Additional Document

Piloting and deployment plan

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Summary

CompLeap is a two-year project funded by the European Union, which aims to create solutions to improve the matching of supply and demand of competence. The project was launched in December 2017 and will end in November 2019. The Finnish IT Center for Science (CSC) carries the project out in collaboration with the Finnish National Agency for Education (EDUFI), the Education Executive Agency of the Dutch Ministry of Education Culture and Science (Dienst Uitvoering Onderwijs DUO), the University of Oulu and the Jyväskylä Educational Consortium Gradia.

CompLeap draws its name from the words “Competence Leap”. The project supports the Digital Single Market strategy outlined by the European Commission and intends to respond to the issue of mismatch of supply and demand with digital technology. A digital ecosystem is designed as a result of the project. This ecosystem creates a picture of the digital services available for supporting continuous and lifelong learning. Three solutions (prototypes) for competence mapping, evaluation and comparison of educational opportunities and applying for education are designed as a result of this project. Making use of analytics is an essential part of building these solutions.

The most central user groups are immigrants and youth not involved in employment, education or training (henceforth NEET). The models and prototypes under development are tested and piloted in practice with different user groups. In addition to a large reference group, associated partners in the testing process include the Educational Consortium of Lapland (REDU) and Oulu Vocational College (OSAO) as well as international partners. The goal of the project is to model the ecosystem and build the prototypes in a manner that enables implementing and deploying the ecosystem or similar services in other countries of the European Union as well.

1. THE AIM OF THIS DOCUMENT

This document is a piloting planning document designed for the CompLeap Work Package 4. The document illustrates the objectives and implementation of piloting and deployment of the CompLeap prototypes. The services implemented are described in section 3 Premises.

This document is to be disseminated to all responsible actors in deployment. The document describes the processes of piloting and deployment of the architecture, analytics and learner plan prototypes in the most accurate detail possible. Additionally, the deployment of the prototypes in Finland, the Netherlands and other EU-countries is illustrated in this document. In addition to these, the finances, risks, timetables and the organization of piloting will be described.

This piloting and deployment plan gives an overview on the processes, tasks and division of labour during piloting and deployment of the CompLeap service.

While this is a working document for the staff involved in WP4 in all partner institutions and will be modified according to intra-project changes, this document will be implemented as the additional document of detailed piloting and deployment plans, which are to be provided by M18 (May 2019, WP3+WP4).

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2. PREMISES AND FUNDAMENTALS OF PILOTING AND DEPLOYMENT

The focus of the Work Package 4 is on the implementation and deployment of the framework architecture and the developed prototypes including analytics. Deployment will take place in at least Finland, the Netherlands, Germany and possibly some other EU-countries through networks that are already available among the partners, i.e. InnoVET via Gradia.

The solutions and services of the project are deployed in stages during 2019. The deployment is based on the fundamentals of distributed deployment, meaning that the CompLeap associate partner institutions will deploy the service in accordance to their own timetables during a set period in months M18 - 23.

Finland aims to deploy all the developed prototypes to measure the effectiveness, usability, and feasibility of the technology and concept as well as the perceived beneficiality of the concept on all levels concerned. Associate partners involved in the deployment in Finland will deploy the developed prototype in their surroundings in order to include the target user groups including immigrants and NEETs (youth not in employment, education or training).

In other countries the aim is more to deploy the functionality of the framework and the concept so that the suitability across Europe is shown. This work is done via case studies where the CompLeap framework architecture is mapped onto existing national and regional educational architecture, and the suitability of CompLeap solutions is evaluated. Even though the focus is on these case studies, workshops on this evaluation as well as the possibilities of piloting the Learner plan prototype are held accordingly. This work begins in mid-May (M18) as a part of the deployment of the architecture (see section 5).

Piloting the deployment is divided into the following three concepts in accordance to the project plan:

1. **Pilot deployment of the architecture** – Dependencies between CompLeap and other services (most central being the different national study record databases, e.g. KOSKI in Finland), links between modules and concepts.

2. **Pilot deployment of the analytics prototype** - How and what information is being used in the background of the services in order to enhance the user experience.

3. **Pilot deployment of the learner plan prototype** – Modular parts supporting personal competence mapping and development.

3. ORGANISATION, PARTICIPATORS AND ROLES

Jyväskylä Educational Consortium Gradia (as the WP-leader) will take care of the following tasks during the piloting and deployment process:

- Identify the tasks in the work package.
- Produce a deployment plan with other partners.
- Bring the plan into use and maintain the tools needed.
- Collect the associated partners in Finland.
- Take care of the cooperation arrangements (e.g. with the associated partners).
- Coordinate the piloting parts 1 - 3.
- Submit the instructions for piloting.
- Organize the workshops and other events needed (in Finland).
- Coordinate the implementation and deployment of the prototypes in national surroundings.
- Produce orientation for the associated partners for piloting with EDUFI.
- Ensure the good information flow during the work package.
- Follow and report the progress (also budget).
- Observe and react to the risks with CSC.
- Collect the piloting surroundings with the end user groups needed.
- Participate the actual deployment in Finland.
- Produce user experience and feedback.
- Collect the data for reporting.
- Coordinate the reporting processes.
- Report the deliverables.
- Conduct the impact evaluation study.
- Pilot preparations and involvement in protype development processes.

The role and the responsibilities of EDUFI in WP4:

- Find the European contacts for piloting with CSC.

- Involvement in the Deployment plan.
- Pilot the ecosystem concept.
- Deploy parts of the prototypes in Europe.
- Organize the workshops and other events needed in Europe.
- Produce user surveys needed.
- Produce material for reporting.
- Maintain the service during the piloting.
- Future development after the input received.
- Final seminar in cooperation with Gradia, CSC and DUO (M20).

The role and the responsibilities of University of Oulu in WP4:

- Define the analytic parts to pilot.
- Pilot the Beta version in Finland (compare educational opportunities, with functionalities).
- Produce material needed for reporting.

The role and the responsibilities of CSC in WP4:

- Find the European contacts for piloting with EDUFI.
- Pilot the service framework in Finland and Europe.
- Produce material needed for reporting.
- Observe and react to the risks with the WP-leader.
- Help and support the WP-leader to achieve the objectives.

The role and the responsibilities of DUO in WP4:

- Help finding the contacts in the Netherlands (Europass experts).
- Involvement in piloting.
- Open doors for "Workshops" in European network meetings/conferences.
- Join workshops with the partners in Netherlands.
- Discuss with the actors of the educational field in the Netherlands.
- Present the idea of CompLeap service as a best practice for said actors.
- Implementation and deployment in Netherlands with other partners.
- Produce material for reporting.

The role and the responsibilities of the associated partners in WP4:

- Conduct the user testing in associate partner institutions with target user group participants.
- Report on the user testing results to WP4 coordinators.

4. PILOT DEPLOYMENT OF THE FRAMEWORK ARCHITECTURE

Responsible partners: CSC and EDUFI

Contact persons: Ari Rouvari/CSC and Annica Moore/EDUFI

Countries involved: Finland, the Netherlands and Germany

CompLeap Framework Architecture:

https://wiki.eduuni.fi/display/csccompleap/Framework+architecture+design

Our Aim is to make CompLeap framework architecture suitable across EU
in other words CompLeap framework architecture should be able to integrate
and "work together" with other reference architectures in these sectors.

CompLeap framework architecture piloting will be done by evaluation discussions.
We will test how understandable and useful the framework architecture is for the stakeholders and how could we improve it.

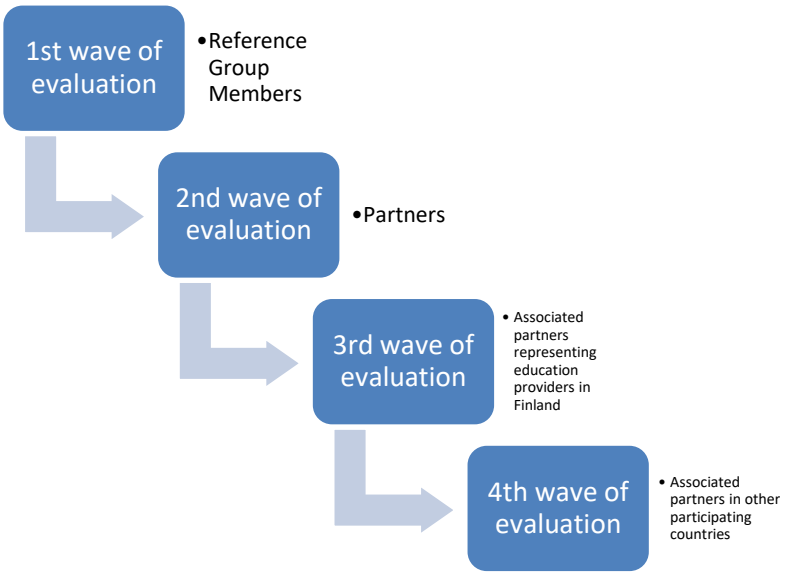
Evaluation discussions are a kind of marketing and implementing tool for framework architecture
and with discussion we will put the Compleap framework architecture into practice and put the strategy into action.

In the following sectors, some related Finnish architectures are listed. After this, the order of the evaluation discussions is outlined. Finally, the contents and issues that are discussed in these evaluation discussions are explored.

Related Architectures in Finland

- AMOS reference architecture, not published (Coordinator: Ministry of Education and Culture)
- KOHVI reference architecture (Coordinator: Ministry of Education and Culture)
- OPI Higher education institutions reference architecture, in progress (Coordinator KOOtuki)
- EDUFI enterprise architecture
- KAPA service architecture

The order of the interviews with the key informants and actors is the following:



1. Reference Group members
   - Ministry of Education and culture of Finland: Tomi Kytölä with his colleagues
   - Ministry of Economic Affairs and Employment of Finland: Kari Rintanen and Teija Felt

2. Partners
   - EDUFI: Erja Nokkanen, Annika Grönholm, Ulla Kauppi, Raakel Hiltunen, Minna Taivassalo, Paula Borkowski, Pauli Sutelainen and Laila Puranen
   - University of Oulu: Hanni Muukkonen and Egle Gedrimiene
   - Gradia: Jaana Virtanen, Hanna Rajala and Rauni Gyldén

3. Associated partners representing education providers in Finland (14.3. Helsinki):
   - The Oulu Region Joint Authority for Education (OSAO)
   - Rovaniemi Municipal federation of Education (Redu)

4. Associated partners in other EU-countries
   - Die EU-Geschäftsstelle der Bezirksregierung Köln, Germany – meeting on the 14th of May, 2019

- the Cooperation Organisation for Vocational Education, Training and the Labour Market (SBB), the Netherlands
- Other countries via InnoVET network (via Gradia) – meeting in March 2019

Themes and subjects to be discussed during the evaluation process

Themes	Subjects (Topics) of Discussion	Descriptions and Definitions
1. Strategic Level		
1.1. Related architectures	Can you identify and name architectures which have or should have been mentioned?	
1.2. Drivers	Are the identified drivers valid and can you identify some not yet named drivers?	A driver represents an external or internal condition that motivates an organization to define its goals and implement the changes necessary to achieve them.
1.3. Capabilities	How should we gain or acquire these identified capabilities?	A capability represents an ability that an active structure element, such as an organization, person, or system, possesses.
1.4. Requirements	Can you identify other requirements beside these?	A requirement represents a statement of need that must be met by the architecture.
1.5. Leading and steering	How should we lead this kind of EU-level development based on common framework architecture?	
1.6. Architecture principles	Have we paid enough attention to the architecture principles?	A principle represents a qualitative statement of intent that should be met by the architecture.
2. Learner path (Business architecture level)		

2.1. Learner path	Validation of the Learners path	Aim: Common understanding of the EU level learner path
2.2. (Business) Services	How should we gain these services?	A business service represents an explicitly defined exposed business behavior.
	Have we focused on right selection of development targets? Are we missing any other important development targets?	
3. Information		
3.1. Conceptual model and information flows	Discussion about the conceptual model and information flows	Aim of the discussion: common and shared understanding
4. Implementation/realisation solutions of the services		
4.1. Initiatives and Projects	Do you already have some initiatives or projects for deploying and improving these kinds of services in your country or area?	
4.2. Implementation models and solutions	Discussion on the implementation models of services and their principles and interoperability. Which one models should be integrated into the CompLeap mapping service?	Will the implementation of mapping services be purely EDUFI's responsibility, or will e.g. private third-party actors be involved?
		Are enough methods disclosed from a guidance point of view?
5. Learning analytics		
5.1 Risk management	Can you identify any risks in this kind of use of learning analytics as a guidance tool for learners?	
5.2 Risk management	How to prepare and control the risks?	

5. PILOT DEPLOYMENT OF THE ANALYTICS PROTOTYPE

Responsible partner for the piloting: University of Oulu

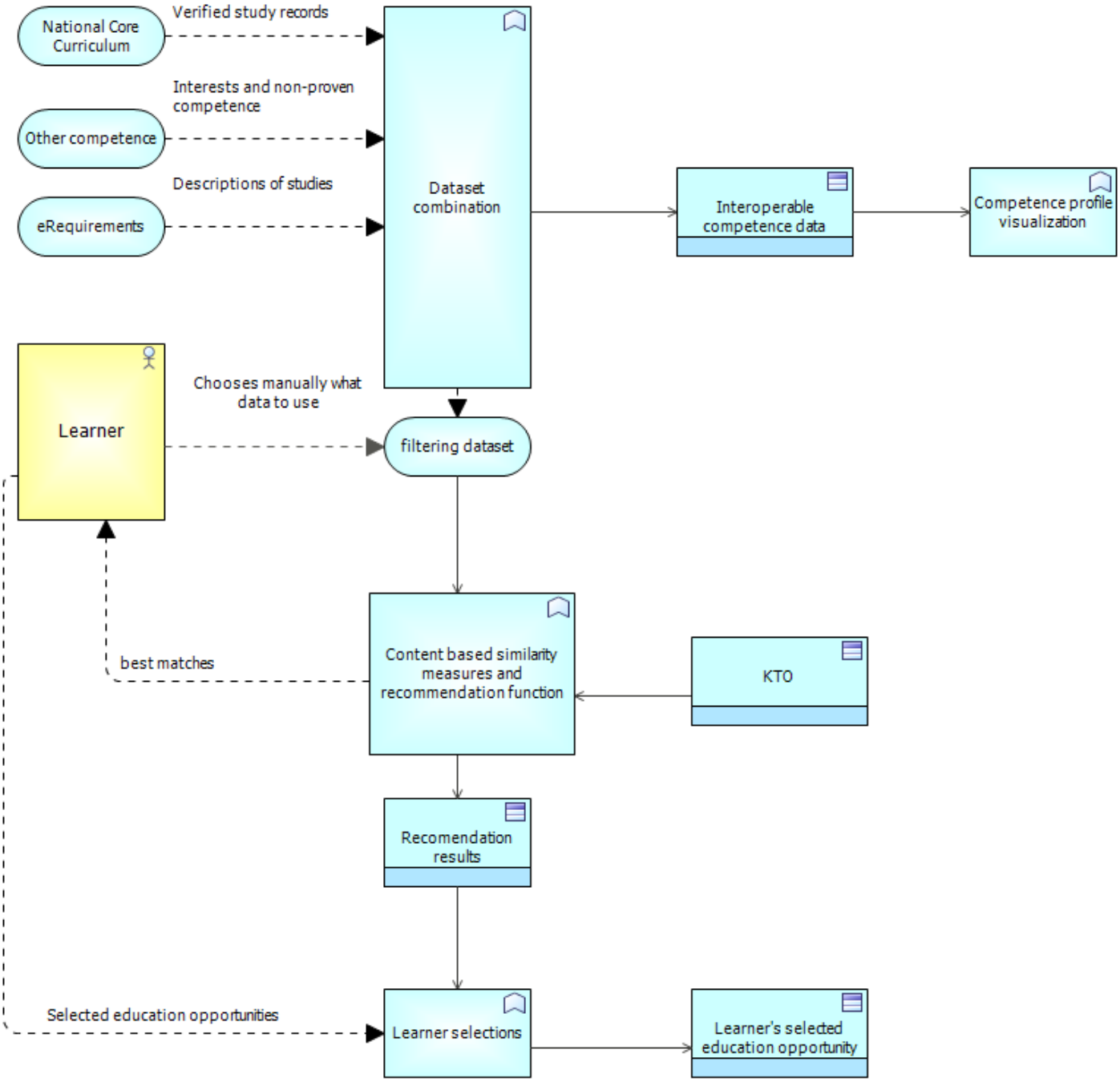
Contact persons: Hanni Muukkonen-van der Meer and Egle Gedrimiene

Piloting of learning analytics is a closely related to the piloting of other services and functionalities in CompLeap project. Thus, the timing, materials to be piloted, type of feedback and other details of the piloting depend hugely on the project goals, general piloting plan as well as development process of Compleap services, collaboration between Compleap project team and the developers and current legislation concerning personal information and data use in Finland and EU.

There are certain limitations to the piloting and testing of the recommendation system as well as competence visualizations imposed by the current Act on National Registers of Studies and Degrees in Finland (Laki valtakunnallisista opinto- ja tutkintorekistereistä, 884/2017). For this reason no real user data will be used in testing and piloting of the services. Mock up data from KOSKI services will be used in the piloting phase and end users will be able to try out the services without their own data but with the mock up data having close resemblance.

During the course of the project, research was conducted regarding possibilities to use various educational data sources and data types for the purpose of supporting learners' educational decisions. Data model was created describing data sources, data types and pathways in Compleap services. The services are interconnected and are presented in the figure bellow followed by the more detailed description of each service.

Figure 1. Data model describing data flow



Data flow model in the Compleap project illustrates how data flows in the Compleap user services.

User comes to landing page and either logs in or uses system without logging in. If user logs in and has SSN (HETU) then all user related data is brought automatically from various data sources to dataset combination.

Dataset combination can be filtered by the user.

Filtered dataset is used as basis to semantic matching with KTO (KTO is abbreviation for Finnish words *Koulutusinformaation, koulutustarjonnan ja Opintopolku.fi* -uudistus).

After semantic matching phase user will get personal recommendations based on input data.

After dataset combination competence profile is showed to user (ESCO). (This is right from the "dataset combination".)

In case user do not login (s/he does not have Finnish SSN) then only one data set is automatically fetched for the user ("other competences") and this will be used for recommendations. This is a set of competences that user has selected from a list (*national education classification*).

Information about non-formal and informal education as well as interests comes from the manual user (learner) input. Specific data set is extracted and used as a data combination to visualize competences for the user and at the same time stimulate his reflection on his current competence situation. User can also manually select data combination and filters to get a content-based education recommendation. Best results are presented to the user where he can further select his favorites.

Information flow described above leads to two main services provided: Competence mapping and education recommendation.

1. Competence mapping - there are certain competences acquired during the study process. These competences are usually described in the national curriculum and are important part of the modern world of work and study. Although they are learnt and specified in documentation many students don't have enough information about them or maybe haven't even heard about them at all. Compleap service provides an opportunity to see what competences in a form of study modules have been gained during the study process in educational institution. Mapping of Finnish national curriculum to ESCO competences is also done in this part of the project. However, possibilities to explicitly show these mapping results to users are still unclear.
2. Education recommendation - education recommendations are calculated and based on similarity of content between user's profile data and education descriptions. Closest matches of between user's profile and education descriptions are presented to the user in ranking. Starting from the closest one to the less close and so on. User can mark some recommendations as favorite and this way generate more suitable suggestion.

The whole service is seen as a study guidance and support for decision making when choosing suitable vocational education and training. Information about own competences, previous studies and interests are gathered in one place and presented in a user-centered way to promote his reflection and guide him to studying possibilities and the world of education in general. Education recommendation is provided not as a solution but as an encouragement for the person to think and reflect on his interest and future educational and work-related goals.

At the moment, competencies visualizations and learner's path visualization is left out of the further development scope of the Compleap project. Two main parts of learning analytics In Compleap are currently developed – competence mapping and education recommendation. More detailed information on these services, desk and user research is available is the following documents: competence visualization, education recommendation, summary of research activities in Compleap. Competence visualizations are currently left out of the scope of the project because of the lack of resources, and the gained competencies are provided in the form of the study modules. However, feedback about gathered visualization ideas will be collected form end users using low-fidelity prototyping. This will create a research base for further learning analytics development in the field of competence visualizations.

As for now, piloting of competence mapping and education recommendation services is seen as a two-step process. End user piloting is very important for the development and proof of concept of the services. However, in some cases, this may not be feasible due to some limitations, e.g., maturity of technology, resources and priorities in development. Technical piloting will be important to test and improve technical details of services and piloting with end users will be necessary to see the final value, understanding and interpretations of the services for the end users.

2019, May, June, July

Gathering feedback from end users about competencies visualizations using low fidelity prototype - Competences are important part of the modern education and during the October, 2018, 5 innovative ideas for competencies visualizations have been created in associate partner workshops. of these visualizations will be used to present students with their competencies using simple visualization means and are expected to promote student self-reflection and learner agency. The aim of this phase is to test the competence

visualizations, gather user feedback and information needed to further development of competence visualizations for the use of learning analytics future projects.

Technical piloting of Competence mapping -This part requires user's previous education to be accessible from national database (KOSKI), integrated with national curriculum descriptions in e-peruste.fi and mapped to competence data from ESCO database (Classification of European Skills, Competences, Qualifications and Occupations). This would provide representation of Finnish vocational education and training curriculum in ESCO classification. However, possibilities to explicitly show these mapping results to users are still unclear and may only take the form of digital testing and not piloting with end users.

User piloting (students) - requires data flow in the Compeap system. It requires information to be available from specified databases as well as calculated algorithms to be functioning to provide individualized education recommendation based on user profile information. There is a need for this recommendation to be based on the content of the user profile and user behavior (favoring and marking some of the recommendations) and not on the choices made by other users. Interest ontology (from finto.fi) must be integrated and functioning as part of the recommendation system. Exact mathematical model of the recommendation system will be left for the developers to create. Available prototype will be tested with end users (people in need of guiding services), and feedback will be gathered about their experience and connection of these experiences to educational and learning phenomena.

As no user personal data will be available for the piloting phase, mock up/historical database will be used.

Expected outcomes - gathered data to do the evaluation of competence visualizations as a learning analytics service for education and career guidance. Also information available about posibilities to use ESCO clasification in learning analytics platform for guidance.

2019, August, September, October

Piloting of education recommendation

Technical piloting - The aim of this piloting phase is to test the recommendation system and its technical aspects, e.g. responsiveness to user requests, scalability, and peak load or reliability and others (Jannach, et al. 2011). This phase of the testing could be done without involving the end users and will be carried out as soon as development process of the recommendation system is advanced enough.

User piloting (counselors) - in this phase feedback will be gathered from the end end users (counselors) who used the application as a tool in a guiding session with their clients. Experiences of counselors will be gathered in a form of structured interview, collecting their needs and suggestions on further development of the guiding services and possibilities to scaffold it with educational technology.

Expected outcomes - data gathered to evaluate the value of recommendations to the counselors and further development possibilities for recommendation system.

Defining the user groups: the KOSKI database, only has data available from 2018 on the upper secondary and vocational education. This would limit our user group for the piloting considerably to the users who only graduated upper secondary school 2018 and those who started vocational education 2018. However, us no real user data will be used, these limitations are not critical. Nevertheless, the results of evaluating recommendation systems using historical data-sets cannot be compared directly to studies with real users and vice versa as data accuracy of real user preferences is not captured (Jannach, et al. 2011). Thus, it would be important to gather some user feedback and information needed for further development of recommendation system. To make user experience as close as possible to having own personal data in the services, mock-up data will be selected to correspond the most to the previously identified user groups (see the table of the user groups). Participants of the piloting will be selected accordingly to represent identified user groups. This will be done to ensure then the participants of the piloting are able to identify with presented data visualizations and education recommendations.

Two types of feedback could be gathered. One from the user and one from guidance counselors helping the student. Three types of interactions could be observed here:

1. student - counselor
2. student - content of education recommendation
3. counselor - content of education recommendation

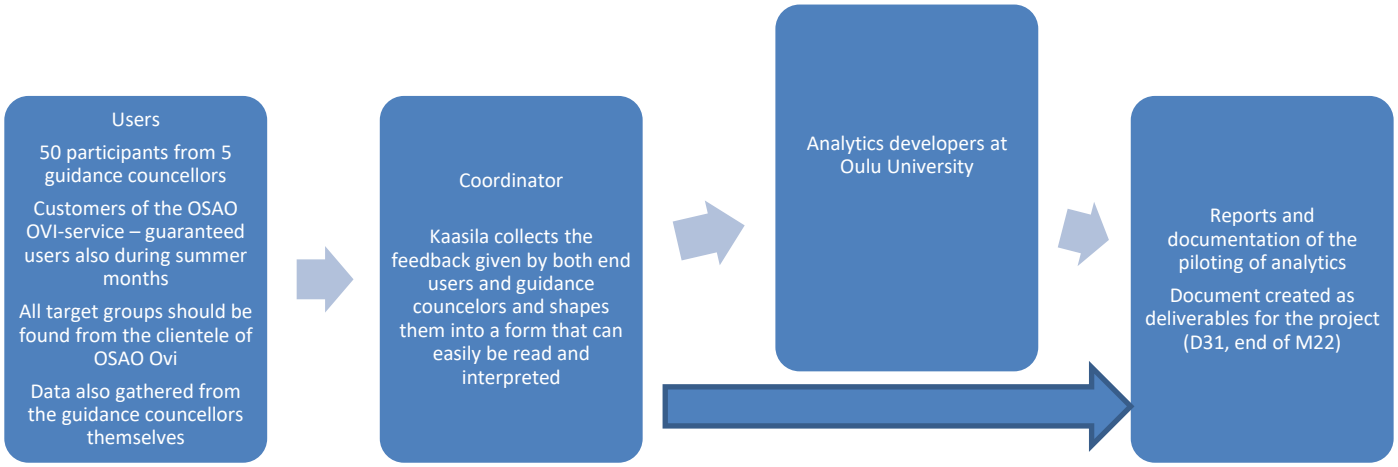
Survey and Interview question will be created using input from stakeholders seminars. These will be used to gather information on these interactions, providing qualitative and quantitative data.

Main questions when piloting the competence visualization / individualized education recommendations:

- How are the individualized education recommendations understood and interpreted by the users?
- How useful these recommendations are to the students?
- How useful these recommendations are to the counselors?
- What emotional, cognitive or behavioral response education recommendation elicit in the students?

Gathered feedback could also be related to the structural design and visual parts of the services as well as general users' understanding, and interpretation of the suggestions given by the recommendation system

The process of piloting the deployment of the analytics prototype:



6. PILOT DEPLOYMENT OF THE LEARNER PLAN PROTOTYPE

Responsible partners: Finnish Natinal Agency for Education (EDUFI) and Jyväskylä Educational Consortium Gradia with the Associated Partners in Finland
Contact persons: Annica Moore/EDUFI, Topias Kähärä/EDUFI and Tarja Puura/Gradia

General

The deployment of the CompLeap Learner Plan prototype is most centrally defined as a series of user testing scenarios. This user testing is conducted in the Finnish associate partner vocational education institutes of the CompLeap project. In these partner institutes, guidance councelors and teachers conduct these user testing interviews in the midst of or immediately after regular counceling sessions as a voluntary, extracurricular activity.

During the testing, the councelors write down observations on potential pitfalls and other obstacles in the usage of the prototype. After the testing, the councelors ask questions on the nature, functionality and the perceived benefits of the prototype. These observations and survey responses are then sent to coordinators Puura (Gradia) and Kähärä (EDUFI), who will in turn use them for reporting and send them forward to the developers in order to develop the prototype further based on comments and observations.

Defining the user groups

The user groups of the learner plan prototype will follow the target user groups outlined in the Grant Agreement and the project altogether. This includes e.g. immigrants, individuals not in education, employment or training (NEETs) and individuals in the midst of a career shift (possibly due to abrupt or long-term unemployment or newly graduated secondary level students, heading for further education). In addition to the target groups, the user testing scenarios will include learners currently in vocational education and training.

In addition to the aforementioned user groups, guidance counselors and admission services are key user groups for the piloting, and therefore their input on the functionalities and perceived benefits of the prototype is valuable. The extent of the piloting covers their training, which will be explored further in *Methods*.

The test population is designed to be divided equally between our partner institutions. During the months of deployment (May-October) each councellor or teacher partaking in the user testing will conduct an average of 10 user tests. As each partner institution has included around five councelors to partake in the project, the total number of user tests conducted is around 150. Naturally, this number will vary based on the resources (time, users in the target groups, councelor resources) available.

The testing and piloting for different user focus groups can be implemented simultaneously due to the variety of learners provided by our associate partner institutions. As the population offered by our partner institutions is versatile, no separate stages of deployment for different user groups is needed.

Methods

The main method of deployment of the CompLeap Learner Plan prototype is user testing mainly conducted via observations and a semi-structured survey. The users in the target group will take part in the piloting and deployment of the prototype voluntarily as an extra-curricular, additional activity to their regular guidance counceling sessions. The guidance councelors conducting the user tests ask these users to use the prototype of the service and to complete a set goal, while speaking out loud what they are doing and what emotions using the service evokes. After completing the task, the councelors will then conduct a semi-structured survey on the perceptions the users have on the nature, functionality and the perceived benefits of the prototype. After completion, the observations written down by the councelors as well as the questions answered by the users will be sent onwards for further development of the prototype.

In addition to one-on-one test settings, some group testing scenarios could be conducted in some of the partner institutions. In these settings, the users testing the prototype would be learners currently in vocational education.

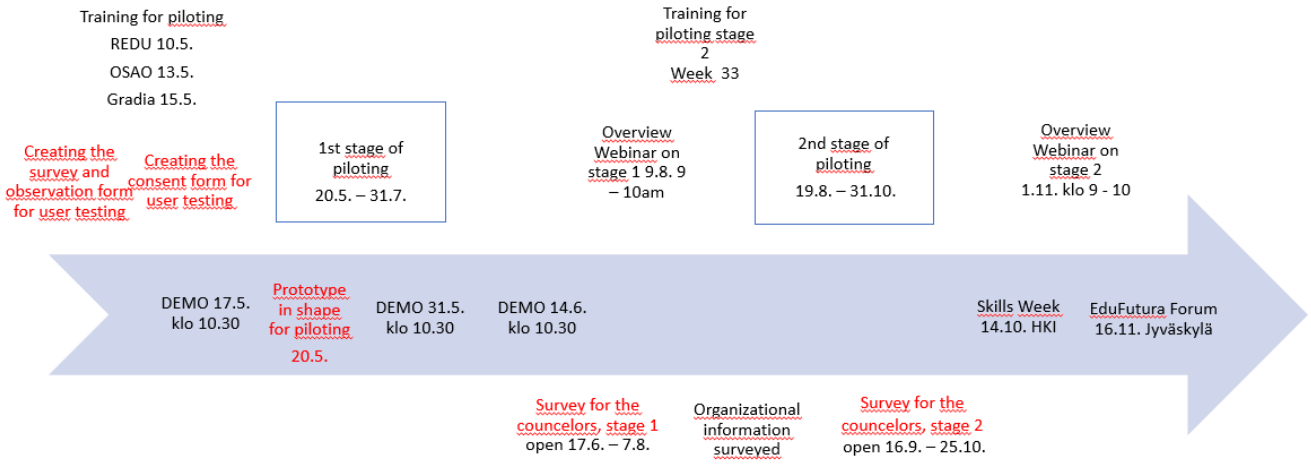
Prerequisites and limitations for deployment

In this stage of the project, a proof-of-concept prototype of the service is required in order to complete the deployment of the learner plan prototype effectively. This prototype will not include real personal user data due to national legislation, but it includes connections to the existing national databases and provides the learner with real and current study recommendations.

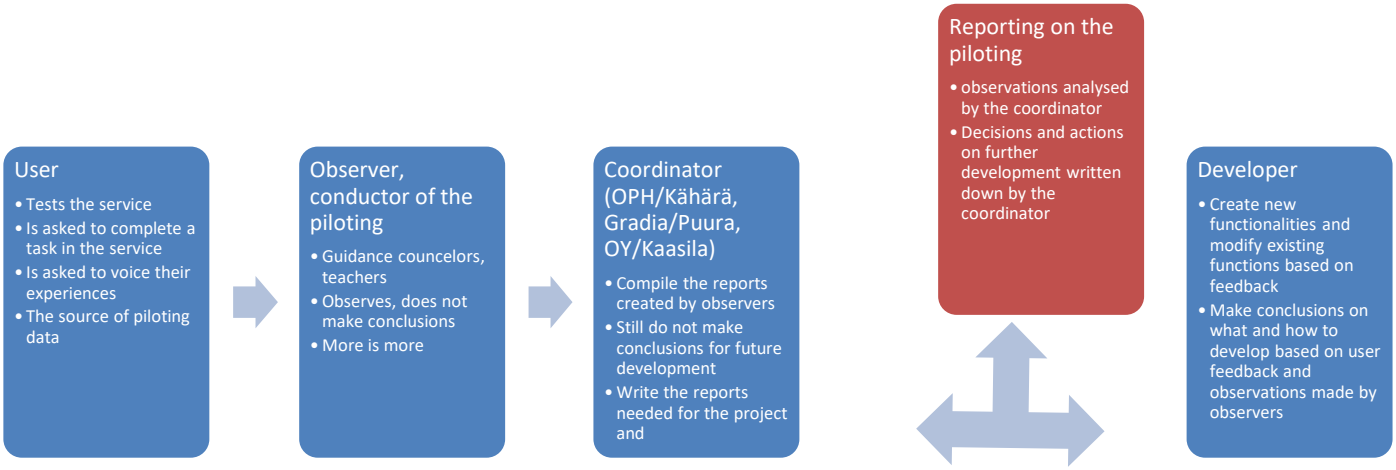
Properly commencing the deployment process of the learner plan prototype requires essential training for the guidance councelors conducting the user testing, questionnaires and observations. This training has been begun in our REDU-workshop at Levi in mid-April, where user testing experts from our developer service provider Reaktor trained the councelors from our associate partner institutions to accordingly test the prototype with learners and users.

Another prerequisite for the piloting and a possible limitation is reaching the necessary user groups. Even though the piloting will not use real user data due to national legislation, the users involved in piloting and the fabricated users should be as close to each other as possible, while being part of the designed central user groups. The timeline for piloting the deployment takes place from May until autumn. During this time, the learners matching most user groups are either starting their holidays or a new semester. Due to this, we are probably facing the fact that there will be limited time for counselling and limited amount of end users for the piloting. There is also little guarantee that we can reach a large number of users from the target group of NEETs, as the main gateway of reaching these target group members is via the “walk in” -guidance service, currently available at OSAO Ovi. We must also remember that the consortium needs time for reporting before the project time ends – not only piloting.

Timetable


Training for piloting
REDU 10.5.
OSAO 13.5.
Gradia 15.5.
Creating the survey and observation form for user testing
Creating the consent form for user testing
1st stage of piloting
20.5. – 31.7.
Training for piloting stage 2
Week 33
Overview Webinar on stage 1 9.8. 9 – 10am
2nd stage of piloting
19.8. – 31.10.
Overview Webinar on stage 2
1.11. klo 9 - 10
DEMO 17.5. klo 10.30
Prototype in shape for piloting 20.5.
DEMO 31.5. klo 10.30
DEMO 14.6. klo 10.30
Skills Week 14.10. HKI
EduFutura Forum 16.11. Jyväskylä
Survey for the councelors, stage 1
open 17.6. – 7.8.
Organizational information surveyed
Survey for the councelors, stage 2
open 16.9. – 25.10.

The process of piloting the deployment of the analytics prototype:



7. INTERNATIONAL DEPLOYMENT

The consortium has now decided to focus more on the existing EU-wide networks on lifelong learning, digital innovations in education, guidance and counselling, like InnoVET (joined by Gradia), Europass (joined by Edufi and DUO), Euroguidance (joined by Edufi and DUO) and other possible partners with established institutional role in the EU-level collaboration, like Die EU-Geschäftsstelle der Bezirksregierung Köln in Germany (EU Agency in Cologne).

The deployment in other EU-countries will consist of exploration of existing educational data systems in place in said countries. This implies that the deployment on the EU-level will primarily be on the architectural level. In more detail, the deployment process in these countries will preliminary follow the outlines described below:

- Exploration of the chosen countries with existing similar or customisable educational register data in place (i.e. national student register databases and/or national databases on curricula).
- Upon choosing the countries, the systems in place will be examined, and the possible role and data architectural position will be investigated. The main question at this stage would be if and how the CompLeap system would fit into the architecture of said countries.
- In these countries, there would most probably be no concrete service to be deployed – rather the deployment would consist of the abovementioned desk research on the possibilities of future deployment.

We will organize separate workshops for the key persons and in addition, join the network meetings with motivating and expanding presentations of CompLeap. The first of these workshops will be with the EU Agency in Cologne. In the first workshop, we will evaluate the CompLeap framework architecture in relation to the German national and regional educational system architecture. After this evaluation, plans on future collaboration and possible more concrete deployment of the prototype are outlined. The following table includes an example of what the nature of the following international deployment discussions and workshops will be.

Date	Agenda	Participants
14.5.2019	Die EU-Geschäftsstelle der Bezirksregierung Köln Zeughausstraße 2-10, 50667 Köln 10-10.30 Project presentation 10.30-12 Evaluation of the CompLeap framework architecture 12-12.30 Break 12.30-14 Competence profile prototype and planning of the further collaboration	Laitinen/CSC Rouvari/CSC Moore/EDUFI Kähärä/EDUFI German National Europass Center Office for School Development of Rhein-Erft-County Members of supervisory board of VET-schools in regional government of Cologne.

Deployment in the Netherlands

Deployment in the Netherlands is a very intensive road to walk, because of the way it's organized. In the Netherlands there are many different kind of organizations who would made data available in the framework. And there aren't one or two authorities that would be a logical source.

In The Netherlands there is a lot of interest in the development Europass has made in the Europass Portfolio which support Life Long Learning and is CompLeap is not well known. That's why there isn't a lot of response on invites because the priority is on other developments.

In the most optimistic scenario DUO and SBB can be part of it in the following way:

DUO hosts the national Diploma Register in the Netherlands. DUO is constantly doing research how to facilitate the owner of the data in Life Long Learning and make this data available.
Regarding to the CompLeap solution DUO is involved with this project but have concerns if it's possible to start with analyzing how diploma data can be shown to the potential CompLeap user in the Netherlands. Reason is lack of resources, finance and an overloaded backlog.

SBB recognizes and guides learning companies where students can go for a good quality internship or learning path. SBB makes agreements about what the student needs to know and be able to obtain a diploma or to develop an VET certificate for life. SBB provides facts and figures, such as the chance of internship, apprenticeship and work or trends and developments in the sector. And they advises the Minister of Education, Culture and Science about the connection of vocational education to the labour market. Students receive the best practical training with prospects of a job so that companies get the professionals they need.

Regarding to CompLeap SBB is interested in the solution CompLeap is aiming and wants to know more about it. During the project it became clear that SBB can't participate because of political reasons and other prioritizing of other solutions for Life Long Learning.

Europass and CompLeap will discuss what the possibilities are to cooperate with each other. Therefor a representative of the commission will meet the member of CompLeap in June/July for a workshop. In the beginning of June there is an innovation working group of Europass. CompLeap is one of the initiatives Europass will look in. The project manager of CompLeap is invited to participate via skype.

8. TIMETABLES (COMBINED)

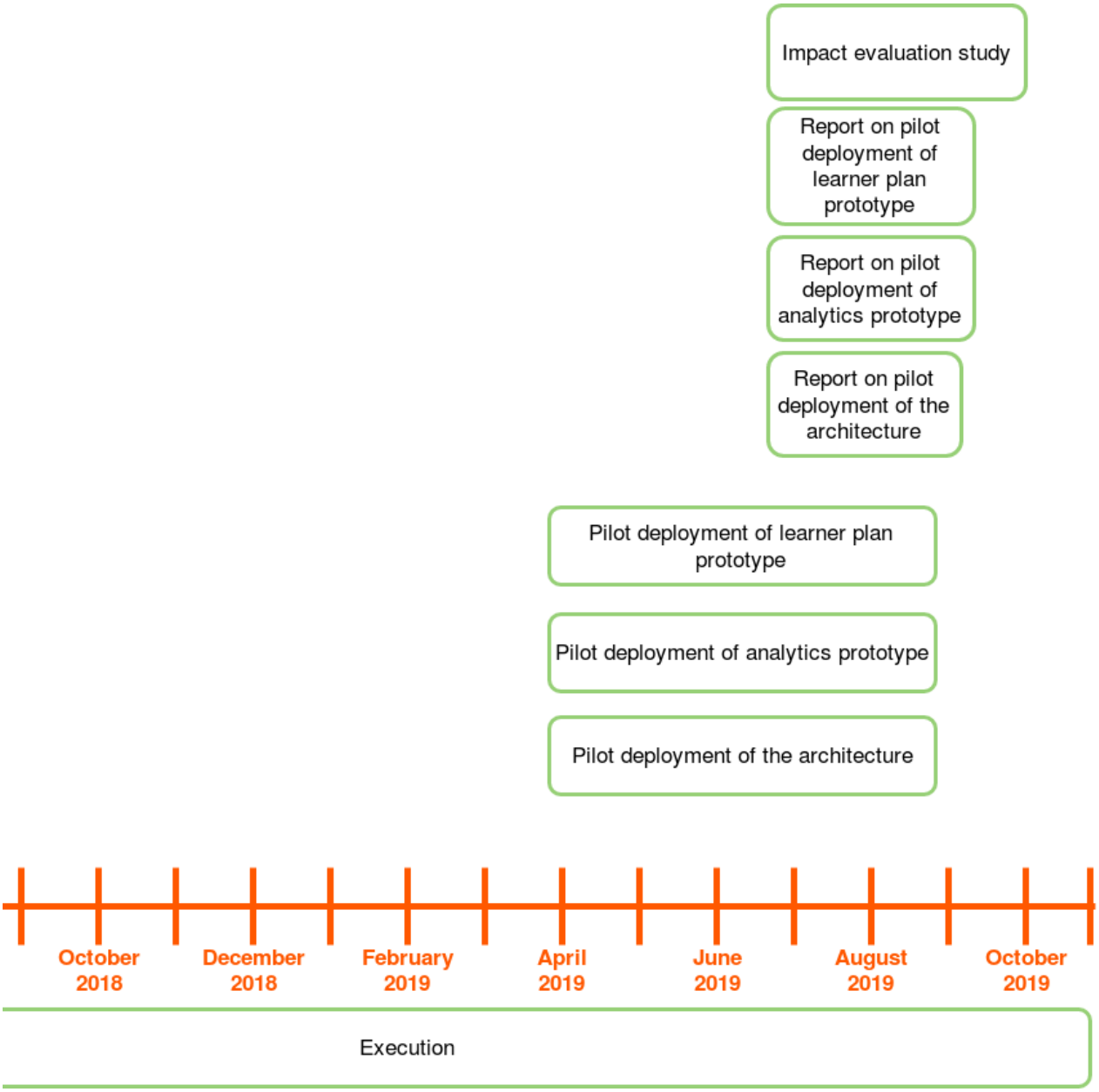


Figure 2. The deliverables of the WP4 on the project timeline

Date	Framework architecture	Analytics prototype	Learner plan prototype	International deployment
18 September 2018			Associated Partner Kick-off @GRADIA	
10 October 2018			Reference Group Workshop @EDUFI	
31 October 2018			Associated Partner Workshop @OSAO	
4 December 2018			Stakeholder Mid-term Seminar @EDUFI	
17 January 2019			Associated Partner Workshop @TREDU	
7 March 2019	Evaluation Discussion at the Ministry of Education and Culture			
14 March 2019	Evaluation Discussion with Associated Partners		Associated Partner Workshop @EDUFI	
27 March 2019	Evaluation Discussion with EDUFI			
March 2019			Network Workshop @GRADIA	
10 - 11 April 2019			Associated Partner Workshop @REDU	
April 2019				
May 2019		Gathering feedback from end users about competencies visualizations using low fidelity prototype (May, June, July)	Associate partner training sessions (REDU 10.5., OSAO 13.5., Gradia 14.-15.5.)	
3 May 2019	Evaluation Discussion with the Ministry of Economic Affairs and Employment			

13-14 May 2019	Framework Evaluation Discussion in Cologne, Germany		Associated Partner Workshop in Germany	Associated Partner Workshop in Germany
20. May- 31. July 2019			**Learner Plan Piloting Phase 1**	
July 2019			Associated Partner Workshop in the Netherlands	Associated Partner Workshop in the Netherlands
August 2019		Piloting of education recommendation August, September, October)	Evaluation sessions	
August 2019			Training session	
August – October 2019			**Learner Plan Piloting Phase 2**	
September 2019			Associated Partner Workshop in Germany	
September 2019			Associated Partner Workshop 2 in other countries	
September 2019			Associated Partner Workshop in the Netherlands	
October 2019			Evaluation sessions	
November 2019			Dissemination seminar in Finland	
November 2019			Dissemination seminar in Europe	
November 2019			Impact Evaluation Study (ready)	

9. FINANCES

There are 27,75 personal months in total to be used for personnel expenses in the work package 4. These PMs are shared with five partner organizations in the following way:

Partner	**pm**
Gradia (wp-leader)	6
Edufi	12
CSC	3
Oulu University	5
DUO	1,75
Total	**27,75**

Costs	***Description***	***€***	***Total***
Partner costs			40 000
	Associated partners in Finland, cooperation in piloting	30 000	
	Associated partners in other countries, cooperation in piloting	10 000	
Workshop costs			40 000
	Workshops in Finland (4 + 3)	10 000	
	Workshops in the Netherlands (2)	4 000	
	Workshops in other countries (3)	6 000	
	Training, orientation, evaluation	6 000	
	Conferencies, entry fees etc. in Finland	5 000	
	Conferencies, entry fees etc. in other countries	5 000	
	Dissemination seminars	4 000	
Travel costs			25 000

	External experts in Finland	15 000	
	External experts in other countries	10 000	
Material costs			20 000
	Marketing material	2 500	
	Videos	10 000	
	Publications/printing	3 000	
	Translation services	1 500	
	Seminars, conferences and other events	3 000	
Total			**125 000**

10.RISKS

The following risks will be included in the Risk Management Plan for the whole project. The most significant risks involve setting piloting objectives, carrying out the piloting as well as the steady management of piloting (the latter two are heavily intertwined).

The risk	Description	Impacts	Assessment and anticipation
Timeline	Due to unforeseen events or issues the development of the prototype(s) would be delayed.	It is not possible to start piloting the deployment of the architecture/analytics prototype/learner plan prototype M17, because they are not ready. This delay would also affect the prototype release in M21. Impacts also reporting (M20 – M22), evaluation (M20 – M23) and dissemination (M20).	Realistic timeline and enough resources for the development phase. Commitment and use of Reference Group members and other partners to get results in time.
Open alignments	It is not possible to start piloting the deployment because of	Not following the Annex I and not achieving what was	Good project management, planning,

	open alignments. The consortium is not sure what we are supposed to do/develop in the project. Too many open questions, no management.	promised. Goals change on the way.	open discussion and cooperation with WP2 and WP3. No unclear questions, planning tools ready to deploy.
The core objectives of the work package/project are not achieved.	It is not possible to deploy the architecture/analytics prototype/learner plan prototype because of the lack of functionalities. There is a disagreement or a misunderstanding how to achieve the objectives.	Deployment is not possible at all, only piloting.	Active cooperation and enough resources in the development phase. The objectives are defined carefully.
The resources in piloting the deployment	There is not enough resources to use for the work package like promised.	The implementation and deployment will be delayed. There will be lack of time and poor results in piloting.	Good project management especially with the resources. Commitment of the partner organizations.

Measurements of success

The most important points of measuring success during the piloting of the learner plan prototype are commitment, collection of feedback during piloting, user satisfaction and dissemination. The measurements are elaborated below.

Criterion	Objective	Measurement
Commitment	Associates are motivated to be involved in deployment.	Confirmation of the deployment plan, participation in workshop activities and receiving feedback in piloting. Contracts with the WP-leader for partner costs and travel costs.
Collection of feedback during piloting	Feedback on the deployed services has been collected from the field as well as end users.	Feedback channels are functioning and easy to obtain and use.
User satisfaction	Users see the benefits and the usability of the services and are willing to use them in the future. A better than average grade in feedback.	The amount of feedback and the grades received from the services. Grade system 4-10.
Dissemination	Associates are planning the use of developed services among other services. They are interested in further development.	Expressions of interest, participation in the dissemination seminar. Activity in project´s social media channels.

11. LINKS TO OTHER SOURCES

The wiki page for Deployment and evaluation (WP4):

https://wiki.eduuni.fi/pages/viewpage.action?pageId=54698726

12. CONTACTS

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