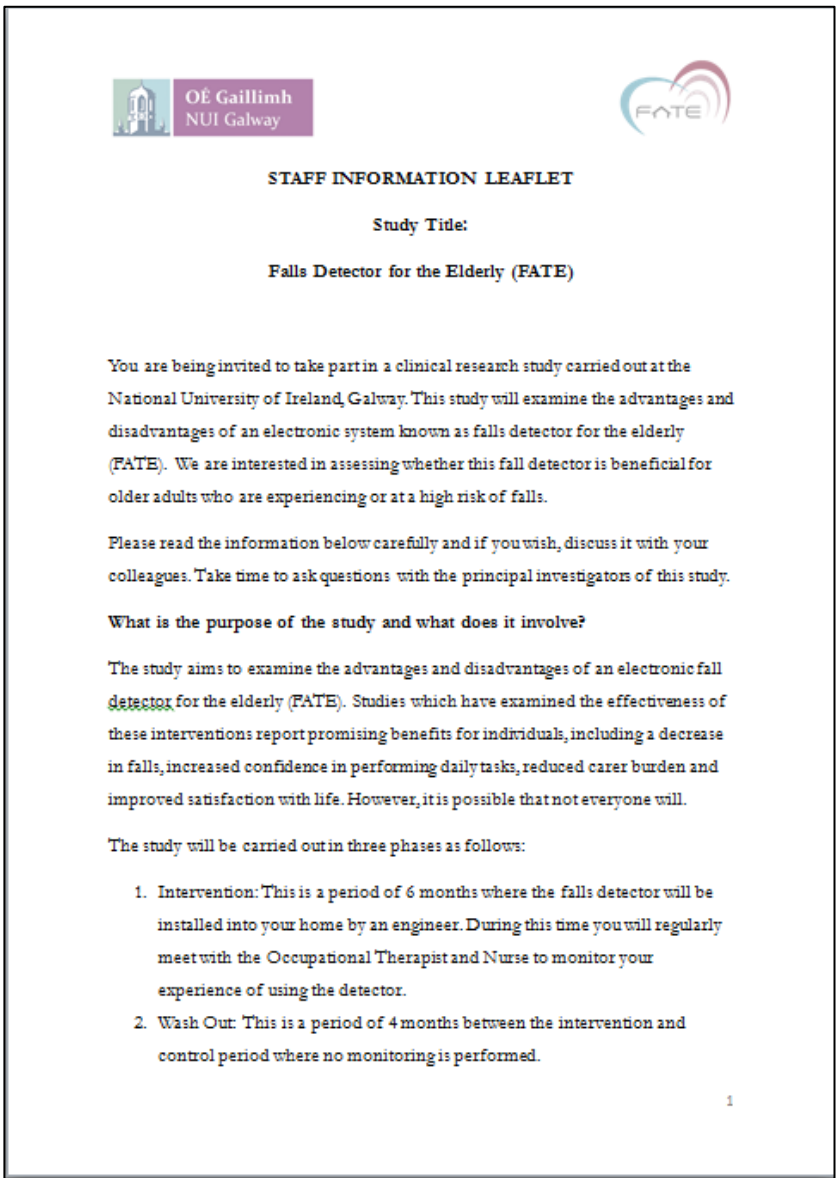
- Carriers of implanted electronic devices: cardiac pacemaker, implanted automatic defibrillator etc.
- Acute/chronic condition leading to more than one hospital admission in the last year.
- Participating in another clinical trial.

When do I do should I feel someone is suitable for the study?

Should you find someone suitable for the study please provide the person with a Participant Information leaflet provided. Following this, if the potential participant wishes to take part in the study please invite them to fill out the form. Hold onto to the form, informing the potential participant that the researcher involved in the study will be in contact in due course. The researcher will make regular visits to collect any leaflets that have been filled.

1

Figure 8. The staff brief info leaflet from NUIG partner



OÉ Gaillimh
NUI Galway

STAFF INFORMATION LEAFLET

Study Title:

Falls Detector for the Elderly (FATE)

You are being invited to take part in a clinical research study carried out at the National University of Ireland, Galway. This study will examine the advantages and disadvantages of an electronic system known as falls detector for the elderly (FATE). We are interested in assessing whether this fall detector is beneficial for older adults who are experiencing or at a high risk of falls.

Please read the information below carefully and if you wish, discuss it with your colleagues. Take time to ask questions with the principal investigators of this study.

What is the purpose of the study and what does it involve?

The study aims to examine the advantages and disadvantages of an electronic fall detector for the elderly (FATE). Studies which have examined the effectiveness of these interventions report promising benefits for individuals, including a decrease in falls, increased confidence in performing daily tasks, reduced carer burden and improved satisfaction with life. However, it is possible that not everyone will.

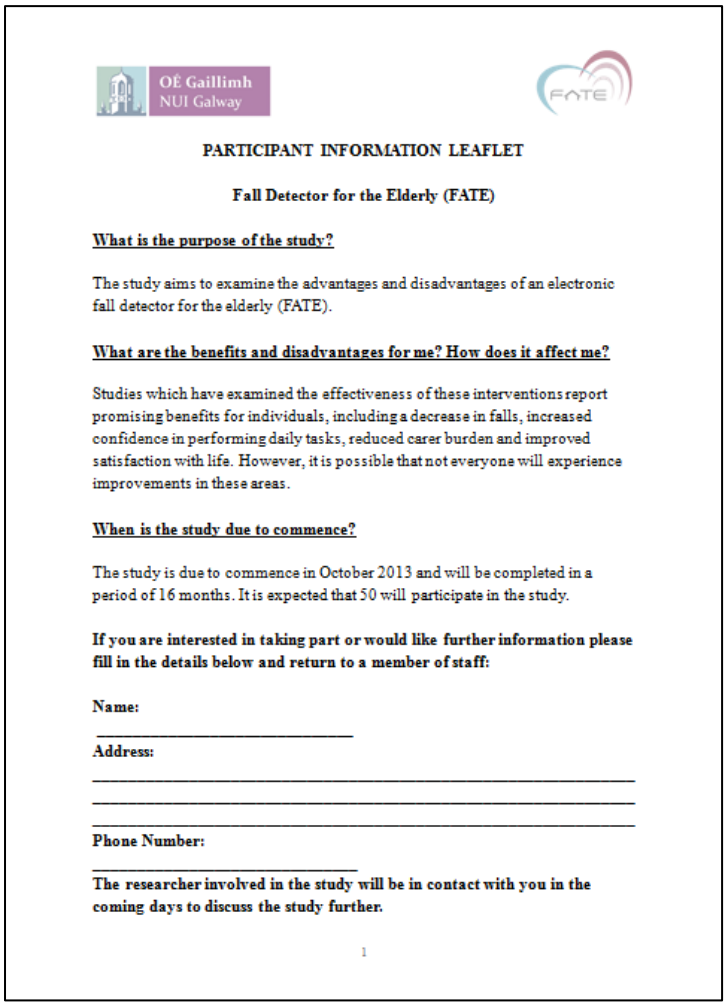
The study will be carried out in three phases as follows:

1. Intervention: This is a period of 6 months where the falls detector will be installed into your home by an engineer. During this time you will regularly meet with the Occupational Therapist and Nurse to monitor your experience of using the detector.
2. Wash Out: This is a period of 4 months between the intervention and control period where no monitoring is performed.

1

Figure 9. The staff info leaflet from NUIG partner

The information included in the brief participant leaflet (Figure 10) is a short explanation about the study purpose, its benefits and disadvantages and finally the date of the study. The tone used is simple and focus to the general benefits. The message is clearly adapted to its target: the final users. At the end of the document, and if the potential users were interested in participate or want more information, they could gave they personal details.
In the case that they want more information about the study or participate in it, they had extended information in the long version of the document (Figure 11 and Annex 3).



OÉ Gaillimh
NUI Galway

PARTICIPANT INFORMATION LEAFLET

Fall Detector for the Elderly (FATE)

What is the purpose of the study?

The study aims to examine the advantages and disadvantages of an electronic fall detector for the elderly (FATE).

What are the benefits and disadvantages for me? How does it affect me?

Studies which have examined the effectiveness of these interventions report promising benefits for individuals, including a decrease in falls, increased confidence in performing daily tasks, reduced carer burden and improved satisfaction with life. However, it is possible that not everyone will experience improvements in these areas.

When is the study due to commence?

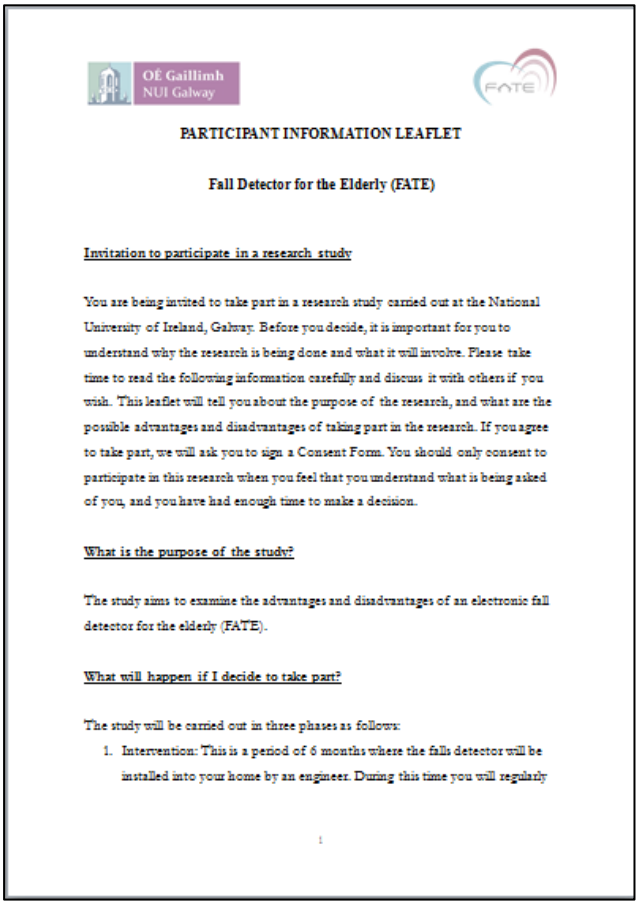
The study is due to commence in October 2013 and will be completed in a period of 16 months. It is expected that 50 will participate in the study.

If you are interested in taking part or would like further information please fill in the details below and return to a member of staff:

Name:
_____
Address:
_____
_____
_____
Phone Number:
_____
The researcher involved in the study will be in contact with you in the coming days to discuss the study further.

1

Figure 10. The participant brief info leaflet from NUIG partner



OE Gaillimh
NUI Galway

PARTICIPANT INFORMATION LEAFLET

Fall Detector for the Elderly (FATE)

Invitation to participate in a research study

You are being invited to take part in a research study carried out at the National University of Ireland, Galway. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. This leaflet will tell you about the purpose of the research, and what are the possible advantages and disadvantages of taking part in the research. If you agree to take part, we will ask you to sign a Consent Form. You should only consent to participate in this research when you feel that you understand what is being asked of you, and you have had enough time to make a decision.

What is the purpose of the study?

The study aims to examine the advantages and disadvantages of an electronic fall detector for the elderly (FATE).

What will happen if I decide to take part?

The study will be carried out in three phases as follows:

1. Intervention: This is a period of 6 months where the falls detector will be installed into your home by an engineer. During this time you will regularly

1

Figure 11. The participant info leaflet from NUIG partner

Once end users had been registered and before the start of the pilot, those responsible for NUIG had prepared and handed three documents to end users. The first was a 12-page user guide (Figure 12 and Annex 4) to help end users to use the system correctly FATE and help them if they had any problems. The user's guide includes an explanation of the FATE system with the explanation of its components and how it sets the detector falls. An explanation of the use of the detector falls, and how it loads. All the explanations are accompanied by photographs that illustrate the explanations to facilitate understanding users.

FATE user guide

Table of contents

1.1.1. FATE system components

Figure 1shows a picture of the FATE system components.

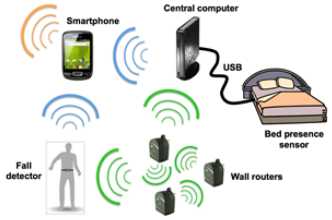


Figure 1. Components of the FATE system.

The picture above shows that all the components of the FATE system can communicate with each other without any wires. The main elements are a bed sensor, a computer, a fall detector, a mobile phone and some wall routers.

The description of the each component is as follows:

- **Fall detector:** The fall detector monitors the wearer for falls and is housed in a neoprene belt, as shown in **Error! Reference source not found.**. The fall detector is placed inside the belt, and the belt is worn around the waist all day long, except when in bed sleeping at night. Instructions for wearing the fall detector are shown in section *1.1.2. Wearing the fall detector*. If the wearer falls, the fall detector will

The user may silence the alert sound generated by the mobile phone (by touching on the **Mute** button on the mobile phone screen). The user may also cancel the contacting with the monitoring service by touching on the **Cancel call** button on the screen.

1.3. Charging the fall detector and the mobile phone

The fall detector has to be charged every night, just before going to bed. The charging connector is located on the back of the fall detector, as shown in Figure 5.

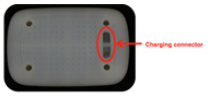


Figure 5. Charging connector of the fall detector.

In order to charge the fall detector just insert these contacts close to the charging connector, as depicted in Figure 6. When the fall detector is properly attached to the charger the light of the fall detector will display a fixed blue colour. This indicates that the fall detector is charging.

Figure 6. Charging the fall detector.

Figure 12. The end user guide from NUIG partner

The second document was an AlertsFlashcard (Figure 13 and Annex 5), one compilation of possible screenshots of the cell phones that the FATE system send and those end users could see. With these images are some text explaining that they had to do according to the situation they found.

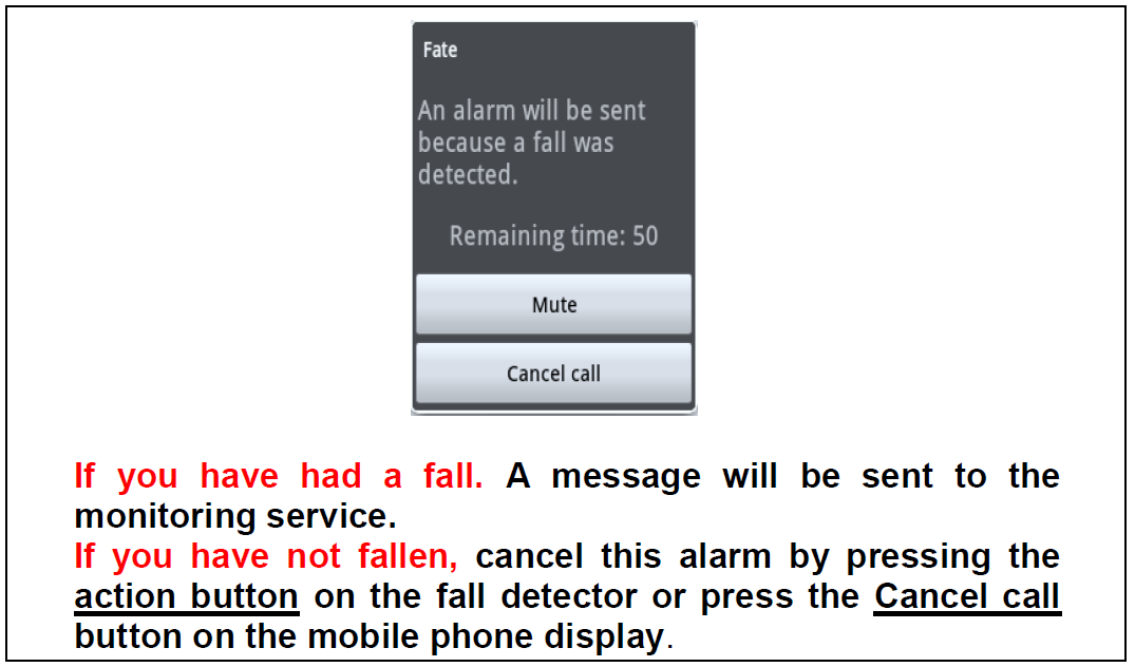


Figure 13. AlertsFlashcard guide from NUIG partner

The last of that tree documents, was an explanation of the different fall detector lights and its meaning. (Figure 14)

FALL DETECTOR LIGHTS		
LIGHT BLINKING	CONDITION	ACTION
None	THE FALL DETECTOR IS OFF	Press the action button for 5 seconds to turn to fall detector ON
	The fall detector is preparing to monitor for falls. This courtesy time will take 5 minutes.	Place the fall detector inside the belt and then place the belt around your waist.
	The fall detector is monitoring for falls	
	The fall detector is monitoring for falls	
	The fall detector is preparing to monitor you for falls, BUT THE FALL DETECTOR BATTERY IS NEARLY EMPTY.	CHARGE THE FALL DETECTOR
	FALL DETECTOR BATTERY IS NEARLY EMPTY	CHARGE THE FALL DETECTOR
	THE FALL DETECTOR BATTERY IS NEARLY EMPTY	CHARGE THE FALL DETECTOR
	THE FALL DETECTOR BATTERY IS NEARLY EMPTY	CHARGE THE FALL DETECTOR

LIGHT SOLID	CONDITION	ACTION
	The fall detector battery is full	
	The fall detector battery is charging	
	A fall has been detected	If a fall did not occur, cancel the alert?
	If you have LEFT HOME • The mobile phone is out of range • The mobile phone is OFF • The mobile phone won't turn ON	• Retrieve the mobile phone • Turn the mobile phone ON • Charge the mobile phone and turn the mobile phone ON • Get help using the SUPPORT phone number
	If you are AT HOME • The mobile phone is OFF • The mobile phone won't turn ON • The mobile phone won't turn ON • The computer is OFF • The computer wont switch ON	• Switch the mobile phone ON • Charge the mobile phone • Get help using the SUPPORT phone number • Switch the computer ON • Get help using the SUPPORT phone number

Figure 14. Flashcard guide from NUIG partner

3. Annexes.

3.1 Annex 1

FATE
Rilevatore di caduta per anziani

Guida per l'utente

Indice

1. Il sistema FATE

COME SI USA IL SISTEMA FATE

Il **sensore di caduta** inserito nella cintura, si indossa la mattina e si mette sotto carica la sera.

Non può essere indossato mentre si fa il bagno o la doccia.

Le fasi per un corretto uso del sensore sono le seguenti:

❖ **MATTINA**

1) Se il sensore è carico la luce sarà verde 
Staccare la spina del caricatore dal sensore di caduta.

2) Premere il pulsante nero grande del sensore e tenerlo premuto fino a quando non apparirà una luce rosa che lampeggia. La luce rimarrà di colore rosa per 5 minuti, durante i quali il sensore si attiva. 

3) Inserire il sensore nella tasca della cintura e poi indossare la cintura. Controllare che il pulsante tondo grande, di colore nero, sia visibile dalla sezione trasparente della tasca della cintura.

➢ Trascorsi 5 minuti, il sensore di caduta è attivato e la luce da **rosa** diventerà **verde.** 

❖ **DURANTE IL GIORNO**

Indossare la cintura durante tutto l'arco della giornata.

➢ Durante il giorno la luce del sensore in alcuni momenti sarà solo verde  e in altri verde e blu. 

➢ Se si **esce di casa** portare con sé il **telefono cellulare** in dotazione. Si ricordi che questo cellulare le permette di avere **sempre** il servizio di assistenza da parte degli operatori del Call Center.

❖ SERA

Prima di coricarsi:

1) Togliere il **sensore** dalla cintura e metterlo in **carica** assicurandosi che, dopo l'alternarsi di alcuni colori, appaia la **luce blu fissa**.

- Se entro circa 30 secondi la luce blu fissa non appare: staccare e riattaccare il caricabatteria dal sensore finché non appare la luce blu **fissa**.

2) Mettere in **carica** il **telefono cellulare** in dotazione.

Quando si corica nel letto:

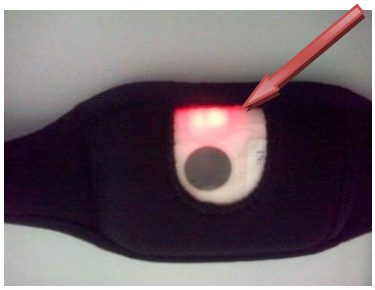
Il sensore di presenza nel letto si attiva automaticamente, lei non dovrà fare nulla. Si ricordi che questo sensore segnala al Call Center eventuali assenze prolungate dal letto durante la notte.

TIPI DI ALLARME INVIATI DAL SISTEMA FATE

Durante il giorno attraverso il sensore di caduta e il telefono cellulare in dotazione, il sistema FATE può inviare un allarme in caso di:

1) RILEVAZIONE DI CADUTA

Quando viene rilevata una caduta il sensore emette una ***luce rossa fissa*** insieme ad un suono continuo d'allarme.



Automaticamente il cellulare in dotazione produce un suono di allarme e invia il **messaggio di emergenza** agli operatori del Call Center che la richiameranno subito dopo al suo telefono di casa o al suo cellulare, per darle assistenza.

- Se subito dopo una caduta si **rialza** l'allarme dal sensore finisce e non verrà più inviato alcun allarme al Call Center.

In caso di FALSO ALLARME premere il pulsante di accensione (quello nero grande) per annullare l'allarme.

2) RICHIESTA DI SOCCORSO

Quando si ritiene di aver bisogno di soccorso **premere il tasto nero grande** e apparirà sul sensore la luce ***intermittente verde e blu*** senza il suono d'allarme.

Automaticamente il cellulare in dotazione produce un suono di allarme e invia il **messaggio di emergenza** agli operatori del Call Center che la richiameranno subito dopo al suo telefono di casa o al suo cellulare, per darle assistenza.

Durante la notte attraverso il sensore di presenza nel letto e il telefono cellulare in dotazione, il sistema FATE può inviare un allarme in caso di:

1) ASSENZA PROLUNGATA DAL LETTO

Quando viene rilevata un'assenza dal letto prolungata il cellulare invierà un messaggio di allarme al Call Center.

Si ricorda che l'ora di attivazione del sensore, così come il tempo massimo di assenza dal letto prima dell'invio dell'allarme, sono stati stabiliti da lei insieme agli operatori del progetto. Possono essere modificati su sua richiesta in base alle sue esigenze e abitudini.

MESSAGGI DI AVVISO DEL TELEFONO CELLULARE

1) Per tutti i tipi di allarme, il cellulare automaticamente emette un suono ed avvisa che sta per inviare un allarme al Call Center:

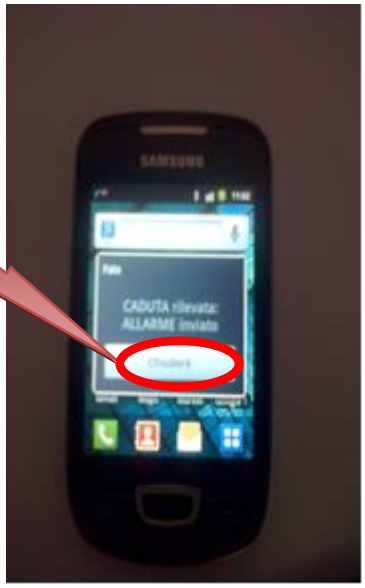
Se non viene toccato nessun tasto il suono d'allarme continuerà per 1 minuto e il Call Center riceverà il messaggio d'allarme.

2) Quando l'allarme è stato inviato al Call Center, il cellulare emette un breve suono di avviso che conferma l'invio.

Inoltre appare il messaggio che conferma l'invio:

a) Premere una volta il **tasto nero in basso al centro** per accendere lo schermo del cellulare:

b) Se tocca il tasto ***"chiudere"*** il messaggio scompare.

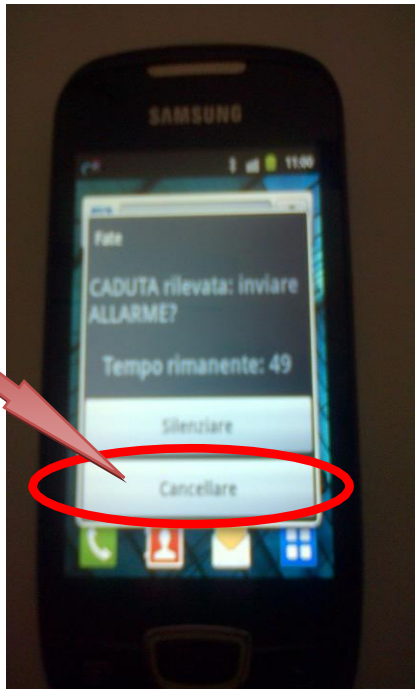


In caso di **falso allarme** si può **interrompere** l'invio del messaggio:

1) **Per tutti i tipi di allarme**, il cellulare automaticamente emette un suono ed avvisa che sta per inviare un allarme al Call Center

2) Premere una volta il **tasto nero in basso al centro** per accendere lo schermo del cellulare:

3) Toccare il tasto "**CANCELLARE**": (rettangolo bianco in basso)



Si è sicuri di aver bloccato l'allarme solo quando dopo aver toccato il tasto cancellare il **suono di allarme si interrompe** e il messaggio scompare.

L'ASSISTENZA DEL CALL CENTER

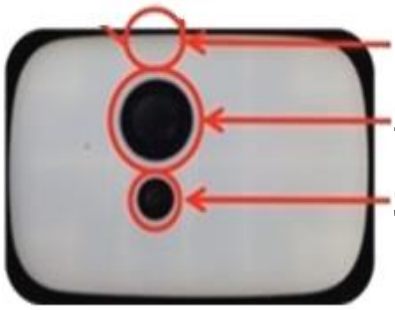
1) Quando il Call Center riceve un segnale di allarme gli operatori la contatteranno immediatamente per verificare la situazione.
2) Se lei non risponde, chiameranno la persona di riferimento da lei indicata, per informarla dell'allarme ricevuto.
3) Se l'operatore non riesce a mettersi in contatto né con lei né con la persona di riferimento, saranno inviati i soccorsi.

2. Componenti del sistema FATE

IL SENSORE DI CADUTA

COME È FATTO?

Davanti:

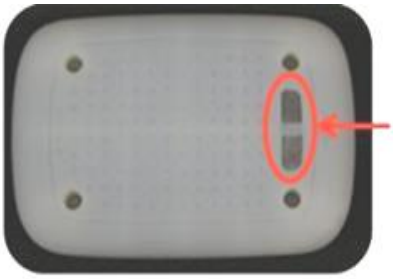


1. LED (luce colorata)

2. Pulsante grande di accensione e antipanico

3. Pulsante piccolo di reset/ripristino

Dietro:



4. Punto di ricarica

1. LED (luce colorata)

Il LED è una luce che segnala con diversi colori la situazione riconosciuta dal sensore di caduta. Alla penultima pagina della guida si può trovare la tabella dei colori ed il loro significato.

2. PULSANTE GRANDE (accensione/antipanico)

Tale pulsante viene utilizzato dall'utente in 3 casi:

1) Per accendere il dispositivo la mattina
2) Per interrompere il segnale d'allarme in caso di un *falso allarme*
3) Per richiedere soccorso in caso di necessità

.

3. PULSANTE PICCOLO (reset/ripristino)

NON utilizzarlo, potrà essere azionato solo da personale specializzato del progetto FATE.

4. PUNTO DI RICARICA

Si trova sul retro del sensore di caduta ed è composto da 2 piastrine magnetiche dove inserire/appoggiare la spina del caricabatteria.

COME SI ACCENDE IL SENSORE DI CADUTA

1) Premere il **pulsante di accensione** e tenerlo premuto fino a quando non comparirà una luce **ROSA** lampeggiante.

1. Luce ROSA

2. Pulsante di accensione

La luce rosa lampeggia per circa 5 minuti, il tempo necessario per indossare il sensore come descritto di seguito

COME SI INDOSSA IL SENSORE DI CADUTA

1) Inserire il sensore di caduta nella apposita tasca della cintura, posizionando il tasto nero grande in alto (visibile dalla sezione trasparente) come si vede dalla figura qui a fianco:

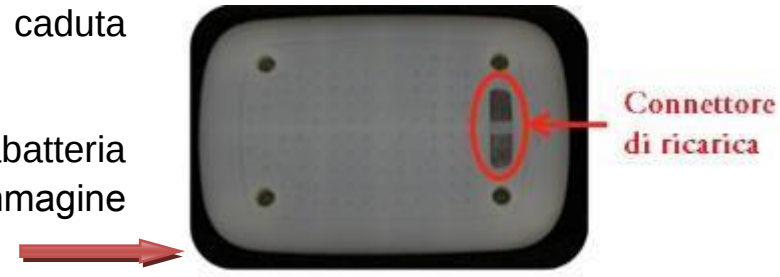
2) indossare la cintura intorno alla vita:

COME SI RICARICA IL SENSORE DI CADUTA

Il sensore di caduta deve essere ricaricato ogni sera, prima di andare a letto.

1) Togliere il sensore di caduta dalla cintura

2) Posare vicino al caricabatteria il sensore, come nell'immagine qui a fianco

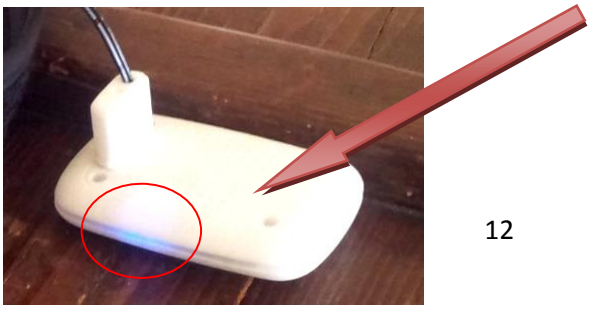


Se compaiono la luce rossa e il suono di allarme proseguire nelle operazioni di ricarica: l'allarme si bloccherà automaticamente!

3) Inserire la spina del caricabatteria a contatto con le due piastrine di metallo magnetiche (connettore di ricarica):

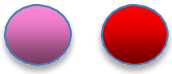
N.B. Verificare che i segni arancioni presenti sulla spina del caricabatteria e sul sensore di caduta combacino come indicato:

4) Il sensore è correttamente in ricarica quando compare la **luce fissa blu** sul sensore come indicato dalla foto:



RISOLUZIONE DEI PROBLEMI

RISOLUZIONE DEI PROBLEMI **durante l'accensione**

Problema	Possibile causa	Soluzione
Quando ha acceso il sensore di caduta, appare una luce intermittente ***ROSA e ROSSA*** 	La batteria del sensore di caduta è quasi scarica.	Ricaricare il sensore.
Sono trascorsi 5 minuti da quando ha acceso il sensore di caduta, ma **non** appare la luce ***VERDE*** 	Il sensore di caduta non funziona correttamente.	Contattare i referenti del progetto FATE (indicati all'ultima pagina della guida)

RISOLUZIONE DEI PROBLEMI **durante la ricarica**

Problema	Possibile causa	Soluzione
Ha collegato il caricabatteria al sensore di caduta, ma **non** appare la luce fissa ***BLU.*** 	Il caricabatteria non è correttamente collegato.	Riposizionare il caricatore e in caso di necessità contattare i referenti del progetto FATE (indicati all'ultima pagina della guida)

IL TELEFONO CELLULARE

Il telefono cellulare non dovrà mai essere spento,
sia durante il giorno che durante la notte.

Dal cellulare partono i messaggi di allarme al Call Center in modo automatico *senza che lei faccia nulla.*

Se durante le operazioni quotidiane toccasse per sbaglio qualche tasto, facendo comparire "scritte" o "numeri":
è possibile tornare alla schermata di partenza premendo il tasto in basso a destra dove vi è la freccia.

Se fosse necessario spegnere o accendere il telefono cellulare segua le indicazioni riportate di seguito:

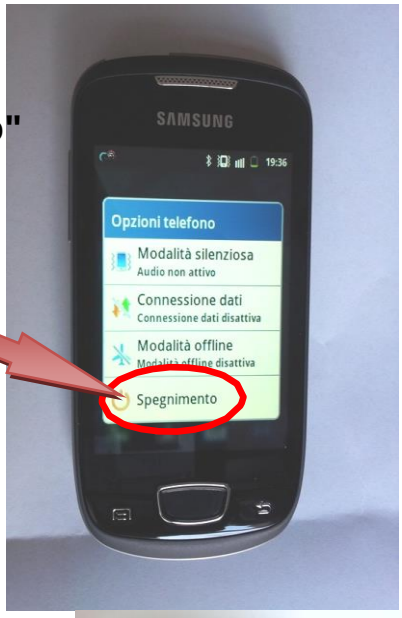
COME SI ACCENDE IL TELEFONO

1) Premere a lungo il **pulsante di accensione e spegnimento**

COME SI SPEGNE IL TELEFONO

1) Premere a lungo il tasto **accensione e spegnimento (indicato sopra)**

2) Quando appare la lista "**Opzioni telefono**" toccare il tasto ***Spegnimento*** (ultimo in fondo)



3) Quando appare la conferma di spegnimento, toccare ***OK*** per spegnere il telefono (a sinistra).

Se si desidera mantenere il cellulare acceso toccare il tasto ***Annulla*** *(a destra)*.

UTILIZZO DEL TELEFONO

Portare <u>sempre</u> con sé il telefono cellulare quando si <u>esce di casa</u>

<u>Il telefono cellulare dovrà essere utilizzato solo ai fini della sperimentazione FATE e non dovranno essere modificate le impostazioni iniziali.</u>

COME SI RICARICA IL TELEFONO

1) Durante la notte Il telefono cellulare dovrà sempre essere collegato al suo caricabatteria.

2) Qualora la batteria del cellulare fosse scarica, il telefono produrrà un avviso sonoro continuo e comparirà un messaggio di avviso sullo schermo del telefono cellulare, come indicato dalla foto.

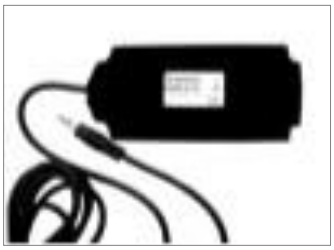
Per chiudere il messaggio toccare sul "OK"

3) Comparirà un messaggio di avviso di ricarica. Toccare “Chiudere” e mettere in carica

4) Il caricabatteria dovrà essere inserito nella fessura di ricarica, con la freccia verso l'alto, come indicato dalle foto:

5) Se correttamente collegato al caricabatteria l'indicatore di carica mostra il simbolo del piccolo fulmine (nell'angolo in alto a destra).

IL SENSORE DI OCCUPAZIONE LETTO



UTILIZZO

Il sensore è posizionato sotto il materasso e **non deve mai essere rimosso.**
Se questo avviene contattare i referenti del progetto FATE (vedi "*Contatti* " nell'ultima pagina di questa guida)

Una luce **verde** segnala che lei si trova sul letto, mentre una luce **rossa** segnala la sua assenza dal letto.

La base del sensore **non deve mai essere scollegata** dal sensore, dal computer né dalla presa di corrente.
Se questo avviene contattare i referenti del progetto FATE (vedi "*Contatti* " nell'ultima pagina di questa guida)

IL ROUTER DA PARETE

UTILIZZO

Il router da parete **non deve mai essere rimosso** dalla presa di corrente, dove è stato posizionato.
Se questo avviene contattare i referenti del progetto FATE (vedi "*Contatti* " nell'ultima pagina di questa guida).

La **luce verde** segnala il suo corretto funzionamento.

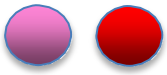
IL COMPUTER

UTILIZZO

Il COMPUTER **non deve mai essere scollegato** dalla presa di corrente, dove è stato posizionato.
Se questo avviene contattare i referenti del progetto FATE (vedi *Contatti* ultima pagina)

APPENDICE: TABELLA COLORI del sensore di caduta

Durante l'accensione

Colore	Cosa significa	Cosa fare
Lampeggia 	Ha appena acceso il sensore ed ora ha 5 minuti di tempo per inserirlo nella cintura e indossarla.	Proseguire con le fasi successive per indossare il sensore.
Lampeggia 	Il sensore si è attivato e funziona correttamente.	Proseguire con le proprie attività.
Lampeggia 	Ha appena acceso il sensore, ma la batteria del sensore è quasi scarica.	Ricaricare il sensore.
Non lampeggia 	Il sensore di caduta non funziona correttamente.	Contattare i referenti del progetto FATE (vedi "*Contatti* " nell'ultima pagina di questa guida)

Durante l’utilizzo quotidiano

Colore	Cosa significa	Cosa
Lampeggia 	Il sensore funziona correttamente.	Proseguire con le proprie attività.
Lampeggia  Il telefono non produce un suono di allarme	Il sensore funziona correttamente	Proseguire con le proprie attività.
Lampeggia  Il telefono produce un suono di allarme	Ha premuto il pulsante nero grande per richiedere soccorso e il sensore sta inviando il segnale al **Call Center.**	Il Call Center la chiamerà subito e se non riesce a rispondere, invieranno i soccorsi.
Lampeggia  E non produce un suono di Allarme	La batteria del sensore è quasi scarica.	RICARICARE il sensore di caduta.

Luce fissa  E produce un suono di Allarme	a. Una **caduta** è stata rilevata. b. Si trova **fuori casa** e ha dimenticato il **telefono cellulare.** c. Il **telefono** cellulare è **spento**. d. Il **computer** è spento o non funziona correttamente.	a. Il Call Center la chiamerà subito e, se non riesce a rispondere, invieranno i soccorsi. b. Tornare a recuperare il telefono e portarlo con sé. c. Accendere il telefono cellulare (vedi pag 15). d. Contattare i referenti del progetto FATE (vedi "*Contatti* " nell'ultima pagina di questa guida)

Durante la ricarica

Colore	Cosa significa	Cosa
Luce fissa 	Il sensore si sta ricaricando correttamente.	Proseguire con le proprie normali attività.
Nessuna luce fissa 	a. Il caricatore non è posizionato correttamente.	Staccare e riposizionare la spina del caricatore
Luce fissa 	Il sensore è completamente carico.	Proseguire con le proprie normali attività.

CONTATTI

In caso di necessità di assistenza nell'utilizzo del sistema FATE è possibile contattare il call center del progetto FATE:

Operatori del **CALL CENTER**: **0733-962009**

Il CALL CENTER sarà attivo 24 ore su 24, 7 giorni su 7

Saranno gli operatori del CALL CENTER a metterla in contatto con la persona o il servizio più idoneo per risolvere la situazione (per esempio in caso di malfunzionamento del sistema FATE).

In caso di emergenza
utilizzare il sistema FATE come descritto in questa guida.

Referenti del progetto per COOSS Marche:

Romina Boraso
071. 50103 275

Francesca Spaziani
366.1473246

3.2 Annex 2

STAFF INFORMATION LEAFLET

Falls Detector for the Elderly (FATE)

You are being invited to take part in a clinical research study carried out at the National University of Ireland, Galway. This study will examine the advantages and disadvantages of an electronic system known as falls detector for the elderly (FATE).

What is the purpose of the study and what does it involve?

The study aims to examine the advantages and disadvantages of an electronic fall detector for the elderly (FATE).

Who is eligible to participate in the study?

The study is open to those living in Galway city and county. The inclusion and exclusion criteria of the study are as follows:

Inclusion Criteria:

- Older than 64 years of age.
- At least 1 fall in the previous 6 months or alternatively a high enough risk of fall determined by their GP.
- Community dwelling participants that have a family member or relative as carer available and willing to participate.
- Participants must have sufficient level of understanding of the English language that allows them to provide informed consent.

Exclusion Criteria:

- Carriers of implanted electronic devices: cardiac pacemaker, implanted automatic defibrillator etc.
- Acute/chronic condition leading to more than one hospital admission in the last year.
- Participating in another clinical trial.

When do I do should I feel someone is suitable for the study?

Should you find someone suitable for the study please provide the person with a Participant Information leaflet provided. Following this, if the potential participant wishes to take part in the study please invite them to fill out the form. Hold onto to the form, informing the potential participant that the researcher involved in the study will be in contact in due course. The researcher will make regular visits to collect any leaflets that have been filled.

3.3 Annex 3

PARTICIPANT INFORMATION LEAFLET

Fall Detector for the Elderly (FATE)

Invitation to participate in a research study

You are being invited to take part in a research study carried out at the National University of Ireland, Galway. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. This leaflet will tell you about the purpose of the research, and what are the possible advantages and disadvantages of taking part in the research. If you agree to take part, we will ask you to sign a Consent Form. You should only consent to participate in this research when you feel that you understand what is being asked of you, and you have had enough time to make a decision.

What is the purpose of the study?

The study aims to examine the advantages and disadvantages of an electronic fall detector for the elderly (FATE).

What will happen if I decide to take part?

The study will be carried out in three phases as follows:

1. Intervention: This is a period of 6 months where the falls detector will be installed into your home by an engineer. During this time you will regularly

meet with the Occupational Therapist and Nurse to monitor your experience of using the detector.

2. Wash Out: This is a period of 4 months between the intervention and control period where no monitoring is performed.
3. Control Period: This is a period of 6 months where you will NOT be using the fall detector system. However, monitoring by the researcher will be carried out.

Do I have to take part?

It is up to you to decide whether or not you would like to take part. If you do decide to take part you will be given this information leaflet to keep, be screened for eligibility by the researcher and accordingly be asked to sign a consent form. If you decide to take part you are still free to change your mind and withdraw from the study at any time. If you decide you do not wish to take part in the study or you withdraw from the study this will not affect the standard of care that you receive.

What will happen to me if I take part?

If you agree to take part in the study you may or may not be chosen to participate. A meeting will be arranged with the Occupational Therapist, Engineer and Nurse involved in the study. During this meeting a screening checklist will be completed. If you deemed eligible to participate you will be allowed participate in the study.

Following discussion of any questions you may have with the researcher, and signing the consent form, all participants will be asked to:

1. Meet with the researcher for between one and a half/two hours to answer questions about your falls history, level of activity and satisfaction with life. During these tests you may take as many breaks as you want, and we can meet for more than 2 sessions to finish these. All sessions will be carried out in your own home.
2. Engage with the researcher via telephone to answer questions on falls experience and changes in activity on a weekly basis during the intervention phase.
3. You will be required to keep a weekly falls diary in which you document any falls experienced during the week. This will be provided by the researcher.
4. Meet with a researcher again to answer the same questions as before when the intervention is finished.

The researcher will also meet with a carer or a member of your family who knows you well. They will be asked questions about your experience of falls, level of activity and overall quality of life.

What are the benefits and disadvantages for me? How does it affect me?

Studies which have examined the effectiveness of these interventions report promising benefits for individuals, including a decrease in falls, increased confidence in performing daily tasks, reduced carer burden and improved satisfaction with life. However, it is possible that not everyone will experience improvements in these areas. Participation in the study will require your time and energy. However there are no other expected disadvantages to participating in this study. The assessments completed before the intervention starts and after it ends will be explained and you will receive as much help completing them as possible. Participation in this study will not impact any other treatments or medication you may be having.

When is the study happening and who else is involved?

The study is due to commence in September 2013 and will be completed in a period of 16 months. It is expected that 50 will participate in the study.

What will happen to the results?

The results of your assessment measures will be held securely in a locked filling cabinet in the NUIG office of the study's investigator's. They will not contain any information which will make you identifiable.

The results from this study will be written-up as part of the investigator's academic requirements to the National University of Ireland, Galway. The results of the study will be published in a reputable journal and presented at conference. A written executive summary of the study will also be provided to you.

IF YOU REQUIRE FURTHER INFORMATION

For additional information now or any time in the future please contact:

Name:

Address:

Telephone Number:

Name:

Address:

Telephone Number:

3.4 Annex 4

Competitiveness and innovation Framework Programme
CIP-ICT-PSP-2011-5 297178
Fall Detector for the Elder

FATE user guide

Table of contents

1. About this document

This document will help you use the FATE system correctly and will also help you with any problems you may have. Please keep this document in a safe and accessible place for future reference, when using the FATE system during the pilot study.

1.1. Understanding the FATE system

The FATE system has been developed to detect falls that occur both inside and outside the home. When a serious fall is detected the system will automatically contacts the monitoring service, the monitoring service will then contact the necessary support service (family, carer, emergency service) to get help. The FATE system also allows the wearer to raise an alarm if the wearer feels they are at risk or in any danger.

1.1.1. FATE system components

Figure 1shows a picture of the FATE system components.

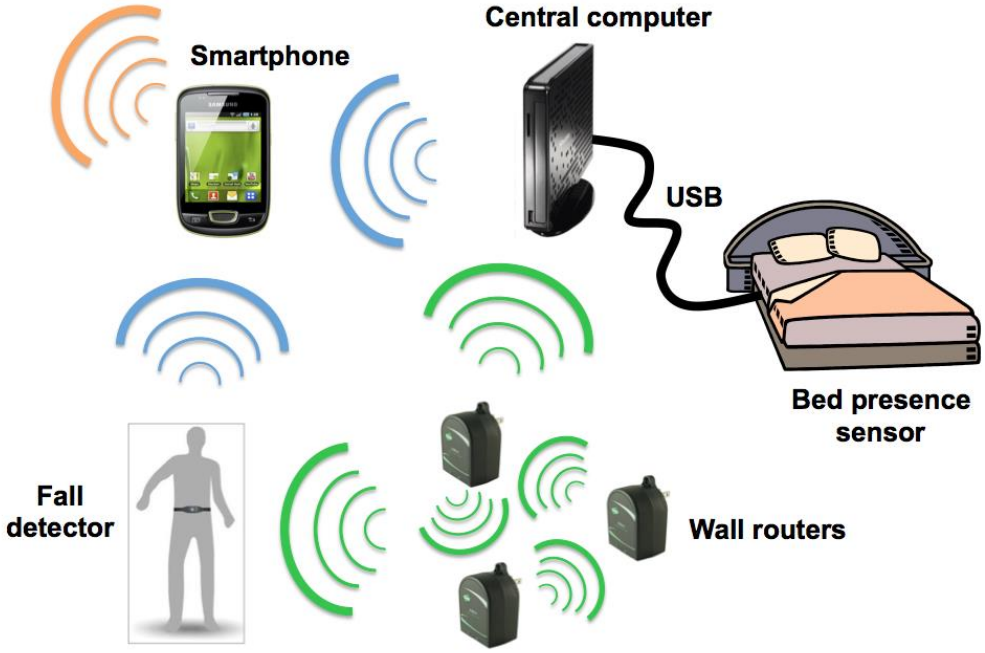


Figure 1. Components of the FATE system.

The picture above shows that all the components of the FATE system can communicate with each other without any wires. The main elements are a bed sensor, a computer, a fall detector, a mobile phone and some wall routers.

The description of the each component is as follows:

- **Fall detector:** The fall detector monitors the wearer for falls and is housed in a neoprene belt, as shown in **¡Error! No se encuentra el origen de la referencia.**. The fall detector is placed inside the belt, and the belt is worn around the waist all day long, except when in bed sleeping at night. Instructions for wearing the fall detector are shown in section *1.1.2. Wearing the fall detector*. If the wearer falls, the fall detector will

communicate this to the mobile phone and the mobile phone will send a text message to get assistance for the faller.

Figure 2. Belt (top) and fall detector (bottom).

- **Bed presence sensor:** This sensor is placed under the bed mattress, and it only detects if a person is in bed or not.
- **Central computer:** The central computer controls the communication between all the devices. It also monitors the bed sensor and if the person fails to return to their bed at night, it communicates this with the mobile phone and the phone will raise an alert.
- **Mobile phone:** The mobile phone sends an alert by text message if the person wearing the fall detector has a fall, or if they press the panic button on the fall detector. It also sends an alert if the person fails to return to bed at night.
- **Wall routers:** The wall routers allow all the components to communicate with each other. Once installed, they should not be unplugged or removed from the wall.

1.1.2. Wearing the fall detector

The fall detector is be used with the belt provided with the system. The fall detector is placed inside the belt, with the action button and lights visible through the plastic window. The belt is placed around the waist, in contact with the user's skin. Figure 3 shows the placement of the fall detector in the belt and how the belt should to be worn.

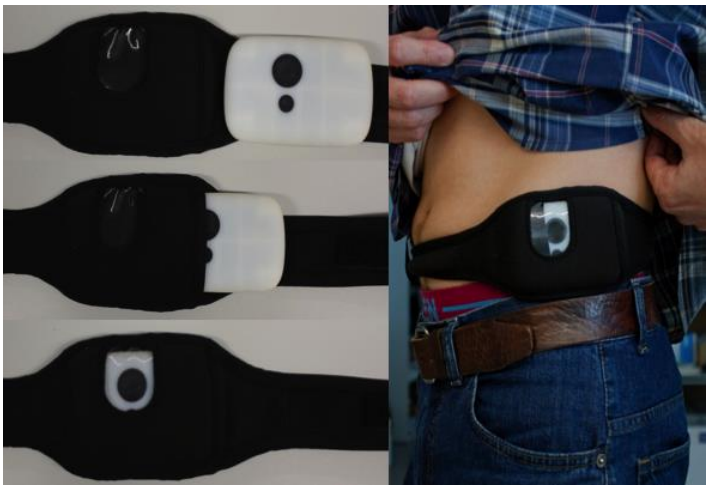


Figure 3. Fall detector placement and belt adjustment.

The fall detector should not be worn in bed at night. It should be left charging, even if it doesn't need charging. Even though the fall detector is waterproof, do not shower or take a bath while wearing it.

1.2. Using the fall detector

Once the FATE system has been installed and operating, the user only uses the fall detector and the mobile phone. Using the fall detector involves monitoring some lights, sounds and some maybe pressing some buttons from time to time. Figure 4 shows a closer view of the fall detector lights and buttons.

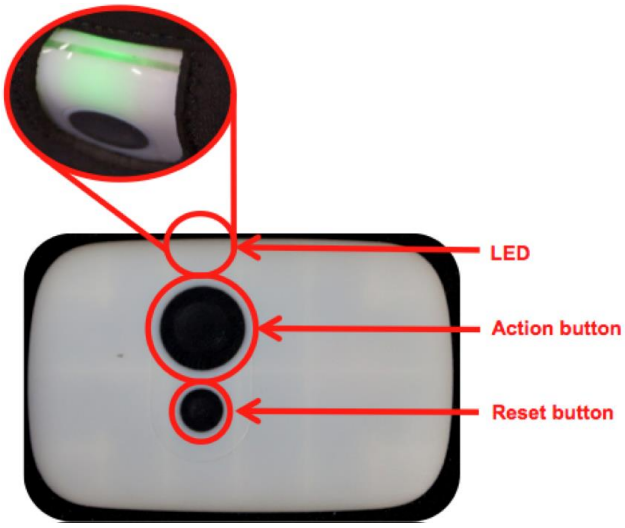


Figure 4. Fall detector lights and buttons.

The three components you need to use the fall detector are as follows:

- **Reset button:** This button should only be pressed by FATE personnel.
- **Action button:** The action button has 3 functions:
    1. If a fall is detected, should you need to cancel this alert you can do this by pressing the panic button.
    2. If at any stage the wearer feels that they are in an emergency situation, they can press this button to send an alarm to the monitoring service.
    3. The panic button turns the sensor on when the sensor is unplugged from the charger. Once the fall detector is switched on, a courtesy time of 5 minutes occurs before it starts monitoring the wearer for falls. This allows 5 minutes to insert the fall detector in the belt and place the belt around their waist.

- **Lights:** The lights use a series of blinking colours to tell the wearer what condition the fall detector is in. The Fall Detector Lights Flashcard shows what condition the fall detector is in.

The fall detector also includes a buzzer that will produce an alarm sound when a fall is detected. It will also produce an alarm sound if the mobile phone or the central computer are switched off, or are not working properly.

The mobile phone provides the user with the following information:

1. An alarm will be sent because a fall was detected.

2. An alarm will be sent as the mobile phone cannot detect the fall detector, and the fall detector battery is full.

3. An alarm will be sent as the mobile phone cannot detect the fall detector, and the fall detector battery is empty.

4. An alarm will be sent as the panic button on the fall detector has been pressed.

5. An alarm will be sent as the user did not return to bed within the allocated time.

6. The fall detector battery is empty. Please charge it.

If one of these situations has been identified by the mobile phone, an alert message will be displayed on the mobile phone screen and it also will provide an alert tune. The alert messages shown on the **Alerts Flashcard**.

The user may silence the alert sound generated by the mobile phone (by touching on the **Mute** button on the mobile phone screen). The user may also cancel the contacting with the monitoring service by touching on the **Cancel call** button on the screen.

1.3. Charging the fall detector and the mobile phone

The fall detector has to be charged every night, just before going to bed. The charging connector is located on the back of the fall detector, as shown in Figure 5.

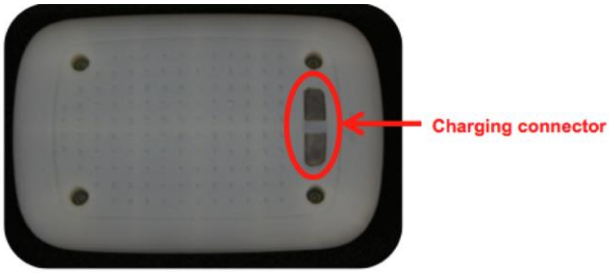


Figure 5. Charging connector of the fall detector.

In order to charge the fall detector just insert these contacts close to the charging connector, as depicted in Figure 6. When the fall detector is properly attached to the charger the light of the fall detector will display a fixed blue colour. This indicates that the fall detector is charging.

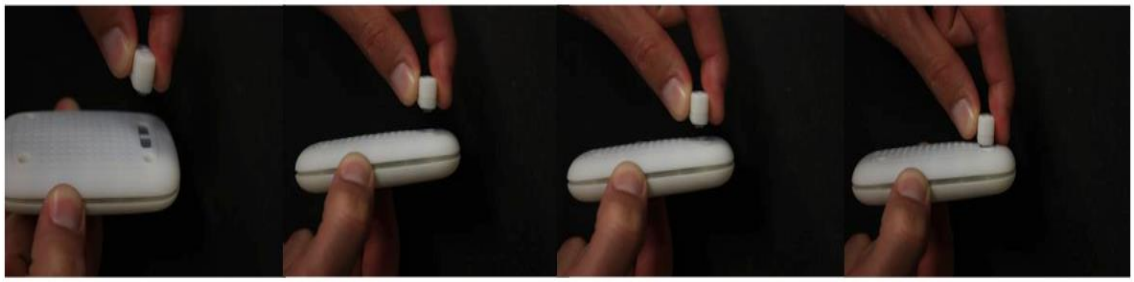


Figure 6. Charging the fall detector.

The mobile phone and fall detector should be charged every night, whether they need charging or not. When the user is at home they should carry the mobile phone with them. The mobile phone charging cable connects to the mobile phone charger through the mobile phone charging slot. The mobile phone charging slot is shown in Figure 7.

Figure 7. Charging slot of the mobile phone.

1.4. Operation of the FATE system

The daily use of the FATE system can be described by the following sequence of steps:

1. When you wake up in the morning disconnect the fall detector from the charger and place it inside the belt and attach the belt around your waist.
2. Activate the fall detector by pressing the action button for 5 seconds. The fall detector light will blink violet during the 5 minute courtesy period. While this is happening you can finish dressing.
3. Check that the light blinks green when the courtesy period is over. If this does not happen within after the courtesy period, use the **Fall Detector Lights Flashcard** to resolve the problem.
4. You should carry the mobile phone with you while wearing the fall detector. If the mobile phone needs charging during the day, you can charge it in your

bedroom while you are at home. If going outside you must always carry the mobile phone with you.

5. If you are going to take a bath or a shower, the belt containing the fall detector should be taken off.
6. If you leave home without the mobile phone the fall detector will signal this situation by means of an alert sound (different from the alarm sound). You should return home in order to get the mobile phone.
7. You should check the status of the battery of the fall detector by inspecting the light every so often.
8. Before going to bed the mobile phone and the fall detector should be connected to their chargers. When the fall detector is connected to the charger its light should display a fixed blue colour. Once the sensor is fully charged the light should display a fixed green colour

Please remember:

YOU SHOULD ALWAYS BRING THE MOBILEPHONE WITH YOU WHEN LEAVING HOME.

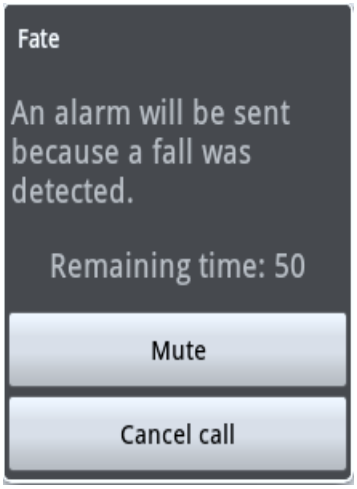
THE FALL DETECTOR AND THE MOBILE PHONE SHOULD BE CONNECTED TO THEIR RESPECTIVE CHARGERS EVERY NIGHT BEFORE YOU GO TO BED.

DO NOT BATH OR TAKE A SHOWER WHILE WEARING THE FALL DETECTOR OR CARRYING THE MOBILE PHONE. THIS CAN DAMAGE THE FALL DETECTOR.

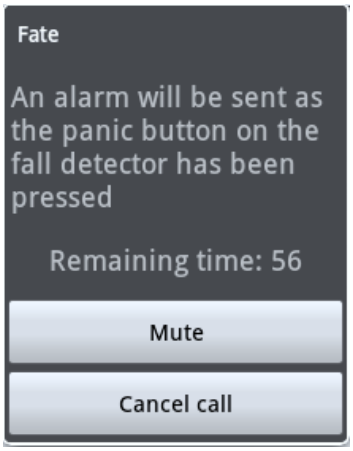
NEVER PRESS THE RESET BUTTON OF THE FALL DETECTOR. ONLY FATE PERSONNEL CAN MANIPULATE THIS BUTTON.

DO NOT INSTALL ANY APPLICATIONS ON THE MOBILE PHONE. IT MUST ONLY BE USED WITH FATE SOFTWARE.

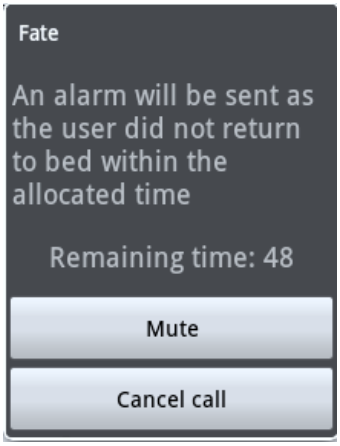
3.5 Annex 5



If you have had a fall. A message will be sent to the monitoring service.
If you have not fallen, cancel this alarm by pressing the action button on the fall detector or press the Cancel call button on the mobile phone display.

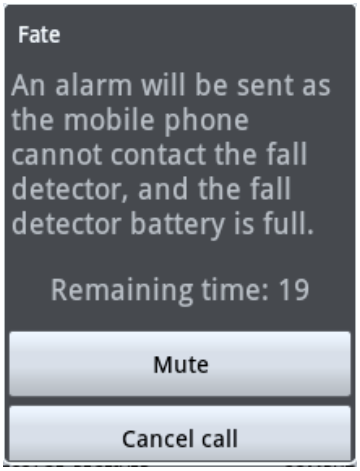


If you have had a panic or emergency situation and you pressed the panic button. A message will be sent to the monitoring service.
Otherwise you can cancel this alarm by pressing the Cancel call button on the mobile phone display.



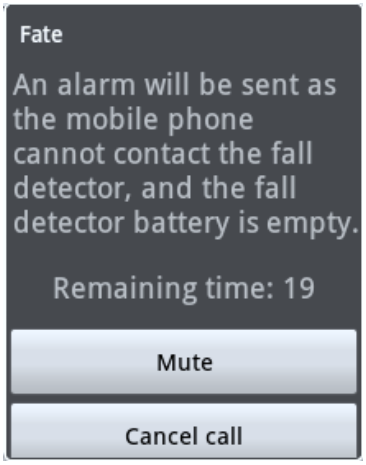
You have left your bed and you have not come back within a given amount of time, an alarm will be sent to the monitoring service.

If this is not the case you can cancel this alarm by pressing the Cancel call button displayed on the mobile phone display.

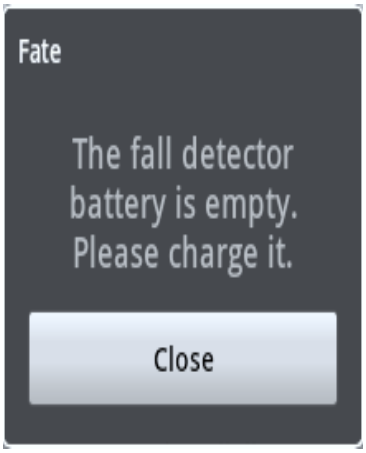


Please ensure you have the fall detector. If you are leaving your home please ensure you bring the mobile phone with you.

If at home keep the mobile phone on charge beside your bed. You can cancel this alarm by pressing the Cancel call button on the mobile phone display.



Please ensure you have the fall detector, the fall detector battery is nearly empty. Please charge the fall detector.
If you are at home keep the mobile phone on charge beside your bed. You can cancel this alarm by pressing the Cancel call button on the mobile phone display.



You need to charge the fall detector immediately. Press the close button on the mobile phone display to cancel this.