D9.5

Initial Exploitation Plan

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Theodoros Michalareas (VELTI), Andreas Drakos (VELTI), David Lund (HWC), Symeon Papadopoulos (CERTH), Adrian Popescu (CEA), Katja de Vries (iCIS), Marita Holst (LTU)

This document describes the exploitable foreground to arise from the USEMP project, and provides the initial plans for exploitation by consortium partners, and includes specific business models for project developed assets. It is to be treated as confidential by the commission and will be updated during the project's time life (D9.7)

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Authors	David Lund (HWC) Symeon Papadopoulos (CERTH) Adrian Popescu (CEA) Theodoros Michalareas (VELTI) Andreas Drakos (VELTI) Katja de Vries (Radboud University) Marita Holst (LTU)
Reviewers	Tom Seymoens (iMinds) Adrian Popescu (CEA)
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1.Executive Summary

This document is the first report on the exploitation plan for the USEMP consortium and its purpose is to describe a 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.

Towards the creation of the exploitation plan the consortium discussed, proposed and agreed on a specific IPR strategy, building a list of all the IPR outcomes of USEMP. Furthermore the consortium has been active in identifying the novelty of the different solution components developed by the consortium and the variety of business opportunities that the developed technology may have.

A description of the USEMP assets is provided along with a strategy towards exploitation and push to market strategy. The report presents ideas and directions for exploiting the results of the project for a mid and long term period.

Following the initial plan for exploitation presented in the USEMP Description of Work (DoW), this document is a predecessor of the final exploitation plan that will be produced by the end of the project and will thus be updated throughout the duration of the project accounting for further input from project partners.

2.Introduction

This document contains the preliminary exploitation plan building upon USEMP project activities undertaken during the first 18 months.

The document describes:

- the methodology for devising the exploitation plan among project partners,
- an identification of tangible and intangible assets that can be exploited by project partners,
- an identification of potential business models and monetization methods to exploit USEMP project developed tools and algorithms
- 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. For the latter the consortium has generated a technical exploitation questionnaire that has been used to collect partners' feedback.

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 research institutions focused on applied research (CEA, CERTH) with active interest in developing technology components for personal data management systems. The consortium also includes three research 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.

The following points have been considered while the initial exploitation plan has been drafted:

- The exploitation plan should offer a flexible approach, considering key technologies developed during the project and information flows to and from external parties/communities. This will help partners to 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 target customer groups and exploitation methods is essential for the exploitation plan of the project (customer driven approach). The effort for identifying potential target customer groups does not stop at the planning stage of the project.

Partners will continue identifying groups and organizations that can potentially be interested in USEMP derivative products and determine whether any modifications would be required to be able to be marketed.

- Project partners should also think about exploitation in its 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. They must think about how best to spark the interest of policy-makers who might not necessarily be in the loop when it comes to communicating specific project results
- 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.

Finally the proposed plans from USEMP consortium partners are provisional and will be reviewed further during the course of the project to produce a final exploitation plan before the completion of the project.

3.USEMP driven products & technologies

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. In this class 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, are being included. 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, such a marketing plan will be evaluated as part of the final exploitation plan. 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 on developing new privacy-aware solutions for their marketing & advertising campaigns

In the cases above, the consortium expects to develop revenue streams by both licensing some of the developed technologies and by providing consulting services to help implement them in a commercial environment.

In order to enable the realization of the commercialization of the project results, a number of steps will need to be taken:

- 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.
- Initiation & progression of a patenting process for key technologies. This will be contingent on the nature of the developed technologies, and will require a desirability and feasibility study near the end of the project.
- The establishment of a final exploitation plan, which will be responsible for identifying market sectors, their size as well as marketing approaches in these markets.

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/or 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 types of results. The figure below provides an overview of the taxonomy of results. Details regarding each of these results are given in the following two sections.

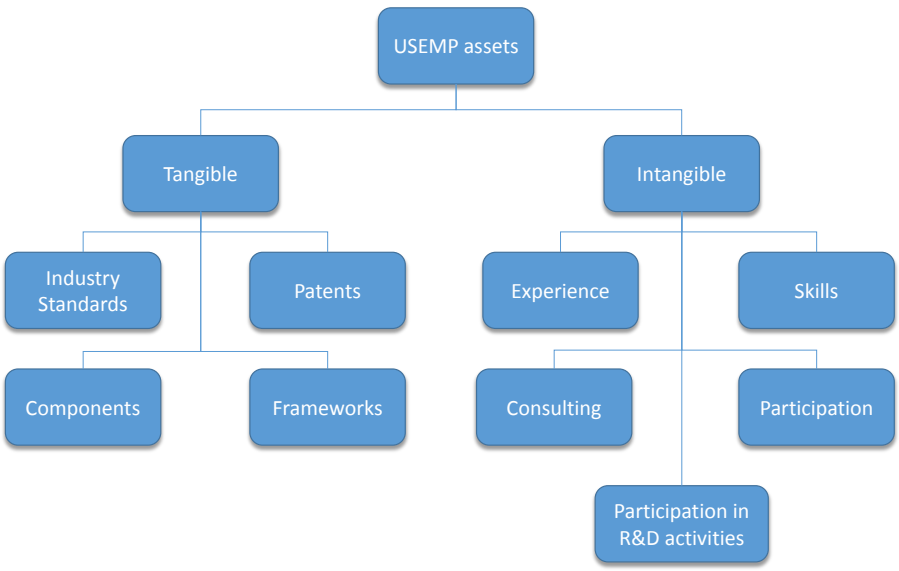

Figure 1: USEMP results identification

3.1.1. Tangible Assets

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

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 (this list will be verified at the end of the project with consortium partners):

- Face Detection
- Face Recognition
- Logo Recognition
- Multi-Modal Similarity
- Text Similarity
- Opinion Mining
- Content Location
- Personal Attributes Multimedia Predictor
- Personal Attributes Behavioral Predictor
- Web trackers blocking
- Personal value data evaluation
- Privacy-aware advertising

The list includes 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
- Methodology for benchmarking of personal data management services for OSN users
- 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 Internet Architecture modules (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 the field 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

USEMP has a strong research focus and exploring 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. After investing resources in the implementation of USEMP, the two companies will find the means to shorten the application development, deployment and configuration phase and will be able to exploit and reuse the produced technology.

3.2.1. Exploitation of the USEMP Output

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

- DataBait frontend tool, backend services framework and a version of the browser plugin will be published as open-source software to foster the adoption of the approach, which will also enable the project to benefit from a broader developer and customer base utilizing publicly available tools for hosting open source project (for example github)
- USEMP industrial members namely VELTI and HWC will further investigate how to use the project results for future products in their specific domains, thereby gaining competitive advantage and experience. As an example VELTI will consider integrating the developed economic value indicators as a new proposition to its mobile marketing & loyalty solution product line “Inspire”.

- USEMP applied research institutions (CEA, CERTH) will investigate how they can project results to foster the development of experimental services based on the developed components and identify opportunities for further research.
- USEMP academic partners (iCIS, iMinds-SMIT, LTU) will investigate how they can use the project results for enhancing their domain expertise/technical excellence and identify how to take advantage opportunities for further research.

With respect to commercial exploitation of the developed DataBait tools USEMP consortium partners have generated an initial 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 source Monetization and Monetization mechanisms

It must be mentioned that monetizing open source software can be a challenging approach but the consortium is confident that the quality of the developed tools will provide the necessary momentum to drive the market value. There are however several approaches to capitalizing on open source all of which are based on thorough uptake by the user community. Partners will investigate one of the following models:

• *Customizing solutions for particular enterprise needs:* Adding value to existing community projects and customizing solutions for particular enterprise needs. A differentiating factor for consumers will be created and added value will be provided for B2B customers through consulting services or training.

• *Embedding open source software in a product or service:* As personal data management services in various market segments other than OSNs are gaining ground every day, USEMP can discover a new market as a part of a commercial solution. As an example e-Government services are now utilizing data from end-consumers for building up personalized features, and the USEMP DataBait toolkit can be further adapted to provide citizens with a transparent view on how they are profiled and what is the value of the data they are sharing. A second example would be that of mobile advertising & marketing where innovative solutions can be built to provide end-consumers with additional understanding on how their personal data are processed and indicators of the value they are generating (possibly sharing part of that value).

The consortium will identify new business cases and identify market segments (for example personalized health services, personalised shopping, etc.) where the developed framework can have additional commercial value.

3.2.3. 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.

Through the distribution of simplified or time limited USEMP software to non-profit higher-education institutions (e.g. media schools, CS/ECE departments specializing in digital media) we will either introduce the concept, or broaden their knowledge in this area, and therefore foster research in this field, which could then lead to the exploitation of USEMP results.

In addition, the availability of tools and libraries required for personal data management in OSNs, according to the USEMP specifications, could also support the introduction and

adoption of the relevant products. Therefore, through our implementation of open specifications within the project and the consortium's efforts towards standardization we are further promoting the introduction and take-up of these products.

Various distribution modes can be used in this category, which could include open source code, access to libraries, APIs, executables, tools or web services under specific licensing conditions (e.g. free use for educational purposes, for internal R&D efforts or for a limited time period). The distribution modes will be rooted in the IPR management principles that are stated in the consortium agreement.

3.2.4. Service provisioning.

Apart from software licences, the USEMP exploitation plan also includes service provisioning. Services may include both consulting or training services as well as the provision of a personalized data management service for OSNs users as a service.

The provisioning of USEMP related services will be supported by the implementation of well-defined APIs based on RESTful web services, that will allow the expansion and the provision of services both to the end users as well as to software systems and companies.

3.2.5. Open specifications & Open Source Products pay-back mechanisms

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.

Parts of the core technology underlying the USEMP framework may be 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, based on a standard fee, which would be decided by the partners that wish to provide such implementations.

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

- 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 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.

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 component of USEMP DataBait tools there is a number 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. Other licenses will be studied and a definitive choice will be given in the final exploitation plan. For non-open source products/technology components please see the section below.

3.2.6. Non Open Source Products monetization

As already mentioned, a subset of the USEMP offering can also be available as proprietary software along with the platform specific implementations. Partners will be 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 will also be 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 will 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 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.

3.2.7. 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/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 or/and 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.

4.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. The following questionnaire is completed by all partners and intends to provide a guideline for the exploitation intentions of all partners of USEMP. The overall results and high level intentions are also provided here.

Topics that are addressed by the questionnaire are among others the following:

- 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.

The questionnaire was addressed to all consortium partners to stress the importance of feedback irrespective if they are industrial partners or research organizations. The questionnaire was broken down into two parts. One is a set of questions that industrial partners answered in a narrative, detailed manner and another set of questions in a form of a survey.

In the first set partners elaborate on their exploitation views and business intentions, whereas the survey touches on more specific issues and is an attempt to build an exploitation profile for the project (i.e. the sort of output that USEMP will have as a whole) and extract certain statistical data.

4.1. 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. A patent application was filled at the end of 2014 for the semantic representation of image content and another one is ongoing that focuses on large scale image retrieval. The creation of a start-up working on image recognition and associated to the lab has also advanced. The incubation process should start before the end of 2015, with an actual creation date foreseen for mid-2016.

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. Contacts were already established with French SMEs for the exploitation of the copy retrieval brick. Of prime importance in CEA's strategy is the creation of a spin-off which would exploit USEMP large scale recognition and retrieval results. A market analysis is scheduled before end of 2015 in order to determine the most promising exploitation paths and the effective creation of the start-up is foreseen for mid-2016.

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 the area and will feed into future research proposals, and b) by directly engaging in 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 software components, CERTH will make them publicly available in the form of open source projects (a part of the results that will have reached a mature state by the end of the project).

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 proposed General Data Protection Regulation (pGDPR), which will most likely come into force in 2017. 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 introduces a system of 'granular licensing', which is an innovative proposal of how the modalities and purposes of data processing could be established, giving the data subject a more active and involved role. As such, granular licensing offer 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. 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 pGDPR; 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 an 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 are constantly gathering data in parallel with the research to enhance the methodology. The design and evaluation of the methodology is realized in iterative manner, aligned with the pilot studies within USEMP. 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. We have already made plans to use our methodology in the future H2020 project Privacy Flag.

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, the economic value indicators framework along with 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.

4.2. Technical Exploitation Questionnaire

CEA

1. *How does your company or research institution plan to promote and support USEMP research results in order to influence the development & research community towards more transparent use of personal data in OSN?*

In addition to its participation USEMP dissemination activities, CEA promotes USEMP activities internally and towards its French industrial and academic partners. In particular, CEA notified the CNIL (French DPA) about the project advancement. Internally, the project helped by raising awareness about the importance of personal data on the Web and the associated legal framework.

2. *Which part of the company business or research activities is mostly influenced by developments in the field of personal data management and how will USEMP results affect this part of your organisation?*

In line with its contribution to the project, the project has a beneficial effect on CEA's work on multimedia mining. The project allowed CEA to advance significantly on a number of scientific topics including: large scale image classification and retrieval, multimedia document localization, logo recognition and entity detection. These results will notably allow CEA to participate to new research projects in the multimedia mining and privacy areas.

3. *Are there ongoing R&D or product development activities in the company or research organization that may be influenced by USEMP results or change the R&D roadmap of the company?*

USEMP results are exploited in a spin-off creation initiative that will propose a range of image recognition technologies. This activity should officially start on 01/10/2016 and the effective creation of the start-up is planned for 2016.

4. *Is there any aspect of personal data management in OSNs within the scope of USEMP not adequately addressed by the project that if it was it would have a greater impact on your company's R&D efforts?*

USEMP already addresses a large variety of user data and, due to the resource limitation and the scientific interest related to their processing, a choice was made to focus on volunteered data. A stronger focus on behavioural data would have been beneficial.

5. *How soon (if not already) do you think that USEMP R&D results would be able to be included in your company's business or research institution R&D roadmap and/or a commercial product?*

USEMP results are already integrated to CEA's roadmap on multimedia mining and, as it was mentioned, a commercial activity in this area should start in2016.

6. *Do you feel that there is a gap in the OSN personal data management market that the results of USEMP if incorporated in current R&D efforts will be able to address?*

One important gap that could be addressed by incorporating USEMP results relates to the way user data are handled by the advertising industry. In the current model, OSNs provide free hosting and structuring of data in exchange for a quasi-unlimited right to exploit them. A more

favourable model to the user would give here more control on how data are exposed by OSNs to third parties and, possibly, reward the user whenever they are monetized while avoiding commodification.

7. *Do you think that USEMP view covers all core aspects of OSN personal data management both from the user and well as from the developer perspective? If not state what else should had been there.*

From a user perspective, USEMP focuses on target users' contributions but less on the interactions with other users and thus cannot extract inferences from these interactions. This is however natural due to the need to respect contacts' privacy. From a developer perspective, USEMP covers the types of data that are accessible through the OSN APIs but cannot control what happens between the OSNs and third parties that are part of their business models. Unless these models are not changed, there is nothing to be done concerning OSN-third party interactions.

CERTH

1. *How does your company or research institution plan to promote and support USEMP research results in order to influence the development & research community towards more transparent use of personal data in OSN?*

Through presenting the key research findings and outcomes to the scientific community (via conference presentations and journal articles) and by making available the most mature of the developed results in the form of open-source projects.

2. *Which part of the company business or research activities is mostly influenced by developments in the field of personal data management and how will USEMP results affect this part of your organisation?*

The Information Technologies Institute (ITI), currently employing more than 200 researchers, and in particular the Multimedia Knowledge and Social Media Analytics Laboratory (http://mklab.iti.gr), an ITI lab that currently consists of approximately 60 researchers, is the part of CERTH mostly influenced by the developments in the field of personal data management. USEMP results, in the form of skills (gained by the people working in the project) and technical know-how (as mapped to key publications and software projects resulting from the project) will provide a stepping stone for future research and development activities in this area.

3. *Are there ongoing R&D or product development activities in the company or research organization that may be influenced by USEMP results or change the R&D roadmap of the company?*

The participating team is currently involved in a number of research projects, where the area of personal data management is of key importance. Hence, several of the USEMP results and know-how could be potentially reused and further developed.

4. *Is there any aspect of personal data management in OSNs within the scope of USEMP not adequately addressed by the project that if it was it would have a greater impact on your company's R&D efforts?*

The high focus of USEMP on Facebook data and the limited coverage of alternative OSN platforms is an aspect that could be addressed in a more comprehensive manner in the future.

5. *How soon (if not already) do you think that USEMP R&D results would be able to be included in your company's business or research institution R&D roadmap and/or a commercial product?*

The USEMP R&D results are already included in the R&D roadmap of the participating team, and are soon expected to be diffused to other research teams working on similar areas.

6. *Do you feel that there is a gap in the OSN personal data management market that the results of USEMP if incorporated in current R&D efforts will be able to address?*

The primary gap in existing OSN personal data management market is the lack of connection between raw data and a higher-level view of the personal profiles of OSN users that can be communicated in a transparent way. USEMP will be able to address this gap if incorporated in current R&D efforts.

7. *Do you think that USEMP view covers all core aspects of OSN personal data management both from the user and well as from the developer perspective? If not state what else should had been there.*

Given the scope of the project, the coverage of OSN personal data management technologies are sufficiently covered by USEMP.

VELTI

1. *How does your company or research institution plan to promote and support USEMP research results in order to influence the development & research community towards more transparent use of personal data in OSN?*

USEMP plans to disseminate the results of the project within its enterprise by a) organizing workshops, b) including presentation of USEMP results to enterprise events related to both business & technical training. In addition to the internal/enterprise dissemination VELTI plan to promote the USEMP results in a number of research community & industry standardization events

2. *Which part of the company business or research activities is mostly influenced by developments in the field of personal data management and how will USEMP results affect this part of your organisation?*

VELTI is a mobile marketing & advertising company and plans to integrate to its product lines of loyalty and mobile advertising the results of the USEMP project. It is expected that both existing and new solutions planned by the company can integrate USEMP derived technologies.

3. *Are there ongoing R&D or product development activities in the company or research organization that may be influenced by USEMP results or change the R&D roadmap of the company?*

VELTI's R&D roadmap and product development is focused on customer interactions via mobile and online/social network interactions. Thus USEMP experimentation and DataBait tools will influence the development of related privacy-aware solutions that provide the end-user with more transparency on how his/her personal data are used and what value they are generating.

4. *Is there any aspect of personal data management in OSNs within the scope of USEMP not adequately addressed by the project that if it was it would have a greater impact on your company's R&D efforts?*

The overall research agenda for USEMP is adequate for the investigation planned in VELTI's R&D and product roadmap. An additional item that we fill can be further investigated is the interaction of the consumers with a dynamic consent mechanism as part of DataBait tools.

5. *How soon (if not already) do you think that USEMP R&D results would be able to be included in your company's business or research institution R&D roadmap and/or a commercial product?*

We expect that USEMP results and knowhow will be integrated in product roadmaps in 1-2 years depending on business priorities. The developed knowhow is expected to be passed on to VELT's technical teams immediately after the completion of the project.

6. *Do you feel that there is a gap in the OSN personal data management market that the results of USEMP if incorporated in current R&D efforts will be able to address?*

VELTI's view is that it there is gap in the current marketing & advertising market for privacy aware solutions. This market is complementary to the OSN personal data management market and has space for developing interesting solutions (for example useragent-based advertising) that will be further researched from VELTI's team in the duration of the project.

7. *Do you think that USEMP view covers all core aspects of OSN personal data management both from the user and well as from the developer perspective? If not state what else should had been there.*

VELTI's view is that USEMP focus is the end-user and DataBait tools are developed based on use cases driven by the end-user. In order to successfully commercialize the technology developed by the USEMP consortium, the software developer needs also needs to be addressed by developing components that are easy to be used for developing solutions from 3rd parties or other consortium partners. This aspect of the DataBait tools will be discussed and developed in the 3rd year of the project along with WP6 and WP7 partners.

HWC

1. *How does your company or research institution plan to promote and support USEMP research results in order to influence the development & research community towards more transparent use of personal data in OSN?*

HWC are leading the demonstration activity to be made at the ICT2015 conference on 20-22 October. In the UK there are a number of activities where OSN research activities are discussed. HWC regularly attends these activities

2. *Which part of the company business or research activities is mostly influenced by developments in the field of personal data management and how will USEMP results affect this part of your organisation?*

Personal data management has been a technical stream within HWC for 8 years, predating the USEMP project. As a result a number of activities have mainly shaped the way that HWC delivers its services and how analytics must be handled. We have learned of the dynamics of personal data management and seek to take this forward in further offerings related to analytics and cryptography.

3. *Are there ongoing R&D or product development activities in the company or research organization that may be influenced by USEMP results or change the R&D roadmap of the company?*

Our Dynamic Consent Framework is continually evolving with changing interests as the understanding of the internet landscape and how its uses evolves. Involvement in USEMP has helped keep us up to date with this and continue to offer the right services.

Further work will continue with regard to the privacy and crowd sourcing of privacy opinion in new Horizon2020 project Privacy Flag which began in May 2015.

4. *Is there any aspect of personal data management in OSNs within the scope of USEMP not adequately addressed by the project that if it was it would have a greater impact on your company's R&D efforts?*

Integration of other feeds of OSN media, other than just Facebook, would be beneficial. However, this is understood to be difficult considering the remaining resources.

5. *How soon (if not already) do you think that USEMP R&D results would be able to be included in your company's business or research institution R&D roadmap and/or a commercial product?*

We would expect 1 to 2 years from project completion, provided that suitable

6. *Do you feel that there is a gap in the OSN personal data management market that the results of USEMP if incorporated in current R&D efforts will be able to address?*

Yes, there is a need for such tools to assist in the education of online exposure

7. *Do you think that USEMP view covers all core aspects of OSN personal data management both from the user and well as from the developer perspective? If not state what else should had been there.*

Again, subsequent work to USEMP should cover the dynamics of different types of OSN and the potential for profiling across multiple OSNs.

ANNEX-A Identified software dependencies (SEP 2015)

The following is the list of software component & framework dependencies for the DataBait tools as of September 2015.The list will be updated in D9.7.

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

	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/