frail safe

Project Title:	**Sensing and predictive treatment of frailty and associated co-morbidities using advanced personalized models and advanced interventions**
Contract No:	690140
Instrument:	Collaborative Project
Call identifier:	H2020-PHC-2014-2015
Topic:	PHC-21-2015: Advancing active and healthy ageing with ICT: Early risk detection and intervention
Start of project:	1 January 2016
Duration:	36 months

Deliverable No: D8.8

IPR Protection Plan (vers a)

Due date of deliverable:	M12 (1st January 2017)
Actual submission date:	28th December 2016
Version:	1.0

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Horizon 2020
European Union funding
for Research & Innovation

Change History

Ver.	Date	Status	Author (Beneficiary)	Description
0.3	30/09/2016	draft	Kosmas Petridis, Hariklia Zografou, Panagiotis Sabatakos (Hypertech)	First draft definition of FrailSafe exploitable components. Distribution of document for information collection by project partners (internal survey).
0.5	24/10/2016	draft	Kosmas Petridis, Hariklia Zografou, Panagiotis Sabatakos (Hypertech), Vasilis Megalooikonomou, Yannnis Elloul (UoP), Christina Karamanidou (CERTH), Roberto Orselli, Carlo Mancuso (Smartex), Javier Montesa (Brainstorm), Cristiana Degano, Luca Bianconi (Gruppo SIGLA), Ioanna Petridou (Materia Group), Marina Kotsani (INSERM)	First draft deliverable report presented at the 1st FrailSafe review.
0.8	20/12/2016	draft	Kosmas Petridis, Hariklia Zografou, Panagiotis Sabatakos (Hypertech), Vasilis Megalooikonomou, Yannnis Elloul (UoP), Christina Karamanidou (CERTH), Roberto Orselli, Carlo Mancuso (Smartex), Javier Montesa (Brainstorm), Cristiana Degano, Luca Bianconi (Gruppo SIGLA), Ioanna Petridou (Materia Group), Marina Kotsani (INSERM)	Updated deliverable report, taking into account the latest feedback from the project partners and discussions of the IPR Working Group.
1.0	28/12/2016	final	Kosmas Petridis, Hariklia Zografou, Panagiotis Sabatakos (Hypertech)	Deliverable finalised taking into account internal review's comments.

EXECUTIVE SUMMARY

The deliverable "D8.8: IPR Protection Plan (vers a)" reports the first version of the Intellectual Property Rights (IPR) management plan inside FrailSafe project. It summarizes the results achieved so far towards the compilation of the IPR agreement, based on the discussions performed -primarily but not exclusively- by the FrailSafe IPR Working Group.

DOCUMENT INFORMATION

Contract Number:	H2020-PHC–690140		Acronym:	FRAILSAFE
Full title	Sensing and predictive treatment of frailty and associated co-morbidities using advanced personalized models and advanced interventions			
Project URL	http://frailsafe-project.eu/			
EU Project officer	Mr. Jan Komarek			

Deliverable number:	8.8	Title:	IPR Protection Plan (vers a)
Work package number:	8	Title:	Dissemination and Exploitation

Date of delivery	**Contractual**	01/01/2017 (M12)	**Actual**	28/12/2016
Status	Draft ☐		Final ☒	
Nature	Report ☒	Demonstrator ☐	Other ☐	
Dissemination Level	Public ☐	Consortium ☒		
Abstract (for dissemination)	The deliverable reports the first version of the Intellectual Property Rights (IPR) management plan inside FrailSafe project. It summarizes the results achieved so far towards the compilation of the IPR agreement, based on the discussions performed -primarily but not exclusively- by the FrailSafe IPR Working Group.			
Keywords	FrailSafe, frailty, Intellectual Property, IPR, exploitation plan			

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1   Introduction

The deliverable "D8.8: IPR Protection Plan (vers a)" reports the first version of the **Intellectual Property Rights (IPR) management plan** of the FrailSafe project.

As reported in deliverable D9.1, the IPR Working Group was defined to work towards the compilation of the IPR agreement. This group is chaired by HYPERTECH and comprises a representative from each partner organization. Moreover, the Advisory Stakeholder Board chaired by BRAINSTORM (again as reported in D9.1) will also assist in this process and in the exploitation of the project results.

Additionally, discussion on the technical architecture of the FrailSafe platform is currently underway. In this architecture, the various exploitable components expected to be developed during the project lifecycle are also included (WWBS, games, data analysis and visualization tools, Virtual Patient Model, clinical and community platform etc.).

The IPR management plan of FrailSafe focuses exactly on these components, by trying to distinguish contribution of partners to individual modules and to the final integrated FrailSafe system, indicating IPR restrictions, licenses required and target markets-audiences for the exploitation of the FrailSafe solution as a whole or partially.

Planned activities will ensure that all project results are formulated and compiled into a protectable form and lead to the finalization of the IP / Joint Ownership Agreement to enable exploitation actions to execute smoothly.

The first draft IPR management plan is presented in the following sections, while the final version will be available in month 24.

2   General Principles

The management of the Intellectual Property is an important precondition for building a framework of cooperation, suitable arrangements for protection and exploitation of the project innovation. The Intellectual Property Management in the FrailSafe framework will conform to the appropriate guidelines of the European IPR Helpdesk concerning IPR issues as described in **"Your Guide to IP in Horizon 2020"** [1], which provides an overview of relevant provisions applicable in the Horizon 2020 programme.

The IPR policy of the project will be in line with several Directives adopted by the European Union concerning IPR issues, such as:

- **Directive 2006/115/EC** of the European Parliament and of the Council of 12 December 2006 "on rental right and lending right and on certain rights related to copyright in the field of intellectual property" [2]
- **Directive 2001/29/EC** of the European Parliament and of the Council of 22 May 2001 "on the harmonisation of certain aspects of copyright and related rights in the information society" [3]
- **Directive 96/9/EC** of the European Parliament and of the Council of 11 March 1996 "on the legal protection of databases" [4]
- **Council Directive 93/98/EEC** of 29 October 1993 "harmonizing the term of protection of copyright and certain related rights" [5]
- **Council Directive 91/250/EEC** of 14 May 1991 "on the legal protection of computer programs" [6]

Regarding the exploitation of FrailSafe, IPR could act as a source of future income if properly managed since IPR promotes commercialization of results. In order to define IPR, **"background"** and **"foreground"** knowledge can be identified where foreground knowledge stands for results, including information, materials and knowledge, generated in a given project, whether or not they can be protected and background knowledge represents information and knowledge (including inventions, databases, etc.) held by the participants prior to their accession to the EC grant agreement, as well as any intellectual property rights which are needed for carrying out the project or for using foreground [1].

As already expressed in the Consortium Agreement of FrailSafe, **background knowledge** consists of the real-time graphics engine of Brainstorm, to be used in the 3D gaming platform.

Based on the current early stage of the project execution, **foreground knowledge** is expected to include the following systems and tools, as presented in detail in the next section:

- WWBS system
- Signal processing and data analysis tool
- Social media sensing tool
- Risk assessment tool
- Virtual patient model (VPM)
- Dynamically synthesized games
- Visualization and DSS module
- Clinical web platform (eCRF)
- Virtual community platform (VCP)
- Integrated FrailSafe system

Additionally, there is already an informal agreement that **clinical data are the sole property of the clinical trial partner that generates them.**

Based on the above facts and since project implementation implies joint ownership, a **Joint Ownership Agreement** will be used as a tool to define partners' rights on the exploitation and future use of project results and outputs and as a tool to protect foreground knowledge. The Joint Ownership Agreement is expected to be developed and accompany the IPR management and the exploitation plan of the project.

3 Draft IPR Plan

An internal survey was performed during October-December 2016 to gather initial information from all participating partners, define their contribution to the final FrailSafe outcomes and realise their intentions on adopting proposed exploitation scenarios of the project.

The following sections reflect the consortium's **initial feedback with respect to the current early stage of the FrailSafe implementation** and taking into account that discussion concerning FrailSafe system architecture and functionalities is still underway and **is subject to change**.

3.1 Contribution to Outputs

The table below indicates the contribution of each organisation to the FrailSafe developments, which are expected to form the foreground knowledge of the project (see Section 2). This will help distinguish, at a later stage, either potential **solely property** of a single organisation or **joint ownership** of individual exploitable components.

Table 1: Contribution to the final outputs

Project Output	UoP	BRAINSTORM	SMARTEX	AGE	CERTH	MATERIA	SIGLA	HYPERTECH	INSERM
1. WWBS system	✓		✓		✓				✓
2. Signal processing and data analysis tool	✓		✓		✓				
3. Social media sensing tool	✓					✓			✓
4. Risk assessment tool	✓					✓			✓
5. Virtual patient model (VPM)	✓				✓	✓		✓	✓

Project Output	UoP	BRAINSTORM	SMARTEX	AGE	CERTH	MATERIA	SIGLA	HYPERTECH	INSERM
6. Dynamically synthesized games	✓	✓			✓	✓			✓
7. Visualization and DSS module	✓				✓			✓	
8. Clinical web platform (eCRF)	✓				✓	✓	✓		✓
9. Virtual community platform (VCP)	✓						✓	✓	
10. Integrated FrailSafe system	✓	✓	✓		✓	✓	✓	✓	✓

3.2 IPR Restrictions, Licences and Target Markets-Audiences

The following table indicates IPR restrictions, licenses required and target markets-audiences for the exploitation of the FrailSafe solution as a whole or partially. IPR restrictions and licenses concern modules or components that are provided by third parties or are being developed by a FrailSafe partner and which are expected to be in its ownership (background knowledge). The input provided, will be used in the definition of the **final IPR scheme** of FrailSafe exploitation.

Table 2: Define IPR restrictions, licenses and target markets-audiences

Project Output	IPR Restrictions	Required Licenses[1]	Target Markets & Audiences
1. WWBS system	Hardware and firmware developed by SMARTEX are owned by the company, but libraries for management of data are open for the consortium and could be open also to third parties.	No licence required	This product could be commercialised: • Within Frailsafe solution as a whole, as it has a central importance in the monitoring activity regarding physiological parameters and posture/balance/level of activity; • Within FrailSafe activity as an independent component, in case a modular solution is seen as more market penetrating; • Independently from FrailSafe, for the same type of target (older adults) but also sportsmen and sportswomen, safety at work, security, etc.
2. Signal processing and data analysis tool	Open-source / to be commercialized (to be decided later on)	No licence required	Clinicians, Researchers, Fragile older adults
3. Social media sensing tool	The Facebook crawler can retrieve public data, including wall posts, only from Facebook pages, provided developer tokens	Facebook and Twitter developer tokens (free)	Emotionally, mentally, cognitively and socially fragile subjects. Social media dangerous behaviour detection for underage subjects.

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[1] Background knowledge or licenses that need to be purchased to use the component or module

Project Output	IPR Restrictions	Required Licenses[1]	Target Markets & Audiences
	have been obtained, and not from Facebook accounts. The latter requires special permission from the owner account. The Twitter crawler can retrieve tweets and retweets from any Twitter account on the condition that the appropriate developer credentials have been obtained prior to crawler launching.		
4. **Risk assessment tool**	Open-source / to be commercialized (to be decided later on)	No licence required	Clinicians, Researchers, Fragile older adults
5. **Virtual patient model (VPM)**	Open-source / to be commercialized (to be decided later on)	No licence required	Health-related companies, clinicians, research institutions
6. **Dynamically synthesized games**	Open-source / to be commercialized (to be decided later on)	BRAINSTORM's real-time graphics engine (background knowledge)	Health clubs and organisations, health-related companies and clinics, medical equipment selling companies
7. **Visualization and DSS module**	Open-source / to be commercialized (to be decided later on)	No licence required	Clinicians, researchers, individual patients/older people
8. **Clinical web platform (eCRF)**	To be commercialized. Software developed by SIGLA is owned by the company but access to data	No licence required	Clinical settings, health organisations and health care providers oriented in:

Project Output	IPR Restrictions	Required Licenses[1]	Target Markets & Audiences
	are open for the consortium and could be also open to third parties via suitable APIs.		• geriatric and gerontological services; • network management for paediatric patients with incurable diseases and high complexity care; • pharmaceutical companies for trial protocol management. Furthermore, organizations and laboratories involved in medical research.
9. Virtual community platform (VCP)	Open-source / to be commercialized (to be decided later on)	No licence required	Healthy older people or patients of all ages with a specific condition, health clubs and organisations, health-related companies (e.g. insurance companies, companies providing telemedical assistance, clinics, medical and paramedical associations etc..), which wish to provide an extra service to their members.
10. Integrated FrailSafe system	To be commercialised	BRAINSTORM's real-time graphics engine (background knowledge)	Health clubs and organisations, health-related companies and clinics, medical equipment selling companies, insurance companies etc.

3.3 Contribution to the Integrated System and IPR

This section illustrates the modules, components, services etc. of the **integrated FrailSafe system**, which have been or expected to be developed and contributed by each organization. Also, based on each organisation view, any IPR restrictions linked to each of the modules, services etc. are defined. The input provided, will be used in the compilation of the **Joint Ownership Agreement** of FrailSafe.

Table 3: Contribution of each organization to the integrated FrailSafe system

Project Partner	Contribution to the Integrated Frailsafe System (Modules, Services Etc.)	IPR Restrictions Linked to Each Piece of Contribution
UoP	1. Signal processing and data analysis 2. Data management 3. Virtual patient model (VPM) 4. Social media sensing tool 5. Risk assessment 6. Clinical state prediction engine 7. Guidance on the frailty metrics (existing and the new ones being developed), frailty related clinical measurements, outcomes evaluation, guidance provision to participants. 8. Provision of the basis of the construction of the clinical web platform (eCRF); interactions and feedback. 9. Provision of clinically relevant guidance and feedback about acceptability issues regarding WWBS system. 10. Provision of guidance about the clinical	1. Open-source / to be commercialized (to be decided later on) 2. Open-source / to be commercialized (to be decided later on) 3. Open-source / to be commercialized (to be decided later on) 4. Open-source / to be commercialized (to be decided later on) 5. Open-source / to be commercialized (to be decided later on) 6. Open-source / to be commercialized (to be decided later on) 7. N/A 8. N/A 9. N/A 10. N/A 11. N/A

Project Partner	Contribution to the Integrated Frailsafe System (Modules, Services Etc.)	IPR Restrictions Linked to Each Piece of Contribution
	relevance and purpose orientation of dynamically synthesized games adjusted to older peoples' special needs. 11. Collection of multimodal data for the FrailSafe database.	
BRAINSTORM	1. Physical and Cognitive games 2. Access to Frailsafe sensors through games 3. Access to users' database through games	1. To be commercialised 2. To be commercialised 3. To be commercialised
SMARTEX	1. WWBS hardware and firmware 2. Algorithms for WWBS data analysis	1. To be commercialised. SMARTEX will own the IPR 2. Strategy will be planned among FrailSafe partners: Some algorithms (e.g. parameter extraction from ECG) are already public, other will be developed within FrailSafe project.
AGE	N/A	N/A
CERTH	1. Virtual and augmented reality serious games 2. Visualization and DSS module 3. Virtual patient model (VPM) 4. Indoor/Outdoor Monitoring module	1. Open source / to be commercialized (to be decided later on) 2. Open-source / to be commercialized (to be decided later on) 3. Open-source / to be commercialized (to be decided later on) 4. Open-source / to be commercialized (to be decided later on)

Project Partner	Contribution to the Integrated Frailsafe System (Modules, Services Etc.)	IPR Restrictions Linked to Each Piece of Contribution
MATERIA	1. Contribution to the design and end-user feedback	N/A
	2. Virtual and augmented reality serious games	
	3. Social media sensing tool	
	4. Risk assessment	
	5. Virtual patient model	
	6. Guidance on the frailty metrics (existing and the new ones being developed), frailty related clinical measurements, outcomes evaluation, guidance provision to participants.	
	7. Provision of the basis of the construction of the clinical web platform (eCRF); interactions and feedback.	
	8. Provision of clinically relevant guidance and feedback about acceptability issues regarding all FrailSafe systems.	
	9. Collection of multimodal data for the FrailSafe database.	
SIGLA	1.Clinical web platform (eCRF)	1. To be commercialised
	2. Virtual community platform (VCP)	2. To be commercialised
HYPERTECH	1. Virtual patient model (VPM)	1. To be commercialized
	2. Visualization and DSS module	2. To be commercialized
	3. Virtual community platform (VCP)	3. Open-source

Project Partner	Contribution to the Integrated Frailsafe System (Modules, Services Etc.)	IPR Restrictions Linked to Each Piece of Contribution
INSERM	1. Clinical study design and implementation. Subjects' recruitment and clinical measurements; clinical battery composition; FrailSafe system devices installation; evaluation of the frailty level, of frailty related clinical parameters, clinical follow up; outcomes and adverse events' recording; data collection, recordings' uploading and reception of input from the participants; guidance provision to participants.	1. N/A
		2. N/A
		3. N/A
		4. N/A
		5. N/A
	2. Provision of the basis of the construction of the clinical web platform (eCRF); interactions and feedback until its finalization.	
	3. Provision of clinically relevant guidance and feedback about acceptability issues regarding WWBS system.	
	4. Provision of guidance about the clinical relevance and purpose orientation of dynamically synthesized games adjusted to older peoples' special needs; application of current versions.	
	5. Collection of data concerning written texts for natural language analysis.	

3.4 Selection of Exploitable Outputs

Given the early level of FrailSafe technical implementation, each partner was requested to specify the outputs that, according to its current view, should be considered as exploitable for any type of exploitation (from sustainability to commercial exploitation). The results are presented in the next table and are expected to assist in the definition of the **final IPR scheme** as well as in the composition of the **exploitation plan** of FrailSafe.

Table 4: Final exploitable outputs

Project Output	UoP	BRAINSTORM	SMARTEX	AGE	CERTH	MATERIA	SIGLA	HYPERTECH	INSERM
1. WWBS system	✓		✓		✓	✓	✓	✓	✓
2. Signal processing and data analysis tool	✓		✓		✓				✓
3. Social media sensing tool	✓								
4. Risk assessment tool	✓					✓			✓
5. Virtual patient model (VPM)	✓			✓	✓	✓	✓	✓	✓
6. Dynamically synthesized games	✓	✓	✓		✓	✓	✓	✓	✓
7. Visualization and DSS module	✓		✓		✓	✓	✓	✓	✓

8. Clinical web platform (eCRF)	✓		✓	✓	✓	✓	✓	✓	✓
9. Virtual community platform (VCP)	✓								
10. Integrated FrailSafe system	✓	✓	✓	✓	✓	✓	✓	✓	✓

3.5 Selection of Exploitation Scenario

Following the above selection, each partner was also asked to declare its preference to the exploitation scenario of FrailSafe. Initial findings are presented in the table below, which, as already mentioned, are expected to assist in the definition of the **final IPR scheme** as well as in the composition of the **exploitation plan** of FrailSafe.

Table 5: Exploitation scenario selection

Exploitation Scenario	Preferred by Partner
Create a company to implement the exploitation strategy and plan	SMARTEX, CERTH, HYPERTECH
Sell the work and the IPR to another organisation (inside or outside the consortium) that will exploit the FrailSafe solution	BRAINSTORM
License the FrailSafe solution to another organisation (inside or outside the consortium) and keep the IPR	UoP, BRAINSTORM, CERTH, INSERM
Exploitation of specific FrailSafe outputs by each organisation (keeping the IPR individually or jointly)	UoP, SMARTEX, CERTH, SIGLA, HYPERTECH, INSERM
Open-source exploitation and revenues through the offering of added value services	UoP, CERTH, MATERIA, HYPERTECH, INSERM

Additionally, each partner defined its desired role in a future exploitation scheme. The following options were given:
- **Active exploitation**: Interested in participating in a company or a scheme that will manage the exploitation of FrailSafe
- **Passive exploitation**: Sell or license the solution

- **Added-value services:** Offer services (solely or in conjunction with another type of exploitation)
- **Sustainability:** Interested only in sustaining the solution (not commercially exploit it).

Table 6: Definition of partners' roles in exploitation

Project Partner	Active Exploitation of the integrated FrailSafe system	Active Exploitation of specific components or modules	Passive Exploitation (sell or license the solution to someone else)	Value-Added Services (participate in the provision of services)	Sustainability (only ensure sustainability)
UoP	✓	✓		✓	
BRAINSTORM			✓	✓	
SMARTEX	✓	✓		✓	
AGE					
CERTH	✓	✓		✓	
MATERIA				✓	
SIGLA		✓		✓	
HYPERTECH	✓	✓		✓	
INSERM	✓	✓		✓	

3.6 Provision of Additional Services

Additional services may be offered in any exploitation scenario, generating revenues in the frame of FrailSafe's commercial exploitation. The following table summarises the preference of each organization in offering an additional added-value service.

Table 7: Provision of additional services

Project Partner	Consulting Services (linked to the use, the maintenance of the system or the components / modules etc.)	Training Services (for the use of the platform or components / modules provided upon customers' request)
UoP	✓	✓
BRAINSTORM		✓
SMARTEX	✓	✓
AGE		
CERTH	✓	✓
MATERIA		✓
SIGLA	✓	✓
HYPERTECH	✓	✓
INSERM	✓	✓

4   Conclusions - Next Steps

The deliverable "D8.8: IPR Protection Plan (vers a)" reports the first version of the Intellectual Property Rights (IPR) management plan of the FrailSafe project. It reflects the consortium's intentions with respect to the current early stage of the FrailSafe implementation and taking into account that discussion concerning FrailSafe system architecture and functionalities is still underway and is subject to change.

In order to define IPR, "background" and "foreground" knowledge is identified. The IPR management plan is trying to distinguish contribution of partners to individual modules and to the final integrated FrailSafe system, indicating IPR restrictions, licenses required and target markets-audiences for the exploitation of the FrailSafe solution as a whole or partially.

At this point, it should be mentioned that, officially, the exploitation and business models creation task (T8.2) has not started yet. However and due to its critical importance, preliminary actions have already been initiated related to the business potential of FrailSafe, its innovative aspects and the added value compared to the current market state.

In this direction and as reported previously (see Section 3), the consortium has already expressed its initial preferences regarding potential exploitation options, i.e. if there is an interest in participating in a company or a scheme that will manage the exploitation of FrailSafe (active exploitation), if partners prefer to sell or license the solution (passive exploitation), if they prefer to offer services (solely or in conjunction with another type of exploitation) (added-value services) and finally, if they are interested only in sustaining the solution (not commercially exploit it).

Based on all feedback gathered, research and discussions will continue in order to reach a consensus about the desired IP policy and the optimal exploitation scenarios to be adopted by the FrailSafe consortium.

Planned activities during the next period will ensure that all project results will be formulated and compiled into a protectable form and lead to the finalization of the IP / Joint Ownership Agreement to enable exploitation actions to execute smoothly.

The final version of the IPR management plan will be available in month 24.

References

[1]   The European IPR Helpdesk, "Your Guide to IP in Horizon 2020": https://www.iprhelpdesk.eu/sites/default/files/documents/EU_IPR_IP-Guide.pdf

[2]   Directive 2006/115/EC of the European Parliament and of the Council of 12 December 2006 "on rental right and lending right and on certain rights related to copyright in the field of intellectual property": http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006L0115&from=EN

[3]   Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 "on the harmonisation of certain aspects of copyright and related rights in the   information   society": http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:167:0010:0019:EN:PDF

[4]   Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 "on the legal protection of databases": http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31996L0009&from=EN

[5]   Council Directive 93/98/EEC of 29 October 1993 "harmonizing the term of protection of copyright and certain related rights": http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31993L0098&from=en

[6]   Council Directive 91/250/EEC of 14 May 1991 "on the legal protection of computer   programs": http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:1991:122:FULL&from=EN