D9.7

Final Exploitation Plan

v 3.0 / 2017-01-31

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Following the initial work presented in D9.5, this document describes the exploitation paths that are to be followed by the USEMP project and partners to ensure the long term exploitation and sustainability of the project outcomes.

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Project acronym	USEMP
Full title	User Empowerment for Enhanced Online Presence Management
Grant agreement number	611596
Funding scheme	Specific Targeted Research Project (STREP)
Work program topic	Objective ICT-2013.1.7 Future Internet Research Experimentation
Project start date	2013-10-01
Project Duration	36 months

Work Package	WP9
Deliverable Lead Org.	Velti
Deliverable Type	Report
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Version	3.0
Status	Final
Dissemination Level	Public
Due date	2016-09-30
Delivery date	2016-10-11 revised 2017-01-31

Version	Changes

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1.0	Initial Draft based on D9.5
1.1	New chapters for the DataBait exploitation
1.2	Partners individual contributions
1.3	Integrated version
1.4	Final version for internet review
2.0	Final version
3.0	Revised version after the final project review

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1.Executive Summary

This document is the final report on the exploitation plan for the USEMP consortium and its purpose is to describe the USEMP consortium partners' plan for the exploitation of project results, as the project comes to its fruition. In order to accomplish this task, the current proposal for an exploitation plan is developed that provides an overview of the different exploitation assets and business opportunities by consortium members internally, as well as of the initiatives for exploitation at large.

A first introduction to the USEMP exploitation plan was presented last year in Deliverable 9.5 "Initial Exploitation Plan" that focussed mostly on the identification of the USEMP outcomes, the different exploitation paths and the discussion on issues regarding the IPR strategy and the IPR outcomes of USEMP.

In this updated version of the exploitation plan, we present the final decisions made for USEMP that have to do the long term viability and sustainability of DataBait, the main outcome of the project, as well as the updated list of assets of the project. As it will be presented later on, the selected path for DataBait is to become an open tool available for users and researchers promoting privacy awareness with no commercial application for the application per se.

In addition, in the following we present main aspects of the USEMP work that can exploited individually and that are of the most interest for selected partners of the project. Partners own exploitation plan is also updated based on the USEMP latest development and presented here.

All the above conclude the exploitation plan for the USEMP project, leaving behind the DataBait tool as a separate item for exploitation in addition to all other aspects.

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2.Introduction

This document contains the final exploitation plan building upon USEMP project activities undertaken during the last period of the project.

The document describes:

- an identification of tangible and intangible assets that can be exploited by project partners, firstly presented in D9.6 and updated here
- an identification of different strategies for exploitation of the USEMP outcomes
- the presentation of the specific exploitation path for different outcomes of the project, including but not limited to the DataBait tool
- a collection of the projects partners' intentions with respect to exploitation based on their role/view on the USEMP related markets and the technologies they see as more probable for commercialization or open sourcing to the community, initially presented in D9.6 and updated here.

The USEMP consortium is focused on generating market impact and exploiting project results in the rapidly evolving market of OSN personal data management services. This approach is reinforced by the fact that the consortium includes two commercial partners (VELTI & HWC) with active interests in the utilization of personal data management systems and related business value chain, two industrial research institutions focused on applied research (CEA, CERTH) with active interest in developing technology components for personal data management systems and big data applications. The consortium also includes three academic institutions (iMinds-SMIT, LTU, iCIS) with vested interest in research in this area. 'iMinds and LTU that study how users would apply the USEMP tools in their daily life and iCIS that follows recent disruptions in the legal field in relation to data regulation to enhance the chance on market success.

For the creation of the exploitation plan, the following items have been considered:

- The exploitation plan should offer a flexible approach, considering key technologies developed during the project and information flows to and from external parties and communities. This will help partners extend and customize their products in such a way so that they are relevant to the market needs beyond the life of the project.
- The exploitation plan identifies both technologies that can be used to a) develop Intellectual Property Rights (IPR) from project partners and b) open source to the wider community.
- Understanding the potential market in terms of its dynamics and developers requirements, motivation and expectations is essential.
- Identification of the right path for the sustainability of the project outcomes towards an open tool to promote privacy awareness

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- Project partners that can exploit project outcomes in a broadest sense as they look to transfer results and policy lessons to regional, national and European authorities and the overall open source and developer community
- The exploitation plan for both the project as a whole and the individual partners should be fully compliant with the initial terms and conditions laid down in the USEMP Grant Agreement.

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3.USEMP Exploitation Paths

Over the period, the USEMP project has identified a number of different paths that could be considered for the exploitation of the project. This process includes the identification of project results, the main strengths of USEMP and the final outcomes that could be exploited by the project partners. The following have initially been conceived and presented in D9.5 and are updated in this document following the evolution of the project.

The following classifications are proposed to distinguish between different offering categories for USEMP results:

a. Short-term offerings composed mainly of assets of high degree of innovation that can be exploited immediately or shortly after the end of the project. This class includes consultancy services, skills in evaluating or developing solutions for OSN personal data management systems/services, training in novel technologies in the field as well as competence in similar R&D efforts and co-funded initiatives. It has to be noted though that these short-term offerings are mainly targeted to a small number of customers with the need of very specialized technologies or knowledge.

   Thus a potential B2B offering scenario studied within USEMP would fit better in this particular type of short-term offerings. Based on this, the expectation is that the short-term offering might have high margins of profit, aiming towards a niche market, but requiring a targeted marketing plan in order to convince the respective market of the benefits this high degree of innovation brings. This market will comprise specialist groups that need to be persuaded of the functionality and strengths of using the USEMP technologies and expertise in existing and newly developed applications following the results and findings of the project.

b. Mid to long-term offerings composed mainly of assets related to technologies and solutions that are of interest to a larger number of users, and may take additional time to develop. These offerings, such as the ability of OSN users to view reports of the expected value they are generating based on USEMP-derived tools, or the ability to classify content posted by OSN users in advertising related contextual categories will require additional effort and time to be developed to full products.

   For these types of components, the expectation is that they can be developed to market in 1-2 years after the project ends, where personal data management solutions for OSN users can be exponentially more popular compared to today.

There are three main types of expected users for the USEMP technologies:

- **End-users of Online Social Networks** (OSN) (B2C)
- **Internet technology companies and software developers** for personal data management services for OSN users (B2B)
- **Advertising & marketing companies** (B2B) that may be interested in developing new privacy-aware solutions for their marketing & advertising campaigns

While the consortium sees as DataBait being an open source tool available for research, in terms of funding the above revenue streams could be of use to boost research around the USEMP outcomes.

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In order to enable the realization of the commercialization of the project results, the following should be taken into account:

- The USEMP DataBait tool architecture and implementation should be widely applicable focusing on the target market, and the design of algorithms should be performed such that they are scalable and use open standards according to the principles of open systems where this is feasible.
- The compilation of the tools developed in the project in an easily usable form, completed with documentation. These tools may then be licensed, or further developed into commercial products.
- The clear distribution of the IPR among contributing USEMP partners, following the principles detailed in the consortium agreement.

Additionally, the project technologies are expected to be used by the partners themselves mainly VELTI, HWC commercially by developing new products and services with added value features from USEMP.

3.1. Identification of Project results

For a detailed exploitation plan, there is a need to firstly identify and analyse the assets and results of the project. Any exploitation plan should be built on these assets and providing appropriate ways of commercially exploiting them. USEMP results are divided into two main categories, the tangible assets and the intangible ones. Each of these categories has been further split according to the type of result. The figure below provides an overview of the taxonomy of results. Details regarding each of these results are given in the following two sections.

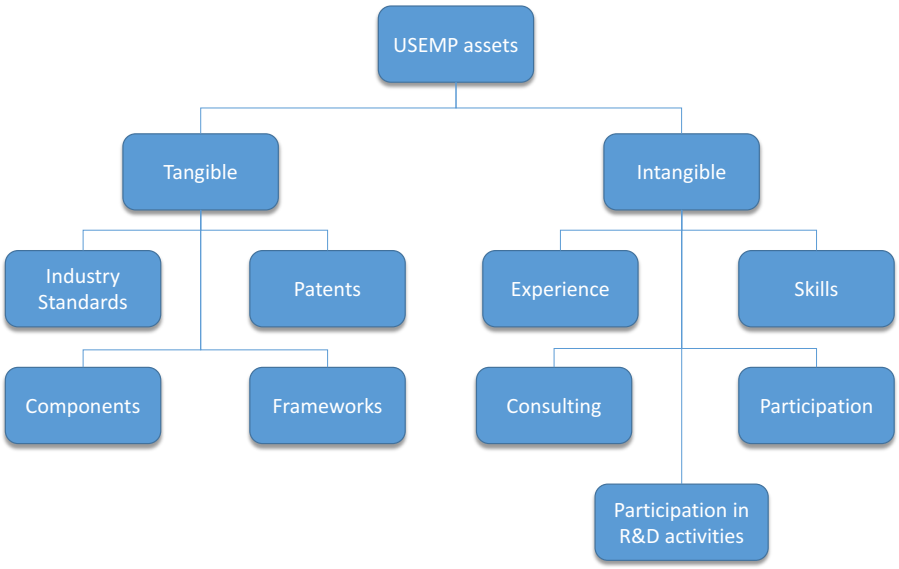

Figure 1: USEMP results classification

3.1.1. Tangible Assets

In this category the following sub-categories are being identified:

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a. Industry Standards
b. Patents
c. Components
d. Frameworks

Related with the USEMP results in this category we identify libraries and software modules developed for:

- Concept Image Detection
- Logo Recognition
- Multi-Modal Similarity
- Text Similarity
- Opinion Mining
- Multimedia Location Detection
- Disclosure Scoring Framework
- Personal Attributes Inferencing Modules
- Privacy-aware Image Classification
- Disclosure Control Framework
- Web trackers blocking

The list also applies to any relevant patents produced related to the components above. Patenting activity has already initiated, with three (3) patents application having been filed by CEA on visual mining technologies based on the research results of the project.

3.1.2. Intangible Assets

In this category the following sub-categories are being identified:

a. Experience
b. Skills
c. Training
d. Consulting
e. Participation in other relevant R&D activities

Related to the USEMP results in this category we identify:

- Methodology for the collection and processing of user requirements for personal data management in social networks
- Increased expertise in the legal domain related to the complex regulatory environment of personal data
- Experience and skills on the development of OSN personal data management services
- Experience and skills on the development of machine learning and multimedia data analysis solutions
- Methodology for benchmarking of personal data management services for OSN users

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- Experience and skills on API development, documentation and prototyping for commercial use

For the academic and research partners, the project is used to help train PhD students. They carry out research work aligned with the project objectives, and gain experience of working on collaborative projects. Results and work on the project is also used in lectures for undergraduate and postgraduate students in social sciences, software engineering and information technology (CERTH, LTU, iMinds-SMIT, CEA, Radboud University). The prestige conferred by working in EU funded projects is currently - and will be used in the future – for a marketing perspective to attract new undergraduate and postgraduate students. It is expected that some of the above students will exploit their knowledge of the USEMP technologies to either obtain employment in relevant market sectors or to create their own start-up companies. Finally, the knowledge generated in the USEMP project will also be used to influence local policymakers and organizations that work on privacy.

3.2. Exploitation Methods

The USEMP project has a strong research focus and explores new ideas that will facilitate the development of more powerful and usable personal data management solutions for OSN users. This is balanced with commercial and industrial interests in developing systems that will yield profit in the medium to long term after the completion of USEMP. Consequently, the project offers several routes for exploitation to partners and results adopters.

The exploitation and dissemination of the project results offers a key strategic opportunity for the longer-term development of the business of engaged industrial partners. The USEMP consortium includes two companies (Velti and HWC) that have already invested resources in the development of the USEMP technologies and are looking forward to reuse the produced technology for new business models.

Bellow we present different exploitation methods that have been consider for the USEMP project, presented in D9.5 and updated here.

3.2.1. Exploitation of the USEMP Output

More specifically the exploitation of USEMP will be driven by the following project characteristics:

- USEMP consortium partners that will join a new legal entity focused to support and continue the work of DataBait.
- USEMP industrial members namely VELTI and HWC can exploit project results for future products in their specific domains, thereby gaining competitive advantage and experience.
- USEMP applied research institutions (CEA, CERTH) can leverage project results to foster the development of innovative services and identify opportunities for further research.
- USEMP academic partners (iCIS, iMinds-SMIT, LTU) can use the project results for enhancing their domain expertise/technical excellence and identify how to take advantage of opportunities for further research.

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With respect to commercial exploitation of the developed DataBait tools, USEMP consortium partners have generated a list of dependencies to external frameworks and libraries and their licensing model to ensure that the derivatives of their work can be commercialized with the appropriate licensing model. The list is described in detail in ANNEX-A.

3.2.2. Open Specifications, Open Source Products and Tools

By adhering to open specifications in the USEMP project we are ensuring that the tools and concepts developed within our project are distributed to and available for take-up by the widest audience possible while at the same time USEMP partners comply with all Intellectual Property rights of existing, modified and/or re-used software packages (see Annex A for full list).

While Open Source has frequently been considered by the general public as free software and the two terms ‘Open Source Software’ and ‘Free Software’ have often (but mistakenly) been used to refer to the same thing or have been commonly interchangeable, the fact that Open Source Software is free is not true. Free software is software that is freely available without the constraints of permission requests to carry out any tasks or limitations through license agreements. Open Source fundamentally means free access to the software source code and documentation but may include varying costs and revenues for the companies investing in an Open Source license, depending on the particular usage of the source code. Within the USEMP project we can use a dual license strategy for its Open Source products. This means that we can make certain elements of the tools and technologies available free of charge for specific pre-defined users or use types, while other elements will be based on a license fee. The implementation of this dual strategy might not be sufficient and other distribution modes will also need to be considered, e.g. free or preferential access to libraries, APIs, executables, tools, and web services. The licensing conditions for the outputs will be reviewed and decided by the respective IP owners and the USEMP consortium, aiming at maximizing the USEMP project impact and the spread and usage of its technical achievements in the market and in fully compliance with the Grant Agreement No 611596 between the EU and USEMP partners.

Parts of the core technology underlying the USEMP framework are available as Open Source and free of charge, with users able to freely access. However, platform specific implementations of the framework will be available as proprietary software (explained later on).

In general revenues from open source can also be generated from:

- Open funding (from institutions, NGOs, etc.)
- Distribution fees (for hard copy installs, as opposed to downloadable versions)
- Packaging (which includes printed documentation, etc.)
- Paid Support
- Implementation, integration and customization services
- Proprietary products on top of the platform
- Consultancy Services
- Training

The consortium will be given the opportunity to engage in this mix of Open Source and proprietary licenses in order to better disseminate the projects results and also allow for their commercial exploitation.

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The coupling together of open specifications with open source provides another possible revenue stream for the partners through specific consulting services or the participation in specific expert groups; while at the same time allowing for the easiest adaptation of the specifications and the relevant technologies.

- **Licensing schemes**

In terms of licensing schemes for the Open source components of USEMP DataBait there is a number of licences that are under consideration like Apache or MIT licences. The main difference is that Apache requires derivative works to provide notification of any licensed or proprietary code which includes copyright, patent, trademark and attribution notices, as well as prominent notifications that the code was changed, in each file modified. And in contrast to the permissive concept, they will still require application of the same license to all unmodified parts. The MIT Licensing scheme has no such restrictions or requirements, and is provided free of charge to use without limitations as long as the MIT copyright license and permission notice are included. In all cases USEMP is compliant with all licenses in the software used for the development of DataBait and any further exploitation of the result will take into account any third party IP rights were required.

3.2.3. Non Open Source Products monetization

As already mentioned, a subset of the USEMP offering will remain proprietary software along with the platform specific implementations. Partners are able to produce platform specific implementations of the framework after the end of the project and market them as proprietary software for commercial exploitation. As part of the USEMP technology is also available as Open Source, there is no restriction on companies from outside the consortium developing and commercialising their own implementations. However, the partners of the consortium have the first-movers' advantage in such attempts and therefore could also benefit from providing consultancy services to any companies wishing to develop such implementations.

- **Licensing scheme for the applications and services**

Following the principles included in the consortium agreement, some of the developed technology enabling developers that use the USEMP platform and corresponding service enablers will be closed source. Developed applications will be domain and sector specific and will be the main form of monetization for participating companies and applied research institutions. It is hence necessary that these applications are protected by a suitable proprietary licensing scheme in order to motivate the participating companies for its commercialization. More specifically, if the technologies/results/products are owned by the partner then there will not be any share of revenues or royalties with other partners. In the case of technologies/results/products are co-owned by consortium partners then the owner(s) will be entitled to an agreed fee, if these are used in further product development as described in the consortium agreement. Common licensing rules will be established for tools developed in common, while each partner will be able to have an independent strategy for its own development. The creation of these back to back agreements are to be developed by the consortium partners when they see fit to their activities.

3.2.4. Services

For any service, such as consultancy and training, each partner is free to act independently. If the technologies/results/products on which the services are based are owned by the partner, then there will not be any share of revenues or royalties. In the case of technologies/

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results/products on which the services are based are owned or co-owned by other partners then the owner(s) will be entitled to a small fee, as described in the consortium agreement.

Partners that wish to capitalize on the results of the project, both tangible and intangible, in the framework of other research activities, including research projects (i.e. re-using a tool developed in USEMP in some other project, transferring skills, know-how and experience gained in USEMP to other research work), the partners should first obtain the specific agreement of the owners/co-owners of the respective technologies, results or products and should also state that the corresponding work has been produced as part of the USEMP project. Any use or share of the technologies/results/products should not violate the existing Consortium Agreement.

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4.USEMP Outcomes Exploitation Plan

While in the previous chapter we referred to the main concepts behind the exploitation plan of the USEMP project, in this chapter we present the main outcomes – products – of the project and the detailed exploitation plan for each one of those.

As explained earlier not all outcomes are exploitable by the whole consortium nor do they have the same type of exploitation and for each one, a different approach is presented. In summary the main outcomes of the project are:

- The overall tool created: DataBait
- The data licensing analysis and profile transparency
- The multimedia information extraction mechanisms
- The privacy awareness and disclosure mechanisms
- The privacy understanding of users
- The privacy visualization frameworks

4.1. DataBait Tool

The main outcome of the project is none other than the DataBait Tool, the USEMP web application that shows you what happens behind the screen, to the digital trail you leave behind when using OSN services. During the project lifetime, the USEMP consortium put a lot of effort to deliver DataBait as a fully functionally tool and all partners are interested at continuing the work underpinned.

DataBait is considered to be the main product that has come out of the whole project and consequently it is treated independently from other outcomes. As all consortium partners are interested in the future of DataBait, it was decided that any decision taken for DataBait should be a decision from all partners. To this end, it is the interest of the parties for to DataBait to ultimately become an independent legal entity, where all USEMP partners have stakes and new partners could be added to continue the work of the project.

It is important to note that for DataBait it was a unanimous decision of the project partners not to proceed with a full commercialization of the tool (e.g. marketing on the tool), but instead following the main principles of DataBait and the USEMP project, i.e. provide an open tool for research and increasing OSN user's privacy awareness. With this concept as the guiding principle of operating DataBait, the only way to evolve DataBait is through private or public funding. To this end the consortium has already established a plan for the continuation of DataBait and its evolution for the next term.

Figure 2: DataBait Evolution

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In summary what is presented in the above plan includes the following steps as major milestones:

- USEMP project ends
  - successful completion of the project with DataBait tool being delivered and publicly available
  - registration of DataBait trademark
  - preparation for the post-USEMP era (e.g. new web site with DataBait as the main topic, extension/transformation of DLA, etc.)
- DataBait new legal entity
  - secure funding for the creation of the entity
  - resolve all pending issues regarding IPR, voting, partners entering/leaving, etc.
  - support the operation of DataBait
- Secure new funding for the future of the project
  - operation costs
  - availability of the service over a cloud infrastructure
  - possibility of transferring the service to a public research infrastructure (e.g. GEANT, EGI, etc.)
- Attract new funding to further develop and evolve DataBait

Following the above roadmap, main challenge and risk is the securement of new funding to secure the future of DataBait. As explained earlier, it is a common understanding among project partners that funding received should be towards sustaining the tool and developing even further the different technologies towards privacy awareness and should be based on either private or public funds. To this end, the USEMP consortium has already identified and initiated a process to secure such funding. The table below presents initial funding schemes and actions taken towards that direction.

Funding Scheme	Action Taken
Open Society Foundation Grant **https://www.opensocietyfoundations.org/**	The Open Society Foundations work to build vibrant and tolerant democracies whose governments are accountable and open to the participation of all people. USEMP consortium has already submitted a preliminary application to get the grant. This is a process that will evolve over the next short period
Data Transparency Lab **http://www.datatransparencylab.org**	A collaborative effort between universities, businesses and institutions to support research in tools, data, and methodologies for shedding light on the use of personal data by online services, and to empower users to be

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	in control of their personal data online. In order to support research in these areas. USEMP partners are aware of this funding scheme and will interact with the DTL once the new calls are out.
W3C Tracking Protection Working Group **https://www.w3.org/2011/tracking-protection/**	The Tracking Protection Working Group is chartered to improve user privacy and user control by defining mechanisms for expressing user preferences around Web tracking and for blocking or allowing Web tracking elements. DataBait already includes tools towards the direction of the working group and already had contributed in the group. The potential of a future collaboration with the group and its roadmap is to be investigated in the future.
European Grid Infrastructure (EGI) **https://www.egi.eu**	EGI is a publicly-funded federation of data and computing centers across Europe. It aims to create and deliver open solutions for science and research infrastructures by federating digital capabilities, resources and expertise between communities and across national boundaries. USEMP partners are already established a contact with EGI as a potential interested party to host DataBait
EC - Horizon 2020 new projects **https://ec.europa.eu/programmes/horizon2020/**	The EC has already published the work programme for the year 2017 where the USEMP consortium partners have already identified calls under which the DataBait could be further funded e.g. DS-08-2017
FIWARE **https://www.fiware.org**	The **FIWARE** Community is an independent open community whose members are committed to materialise the FIWARE mission, that is: “to build an open sustainable ecosystem around public, royalty-free and implementation-driven software platform standards that will ease the development of new

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	Smart Applications in multiple sectors”.. FIWARE runs a number of parallel supportive projects that provide funding to work on applications such as DataBait. The USEMP consortium is following these opportunities and is ready act when the opportunity will rise.

In addition to the above mentioned schemes, USEMP partners will continue searching for new opportunities that might arise in the near future as for example collaborating with main research infrastructure projects that could provide the needed resources for hosting and running the services of DataBait with no or limited costs.

Finally, in regards to the formation of the legal entity, USEMP partners will be securing the required funding for tis formation (not foreseen in the USEMP Description of Work). Following an initial analysis of the USEMP team, the legal entity will be based in Belgium as it provides a necessary legal framework that can support the creation of this type of legal entity and all partners agree on using this framework as the most suited for the case.

4.2. Data Licensing and Profile Transparency

The legal research done during the USEMP project has produced a wealth of know-how and expertise that is extremely relevant – especially now that the new GDPR comes in to effect in 2018 – to many different stakeholders in the ecology of commercializing the digital trails of users of browsers and OSNs. Some important and topical issues in relation to profile transparency and the exercise of user control over one’s digital profile(s) which the USEMP research helps to clarify, are:

a) how the data controller’s duty to provide profile transparency (as stipulated by the GDPR) should be interpreted;
b) how this can be complemented by independent, third party profile transparency providers;
c) which tensions there can be between IP rights and the provision of profile transparency as a data controller – and how these tensions can be avoided;
d) which tensions there can be between IP rights and the provision of independent, third party profile transparency – and how these tensions can be avoided;
e) on what kind of contractual relation (‘data licensing’) the provision of independent, third party transparency should be built in order to maximize a user empowerment and compliance with data protection and other relevant laws;
f) the difficulties (but also some opportunities) of granular licensing systems (which would allow the user to define outer boundaries with regard to which types of data can be processed and for which purposes);
g) whether portrait rights (as derived from IP law and/or the field of fundamental rights) can contribute to a strengthened position of the user with regard to exercising control over one’s ‘profile’

After the end of the project the iCIS team of legal researchers will continue to exploit and disseminate the knowledge and know-how generated during the USEMP project through: (a)

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academic publications based on the research presented in the USEMP research deliverables, (b) interventions in forums where policy makers and other relevant stakeholders with regard to the tensions and opportunities between profiling and data protection, IP law, privacy, etc. are discussed.

4.3. DataBait Multimedia Information Extraction

The work carried out in USEMP marked a significant progress in CEA's multimedia mining tool stack. Through the improvement of existing modules, such as visual concept detection and location identification the research directions pursued within USEMP will be confirmed as pillars in the laboratory's scientific roadmap. This will allow their further development and spread their use to different scenarios by including them in novel project proposals and industrial partnerships. Besides their role in the DataBait platform, the visual mining modules will enable a fast implementation and prototyping of novel methods for approaching emerging topics in the computer vision field (e.g. image caption generation, visual question answering). Having applied visual and textual mining techniques to user data with the scope of highlighting sensitive information, CEA will further consolidate its position in the privacy and security by actively seeking collaborations in these fields.

CERTH, as the main developer of the privacy-aware image classification framework, will look into means of further supporting its research in the area, and in particular on the problem of accurately detecting in a personalized manner whether personal information is disclosed through images, as well as on generating understandable explanations of such disclosures. To this end, the team has already open-sourced the implementation of the developed module and made available a reference dataset (comprising the extracted image features and the associated privacy labels assigned by the users). CERTH will also investigate the potential of applying the developed personalization approach to other application areas where subjective feedback is important for the image classification task.

4.4. DataBait Privacy Disclosure mechanisms

CERTH has developed the privacy disclosure framework behind DataBait along with a set of approaches for inferring personal attributes based on behavioural and content features from users' OSN activities. This is an important asset that could be reused in several projects and applications where user profiling is needed either as a means of transparency or as a means of serving more appropriate content (through recommendation mechanisms that take into account the interests and attributes of a user). Moreover, CERTH has developed a novel cost-sensitive learning approach that can help achieve improved accuracy in classification problems where some of the classes are more sensitive or are very sparsely represented in the annotation set. Finally, CERTH will look into ways of adapting and reusing the developed disclosure visualization and control framework, by integrating it in other web applications that handle personal data. To this end, CERTH has already: a) made publicly available the implementation of the disclosure framework and the accompanying inferencing methods, and b) is preparing a tutorial on the subject of multimedia privacy that will be first given in the context of ACM Multimedia 2016, with the goal of engaging the research community.

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4.5. DataBait User Empowerment Research

There are three important features of DataBait iMinds-SMIT will use for future exploitation: DataBait as an awareness riser, its settings to affect the algorithm behind the disclosure scoring framework and lastly its settings to directly influence users' digital footprint.

Due to the fragmented location of personal information little tools exist to probe end-users' digital footprint awareness. Without tools such as DataBait we are unable to compare end-users' perceived awareness with their actual situation. This comparison is required to further the argument that due to the fragmented nature of personal information, complete awareness is next to impossible. But it also opens up research in a more nuanced area: How complete is complete awareness? DataBait offers a first step towards informing users, but much more research needs to be done in layering and personalising the offered information so that it is adequate for users with varying levels of interest and literacy.

Looking at the settings DataBait provides with regard to its own disclosure scoring framework algorithm and settings to change UGC or stop trackers is also important for user empowerment research. It allows us to gauge user preferences via actual settings instead of self-reported preferences which takes into account the complex trade-off of time, ease of use and perceived risks associated with particular bits of information.

In conclusion, having access to DataBait or its components is crucial for the acquisition of future projects with regard to user awareness and preferences in complex personal data applications. This importance is underlined by the coming GDPR in which we require Data Protection Impact Assessments with possible data subject participation. Beside future projects iMinds-SMIT is already using its USEMP knowhow in internal projects to ensure end-user participation in big data and IoT applications.

4.6. DataBait Privacy Visualisation

One of the main outcomes of the USEMP project was the creation of a web framework to visualise privacy related information to end-users. This included a detailed research and analysis of different technologies and methodologies regarding end-user visualisation and the selection of the most appropriate means to achieve the desired result. As an example of the successfulness of the front-end development, on October 2015, USEMP was awarded with the ICT 2015 'Young Minds' Awards for the best exhibitor.

Velti, as the leading partner of the front-end framework, has already taken upon the investment made during and outcomes of the USEMP project, working in close collaboration both with the USEMP consortium but also in other projects in the area of privacy visualisation. In the research area, Velti has already undertaken the role of end-user visualisation in two new projects around privacy, funded under the Horizon 2020 framework, the Privacy Flag (also participating HWC and LTU) and VisiOn projects. In addition, with the GDPR coming into fully effect over the next years, Velti considers that the investment in this domain will give the necessary background for the company to be ahead of the competition.

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5.Partner plans for exploitation

In this section USEMP industrial and academic partners in collaboration with their business and marketing units attempt to provide an outlook of how they intend to exploit the results of the project and integrate the effort and knowledge gained within the project to their overall business or institution goals and long-term organisation roadmaps. This section documents these intentions as firstly indicated in D9.5 and updated in the last period of the project. For the individual partners exploitation the following are taken into consideration:

- Promotion and support of USEMP research results with respect to OSN personal data management services within the development and R&D community.
- Influence on business units by developments in the field of OSN personal data management services.
- R&D and product development within individual organisations influenced by USEMP results.
- Relevant research topics not addressed by USEMP that could have an impact on the R&D efforts of individual organisations.
- Potential of USEMP results to be incorporated in individual company roadmaps and research endeavours.
- Gaps in the OSN personal data management market that the results of USEMP will be able to address.
- Privacy aspects that the current USEMP focus is not adequately addressing.

5.1. Consortium partners intentions

CEA

USEMP results are perfectly integrated in the lab's roadmap on multimedia mining. The integration in the lab's multimedia platform is finished or ongoing for the following technological bricks: textual entity detection, image duplicate detection, large scale image classification, large scale image retrieval, multimedia document localization. Two patents were granted, one for the semantic representation of image content and another that focuses on large scale image retrieval. A start-up associated to the lab that exploits USEMP large scale recognition and retrieval results was created and is in the final stages of the incubation process.

On the longer term, CEA will continue integrating its USEMP tools in its multimedia mining platform and will exploit them in its collaborations with industrial partners. Partnerships were already established with French SMEs for the exploitation of several tools developed or improved within USEMP, such as the copy retrieval and face detection bricks.

CERTH

CERTH is interested in exploiting the USEMP outcomes in two ways: a) by developing research expertise in the area of personal data management, which will drive future scientific publications in pertinent research areas (multimedia retrieval, privacy, data mining, machine learning) and will feed into future research proposals, and b) by directly engaging in

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commercial exploitation activities of the developed components, which will be further pursued through the team's spin-out company, infalia (http://www.infalia.com). In terms of tangible project results developed by CERTH, namely the software components described in sections 4.3 and 4.4, CERTH has already made them publicly available in the form of open source projects in order to promote their further improvement and take-up by the research community. CERTH has also expressed its strong interest in being actively engaged in joint sustainability and exploitation activities of the USEMP consortium.

HWC

HWC is committed to consider the delivery of USEMP based services after the completion of the project. Some discussion has occurred with regard to pre-commercial activity after the project with regard to supporting transition into a commercial setting. HWC fully supports such activity, and the search for seed funding to continue to investigate commercial opportunities for the DataBait service.

Additionally, for HWC, a key aspect is data analytics and the numerous applications and possibilities that arise from it. There are a number of applications under consideration, one such related to financial transactions and 'opinions' related to financial trading. Another is in the healthcare sector where opinions on drugs and trustworthiness of services is of interest. In the Public Safety domain we look towards gathering of intelligence in preparation for events and detection of threat posed on key critical infrastructure assets

iCIS

The results from the USEMP project and the DataBait tool provide an important contribution to debates how to ensure that end-users, who are active in online social networks (OSN's) or are browsing the web, are protected with regard to their rights following from the current and upcoming new EU data protection legislation. How can the legal requirements from EU data protection legislation be put into action and given teeth? Translating the legal requirements into the technical design of a profile transparency tool (the DataBait tool created and controlled by the USEMP project) is a concrete exercise in creating Data Protection by Design (DPbD). DPbD will be required by the General Data Protection Regulation (pGDPR), which will come into effect on 25 May 2018. The experience gained from the USEMP project will allow us, the legal scholars from iCIS, to act as experts in scientific and policy forums with regard to DPbD. We will validate the expertise gained in the relevant academic settings (integrating the findings in academic papers and books, presentations, keynotes, scientific boards), and use USEMP as an example when providing expertise in a variety of settings (advisory boards, expert assignments, grant proposals). What makes the knowledge and experience gained from the USEMP project particularly valuable with regard to data protection law is that we studied some underexplored yet pressing issues. Firstly, USEMP relates the data protection requirements to conflicting and converging requirements from other fundamental rights (privacy, anti-discrimination) and intellectual property rights. Secondly, USEMP provides an alternative to consent as a legal ground by creating a flexible and easy adaptable ('modular') contract (a 'Data Licensing Agreement') supporting transparency and a level playing field between data subject and controller. Thirdly, the project has explored the (im)possibilities of what some might consider the "holy grail" of giving control to users over their data: i.e., a system of "granular licensing" which would allow

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users to set the outer boundaries of the modalities and purposes of data processing. This would give the data subject a more active and involved role and offering an alternative to 'all-or-nothing' consent in which the data subject simply has to accept a data policy or refrain from using a particular service. We concluded in this respect that the possibilities for creating granular licensing systems are limited by the data limitation and specification principle; and that we, in contrast to certain other others, think that it is good that this principle is not watered down and continues to be a guiding principle in the new GDPR. Last but not least, USEMP offers an unprecedented interdisciplinary interpretation of how profile transparency could be offered to end-users (this is one of the core capabilities of the DataBait tool). With regard to the latter USEMP is also of special value to anyone who has to deal with data protection issues, by interpreting some legally contentious terms like 'sensitive data' and 'anonymous data' and exploring how such interpretation affects the design of a profile transparency tool.

Many companies and other organizations are already anticipating the requirement of DPbD in the GDPR; thus disseminating and validating the results from the USEMP project with regard to DPbD can thus have an impact which reaches beyond scientific and policy forums.

iMinds-SMIT

The results from the USEMP project and the DataBait tool provide important input for the current debates on privacy on European, but also on local policy level. The participation and results of USEMP makes and will strengthen iMinds-SMIT a respected partner in local policy consultancy about privacy and digital literacy. Because of the outcomes of the USEMP project and the build-up knowledge, iMinds-SMIT has grown as consultant for policy-making and policy-driven research. On methodological level USEMP adds to the expertise on interdisciplinary teamwork in innovation projects and on technical solutions for empowering the end-user in social networks.

The development of the DataBait tool has also contributed to building up hands-on expertise on the development of Data Protection by Design and Privacy Risk Assessments for projects that work with personal data. iMinds-SMIT has become an important partner for these assessments in the living lab projects in Flanders. Moreover, the Databait tool will be used within the work of the Mediawijs organisation of which iMinds-SMIT is an important partner. The goal of Mediawijs is inform policy makers on digital literacy and increase digital literacy in Flanders, focusing on children and youngsters.

Finally, the expertise is translated to educational material in the courses on Communication Sciences at the VUB, as well as in lectures professors give in the rest of Europe.

Further, iMinds-SMIT will validate the expertise gained in the relevant academic settings (integrating the findings in academic papers and books, presentations, keynotes, scientific boards), and use USEMP as an example when providing expertise in a variety of settings (advisory boards, expert assignments, grant proposals).

LTU

LTU is researching and developing a methodology to evaluate Privacy Enhancing Tools. In the USEMP project we were constantly gathering data in parallel with the research to enhance the methodology. Current body of knowledge lacks appropriate means to evaluate

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enhancing part of PETs from social and institutional perspectives. End users have expectations that PETs need to fulfill both regarding their disclosure habits and awareness about the way companies handle their privacy. However PET designers does not have appropriate models to measure that. LTU, from the start of the USEMP project has been focused on design of such a method. The design and evaluation of the methodology is realized in iterative manner, aligned with the pilot studies within USEMP and another EIT-Digital project called “MobileShield”. We believe that the result would help us to enhance future research and privacy related tools in a great sense and future projects can benefit from the evaluation of privacy tools in better alignment of user needs into more enhanced and adoptable tools. LTU has enriched their Living Labs through USEMP project by recruiting relevant users who are enthusiastic of privacy tools for further privacy related research and development. We have already made plans to use our methodology in the H2020 project ‘Privacy Flag’ with the help of already recruited end users in the USEMP pilot studies. The users will continue to evaluate the tools developed in Privacy Flag project from the initial design till the end of innovation process.

VELTI

VELTI’s focus for the exploitation of the USEMP project results is a) the development of knowhow & expertise in developing privacy-aware solutions that comply with EU legal framework, b) the integration of the developed tools to its existing product lines in the areas of mobile marketing & advertising, c) the consideration of spin-offs that can exploit new business models and technologies developed in the project (for example a B2C DataBait solution to consumers).

In terms of the development of knowhow and expertise the company plans to disseminate within the company both the technical and legal framework knowhow so that its solutions can be compliant with future EU regulation. In terms of integration of developed tools and after the final evaluation of the pilots some of the developed components can be integrated to VELTI’s mobile loyalty and marketing solutions that are used by large brands and mobile operators across the world. Examples of such components are amongst others the DLA, the DataBait developed OSN user dashboards and the developed machine learning algorithms/knowhow and big data engineering knowhow. In terms of new solutions that can be spinned off from the project and will be considered further after its completion, the most promising components are: a) web blocking & recommendations developed for such tools, b) privacy-aware & user-agent based advertising, c) multimedia and text classifications methods developed by other partners for developing new privacy-aware solutions in marketing & advertising.

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6.Conclusion

With the USEMP project coming to its end, this document presents the exploitation plan for the project outcomes and especially for DataBait. USEMP being a research project, the decided way to proceed is open sourcing the main platform and supporting the research and privacy awareness concept of DataBait. To achieve that, the consortium has already established a path to establish a new legal entity under the trademarked name of “DataBait”. The under creation legal entity has as main purpose the short and long term sustainability of DataBait and its further evolution with new tools and application. As a legal entity, main revenue stream for DataBait will be the collection of support through funding mechanisms, a process that has already been initiated and already has shown its first results with Open Source Foundation.

All partners have already committed in supporting this path while in addition, each partner has its own plan for the exploitation of the project outcomes, which apart from the DataBait tool per se includes a number of services, methodologies and tools created. Partners will use these outcomes based on their exploitation plan ensuring their re-usage in future products, tools or even research.

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ANNEX-A Identified software dependencies

The following is the list of software component & framework dependencies for the DataBait tools.The list was initially presented in D9.5 and is updated in D9.7.

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Databait tools WP7 group of functionality	Software components	Distribution license	Notes	References
LimeSurvey Server		GPLv2		https://www.limesurvey.org/
Backend API Server list of 3rd party components	Facebook Capture engine	MIT Licence		
	Public internet facing proxy	BSD 2-Clause Licence		http://nginx.org/
	image analytics library	BSD 2-Clause Licence (+ CEA Components)		http://caffe.berkeleyvision.org/
	Java-ML	GPLv2		http://java-ml.sourceforge.net/
	commons-configuration	ASLv2		https://commons.apache.org/proper/commons-configuration/
	org.apache.httpcomponents	ASLv2		https://hc.apache.org/
	commons-dbcp	ASLv2		https://commons.apache.org/proper/commons-dbcp/
	spring-framework	ASLv2		https://spring.io/
	hibernate-core	LGPL 2.1		http://hibernate.org/
	jackson	ASLv2		https://github.com/FasterXML/jackson
	aspectj	Eclipse Public License - v 1.0		https://eclipse.org/aspectj/
	mysql-connector-java	GPLv2		http://dev.mysql.com/downloads/connector/j/
	restfb	MIT Licence		http://restfb.com/
	slf4j	MIT Licence		http://www.slf4j.org/
	hsqldb	BSD		http://hsqldb.org/
	kryo	BSD		https://code.google.com/p/kryo/
	MySQL Server	GPL license		https://dev.mysql.com/
	Tomcat Application Server	ASLv2		http://tomcat.apache.org/
Front-end server components	Django application server	BSD license		https://www.djangoproject.com/
	python-social-auth	BSD license		http://psa.matiasaguirre.net/
	Reportlab	BSD license		http://www.reportlab.com/
	Webgl Globe visualization	ASLv2		https://github.com/dataarts/webgl-globe/blob/master/LICENSE

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	D3.js	BSD license	http://d3js.org/
	SimpleWeatherJS	MIT Licence	http://simpleweatherjs.com/
	Bootstrap	MIT Licence	http://getbootstrap.com/
Machine Learning/Graph DBs	Hadoop	ASLv2	https://hadoop.apache.org/
	Mahout	ASLv2	http://mahout.apache.org/
	Caley	ASLv2	https://github.com/google/cayley
	Helios.JS	GPL	https://github.com/entrendipity/helios.js
Browser plugin	Disconnect.ME	GPL	https://github.com/disconnectme/disconnect
Privacy scoring framework	pymongo	Apache License 2.0	http://api.mongodb.org/python/current/
	flask	BSD license	http://flask.pocoo.org/

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