LIFE GreenYourRoute: A European innovative logistic platform for last mile delivery of goods in urban environment

Deliverable E1.3: *Risk Management Plan associated with Risks Assessment Forms and Quality Control Report (updated every month)*

Partner responsible for this report: UTH

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Abbreviations

BT	Buffer Time
EEA	European Environment Agency
ERP	Enterprise Resource Planning
ETV	Environmental Technology Verification
EU	European Union
GYM	GreenYourMove project
GYR	GreenYourRoute project
RAF	Risk Assessment Form
SME	Small and Medium-sized Enterprise
VRP	Vehicle Routing Problem

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Abstract

The following report deals with the Risk Management Plan of LIFE GYR project which allows verifying the life cycle of the project in terms of risks. Specifically, in this report the team members record and analyze all the relevant risks that may arise during the implementation of the project and also the appropriate risks' treatment. Periodically, an updated version of this Plan will be provided in order to show which risks are still active or not, include new risks and the mechanisms the consortium used to deal with.

Moreover, the authors designed the risks assessment form, in .xls format, with all the relevant fields that should be filled in during the project's implementation in order the consortium to be able to monitor the project's risks.

1   Introduction

The Risk Management Plan describes the risk management approach followed by LIFE GYR project participants throughout the project's implementation. Its principal objective is to identify and prevent technical and methodological risks. These risks are identified along with their implications and the consequential impact in terms of timescale, quality and cost. Each risk is assessed against the probability of its occurrence and is further characterized by a set of risk reduction measures. A risk assessment, contingency/recovery plan is developed placing particular emphasis on any high-probability or high-impact risks. Project Managers are responsible for identifying new risks as they arise and inform the Project Coordinator. GYR team designs the Risk Assessment Forms (RAFs), in .xls format, where technical, methodological, dissemination, management, socio-economic, after-life plan and miscellaneous risks are included.

The COVID-19 outbreak added new risks for the implementation of the project mainly affecting its timeline.

2 Risk Management Plan

The risk management approach adopted for the project will be described in the Risk Management Plan, drafted and implemented during the initial phase of the project. Its principal objective is to identify and prevent all kinds of risks. These risks will be identified together with their implications and the consequential impact on the program in terms of timescale, quality, cost and the delivery of milestones and deliverables. Each risk will be assessed against the probability of its occurrence and the potential impact it might have on the identified risk. Factors will then be marked on a scale of "null", through "low" and "medium", to "high". Each risk that is identified is further characterized by a set of risk reduction measures that could be implemented in order to reduce either the likelihood of the risk event occurring, or to mitigate the impact if it does happen. Based on this risk assessment, contingency/recovery plans will be developed placing particular emphasis on any high-probability or high-impact risks. A "risk owner" is identified and is assigned with responsibilities for monitoring the risk, taking proactive and preventive measures and implementing the contingency plan if required.

Action Leaders will be responsible to identify new risks as they arise and inform the Project Managers and the Project Coordinator. In the following sections, the risks (technical, methodological, managerial and socio-economical risks), that might occur during the implementation of LIFE GreenYourRoute project are described.

2.1 Technical risks

2.1.1 Data access service

Finding a common language between GYR service and the existing Enterprise Resource Planning (ERP) systems installed and used by the demonstrators and potential customers of GYR company is a challenge for GYR team, since each demonstrator as well as each future customer of GYR company has an (ERP) system of their own. A data access service is critical to be developed since the ERP systems and GYR service should communicate and exchange a big amount of data. If it is not developed then GYR service will be isolated by any other existing system used by a logistics company. COVID – 19 pandemic does not introduce additional technical risks for the implementation of the data access service but the implementation of the tasks requires more effort due to cases of unsynchronized working and reduced productivity in cases of working from home (e.g. problems in internet connection, PCs with less capacity, disruptions from home environment etc.) for the technical team during the COVID-19 outbreak period.

2.1.2 Response on Data access service

GYR team made a generic template of "plug and play" which allows the potential customers of GYR platform to set up interactive connections between the systems of their business environment and GYR platform. The ERP features of the demonstrators will be meticulously collected under the frame of Action B4 and GYR team will develop a data access service meeting these features. In order to increase the reusability, extensibility and marketability of GYR service, a data access service manual will be developed under the frame of Action B1. Further development of additional mid-ware for data management between the ERP and the

GYR platform is a solution for enabling communication between different databases and the platform.

2.1.3 Green Vehicle Routing Problem requirements

All demonstrators perform routing requests in a daily basis. These routing requests have general specifications, e.g. capacity constraints, time windows constraints, vehicles' availability constraints, but also specific requirements, for instance transport of cold/frozen freight. Meeting these requirements is a challenge for GYR team. There are not any additional requirements from the demonstrators resulting from the COVID-19 pandemic, but the definition of problems requirements necessitates more working hours due to cases of reduced productivity for the technical team due to working from home (e.g., problems in internet connection, PCs with less capacity, disruptions from home environment etc.) during the COVID-19 outbreak period.

2.1.4 Response on Green Vehicle Routing Problem requirements

GYR team collects all demonstrators' requirements under the frame of Action B4, by studying their daily activities through on-site visits and examining their routing operations. These requirements are turned to mathematical expressions of the Green Vehicle Routing Problem in order to be included in GYR service. To meet specific requirements apart from general ones, like time windows, the final step of the algorithm developed under the frame of Action B2 will provide GYR service users the ability to perform manual customer allocations after receiving GYR platform's solution. A fine-tuning of the Green Vehicle Routing Problem algorithm will be also performed under the frame of Action B5, when the real-life practice will take place, in order to further adjust the developed algorithm to meet demonstrator's needs.

2.1.5 CPU Solution Time of the Platform

The CPU response time of the platform could be a technical constraint. For large-scale problems, the computational effort required for the exact solution approaches to provide a solution within reasonable timeframes (few second for re-routing and few minutes for routing purposes) may be prohibitive.

Another component of the platform that will affect its response time to a routing request is the architecture of the database and data feeds. CPU solution time is not further affected by the COVID-19 pandemic.

2.1.6 Response on CPU Solution Time of the Platform

Through appropriate meticulous testing, the project team will guarantee that the system returns a solution in less than 60 seconds in case of re-routing and less than 10 minutes in case of routing. This is achieved following two principles, presented in detail in Action B2 (Green Vehicle Routing Problem, Modelling and Solution approach):

- In too large instances, clustering approaches are introduced. Clusters are subsets of region for which a separate optimization problem is solved.

- The more the heuristics are favored, the shorter the solution time is. Hybrid approaches are thus tuned in a careful way to provide a balanced trade-off between exact and heuristics approaches.

In order to guarantee the fast response of the platform, more than one different database architecture of previously implemented EU projects will be evaluated. This procedure is presented in detail in Action B1. The database architecture of LIFE GreenYourMove, GreenRoute & EnvRouting platforms (previous implemented EU project) and the CHAPS IDOS journey planning which offer high availability and performance under high volume simultaneous routing requests will form the base of GYR database architecture.

2.1.7 Online Security Issues

Another technical constraint is the online security (presented in detail in Actions B1 and B3). Hackers will try to get through security barrier of the website and database servers, either to extract data or plant some kind of virus that may cause damage to the functionality of the platform. COVID-19 does not affect further this technical issue.

2.1.8 Response on Online Security Issues

UTH has already a complete secure network setup which was implemented in the frame of LIFE GYM project (including Port Forwarding, IP & MAC binding, IP Firewall, Bandwidth Control etc.). This secure network setup protects from malicious usage and provides the way to limit the usage of specific services to specified users. This network setup can form the base for GYR platform and with some additions (due to additional needs such as communication of web services with the web services of demonstrators, e.g. ERP systems) will guarantee a highly-secured LIFE GYR service. Also, GYM platform uses nginx with optimized configurations (nginx is a load balancing software which distributes user requests across all CPU cores, allowing multiple users to perform requests and taking responses in parallel, utilizing the hardware for best performance). Similar configurations will be used on GYR platform.

The system will be auto updated with the most up-to-date firewall services and antivirus protection. In addition, storage, database and application backup methodologies will be applied in order to enhance system sustainability.

Pertaining to the online security, the consortium will focus on user privacy, hacking attacks and virus protection. The database server will be isolated from the external network, accessible only through the web server, in order to reduce the 'attack surface' of the system. Both servers will be kept up-to-date with system, software and antivirus updates. A software firewall will be installed on the web server, to further reduce the 'attack surface' by closing unneeded ports and by preventing unauthorized 'brute-force' attacks through the use of an auto-banning mechanism after a number of unsuccessful logins.

To further foolproof the system from security threats that cannot be prevented, such as Denial of Service attacks, we are looking into virtualization clustering solutions, where there are multiple virtual servers, all with the same data/software. Automatic tools are monitoring those virtual servers, and in case one of them fails for any reason (including due to DoS attacks), they redirect legitimate traffic to a functioning one. The malfunctioning virtual server

then goes through a process of restoring and rebooting, and then enters the cluster of virtual servers as a normal node. The whole process is transparent to the end-user, who might only experience a slight delay when the tool re-routes the traffic to another server.

2.1.9   Failure of technical equipment

Extreme weather conditions (e.g. heavy rain) may cause failure of the technical systems of the technical equipment located in the premises of UTH. Rapid changes in the electrical current that may follow, cause malfunctions in several parts of the installed equipment such as the CPU hard driver, the Virtual machines, the UPS etc, or lead to the total collapse of part or all the equipment. Additionally, several other physical risks may be encountered such as the case of fire, earthquake or similar phenomena that may destroy the equipment.

2.1.10   Response on Failure of technical equipment

For ensuring the functionalities and the work implemented and stored in the project's systems and hardware, and for enabling the function of the GYR services with the least possible disruptions, the team is planning to use Cloud environment as a backup of any possible physical threat that may destroy the equipment.

2.1.11   Integration issues

GYR team may face several integration issues when proceeding to integrate GYR service into the demonstrator's environment. One challenge GYR team will face is time. In general, it often takes 6 months or longer just to deploy and set up the integration environment that is intended to power the desired integrations. Also, connecting all tools already installed in the demonstrator's environment and the tools developed by GYR team is a process of high complexity. Furthermore, integration is a process requiring coordination not only between multiple systems, but also between multiple teams. COVID-19 seriously affects the integration process since there is possibility that some key persons from the demonstrator's personnel will be working remotely or may be in suspension during the integration period. Additionally, another possible issue due to COVID-19 would be that some customers of the demonstrators may not be working, with risk that issues regarding the integration may not be encountered to be resolved and may be excluded in the fine-tuning of the platform.

2.1.12   Response on Integration issues

GYR team, in order to successfully integrate GYR service to the demonstrators' environments, has foreseen a 6-month period of integration activities in the demonstrators, i.e., from M34 (June 2021) to M39 (November 2021). Real life practice begins on M40 (December 2021). The final integration activities are rescheduled so that logistics companies are adopted to the new constraints introduced by the COVID-19 pandemic.

For the compatibility of demonstrators' ERPs with GYR service, GYR team will put high effort in Action B4 to collect all demonstrators' ERPs features and in Actions B1 and B3 to develop tools and services easily to be integrated in their environments. Since the platform will be developed based on these requirements, connection compatibility is almost certain. However, in all Actions involved in the platform development, fine-tuning activities have been foreseen to solve possible integration issues.

For the demonstrators' staff coordination during the integration process, GYR team will perform several training sessions on how to use GYR data access service such as how to map their transport network (e.g. oil collection locations, customers' locations etc.) and store mapping information into the database, how to introduce customers info from the IRP systems to GYR database, how to do the geocoding of pick-up/delivery points and insert them to the database, how to include in the database data related to fleets (e.g. number and type of vehicles) and how to import routing solution back to the ERP systems. Furthermore GYR team trains the demonstrators' staff on how to use GYR web application such as how to submit a routing request, how to extract routing solutions and statistics (i.e. delivery schedules and routes), how to "read" the routing plan obtained, how to execute the delivery trips and how to monitor solution's implementation. Finally, UTH and CHAPS, train demonstrators' staff on how to use GYR smartphone application such as how to introduce a routing solution to the mobile application, how to "read" a routing solution from a mobile device and how to perform a re-routing request in case something unpredictable occurs during the execution of the initial planned route.

2.1.13 Integration to 3 additional companies

There is potential risk that GYR team won't find three additional companies to integrate GYR service until the end of the project. The risk is intensified in case that the duration of COVID-19 crisis affects the sector of logistics to appoint that some logistics companies may close or lose their interest on their interest on environmentally friendly routing due to problem arising from their deteriorated economic status.

2.1.14 Response on Integration to 3 additional companies

GYR team puts high effort from the beginning of the project to identify potential stakeholders and companies to participate in workshops and webinars to be organized during the project duration. By the time the workshops and webinars take place, GYR platform will be fully operational. Also GYR Company will have been established and GYR certificate is planned to have received ETV verification. In order to achieve that, GYR team has revised the project's timetable, starting earlier all of the abovementioned procedures. When the workshops and webinars start, GYR team will offer potential customers of GYR Company an integrated and verified solution for their routing operations, making this way GYR service more attractive to adopt. It is preferable that the workshops are organized in person. In case that due to extended COVID-19 constraints this is not feasible, the workshops may be organized as electronic meetings. Additionally, project members may visit the potential stakeholders and companies for follow up.

2.1.15 Marketability plan

One risk the project may encounter is the failure of the Marketability plan to be developed under the frame of Action B6. The indications of the marketability plan failure could be low traffic in workshops and webinars, low response from potential customers of GYR Company, etc. This risk may be intensified in case that the workshops are organized electronically due to COVID-19. COVID-19 may affect the business model in a way of the total income predicted due to decreased interest of the logistic companies for environmental considerations.

2.1.16 Response on Marketability plan

In order to assure a successful marketability plan, GYR team will perform extensive research on the target market, i.e. logistics companies or companies performing logistics operations. Additionally, GYR team will investigate competition in the field of logistics solutions, i.e. their deals, offers, etc. GYR team is committed to be actively engaged in the developed marketability plan by performing networking activities and further dissemination actions. The effect of COVID-19 in the environment of the logistics sector will also be depicted in the marketability plan and reduction in the pricing policy is also considered in order to increase the interest of the potential clients.

2.1.17 Environmental Technology Verification

There is medium risk that the application for the Environmental Technology Verification (ETV) may not be accepted. The ETV is essential for the marketability of GYR service and the establishment of its environmental added value. COVID-19 pandemic affects the date of the completion of the ETV procedure since personnel of the Verification body was not available during a large period of the COVID-19 outbreak and results in delays. To certain extent, these delays do not affect the implementation of the project.

2.1.18 Response on Environmental Technology Verification

GYR team will develop a verification plan, including the main steps to be followed in order to receive the ETV. Identifying the difficulty in the procedure, GYR team will start working on the ETV verification from M7 (March 2019) instead of M25 (September 2020). The completion of the ETV procedure is rescheduled, when the GYR company will also be established. Following to this rescheduling several amendments to the initial timeline follow, that will have been presented thoroughly on the amendment request. Additional comparative examples (with and without use of the GYR platform) have been sent again to the Verification Body for evaluation. Other possible treatments would be simplification of GreenYourRoute platform claim, development of external subsystems to enable the Verification process, application for a different verification (eg. ISO). For enabling the verification procedure, after agreement with the Verification body, UTH prepares external tools necessary for the preparation of the specific verification protocol.

2.1.19 Updating EU policy

One potential risk GYR team may face is the failure to update EU air quality legislation and policy. One possible risk arousing due to COVID-19 pandemic may be that the remote communication may result in less interest of key persons involved. The economic crisis in the EU resulting from the COVID-19 pandemic may lead to reduced interest in topics related to environment.

2.1.20 Response on Updating EU policy

In order to achieve updating EU air quality legislation and policy, GYR team will perform extensive research on EU policies, standards, directives, practices and initiatives on air quality under the frame of Action A1, in order to identify gaps and room for improvement in the existing policy. GYR team's effort to update EU policy starts from the very first day of the project by approaching and performing networking activities with EU policy makers. The

networking activities include the presentation of the baseline of routing planning, invitations of policy makers to GYR workshops (relevant budget has been foreseen for all workshops) and the delivery of the final report to appropriate directions and policy makers. Extra workload and effort are expected from the team members for extensive communication with the stakeholders.

2.2 Methodological Risks

2.2.1 Emissions' Calculation

The start-up emissions and the evaporative emissions are not considered at the development of the emission calculation models. Calculating these types of emissions with an acceptable accuracy at route level (microscopic view) requires control of too many parameters which is practically unrealistic.

Also, the European Environment Agency (EEA) has developed specific emission calculation models for each type of vehicle. However these models cover average vehicle types and not specific vehicle models or brands. Potential reduction in the workload of the demonstrators due to COVID-19 crisis, may result in a smaller environmental impact than foreseen (due to reduced amount of tnkm transferred).

2.2.2 Response on Emissions' Calculation

Excluding start-up and evaporative emissions from the methodology does not affect the quality of the outcome as in a Green-VRP (Green-Vehicle Routing Problem) context these emissions do not affect the optimal route as they could not be decreased; for instance, a vehicle generates the same start-up emissions even if it is running full or empty – even if it is running for 10 km or 90 km. On the other hand, at emission inventory level (macroscopic view) these two types of emissions are taken into account (more details are presented in Action C1).

The objective is to exclude the calculations of the start-up emissions and the evaporative emissions from the methodology. This approximation does not affect the quality of the outcome as for trucks these emissions do not affect the optimal fleet routing. Regarding the classification of vehicles, in Greek, Czech and Italian road networks, they are all classified in one of the existing categories foreseen by the methodology. The innovation that this project brings is also based on this classification.

Vehicles in the demonstration networks are classified in one of the existing categories foreseen by the methodology developed in previous EU project (GreenRoute, EnvRouting and LIFE GreenYourMove).

The risk of a reduced environmental impact due to less tnkm transferred cannot be handled by the project team since it depends on the volume of the logistics business.

2.3 Dissemination Risks

2.3.1 Limited Participation to Workshops and Webinars

Participation of the stakeholders in the workshops/webinars is important for the further commitment to LIFE GYR objectives after the end of the project. COVID-19 pandemic may intensify this risk.

2.3.2 Response on Limited Participation to Workshops and Webinars

In order to ensure maximum participation, pre-workshop/ pre-webinar activities related to announcements, agenda, location and time of the event will be disseminated through electronic media well in advance. In case of last-minute cancellations, the project team will consider options of postponing the event for a few weeks or days later. Additionally, in case that COVID-19 will not allow in person visits, electronic meetings shall be considered. For better results, and higher participation it is proposed to organize the workshops in the frame of other events related to logistics.

2.3.3 Damage of Dissemination Material

Another constraint is that notice boards or posters may be damaged or vandalized.

2.3.4 Response on Damage of Dissemination Material

We foresee their immediate restoration by monitoring the status of notice boards and posters at regular intervals.

2.3.5 Proper translation of Layman's Report

One constraint identified in relation to the development of the project Layman's Report (more details in Action D1) refers to the appropriate "translation" of the project scientific language and terms to non-scientific. COVID-19 does not add further risk.

2.3.6 Response on Proper translation of Layman's Report

The holistic approach of the project brings together scientists from different fields (environment – transport – informatics). The project team members will evaluate the Layman's Report content from a nonscientific point of view by reading texts outside of each member's field of their expertise.

2.4 Project Management Risks

Partners are experienced in the management of European Commission projects and some of them (UTH and CHAPS) are running currently a LIFE project (LIFE GreenYourMove project). The project team has foreseen structures so that any potential problem is effectively anticipated through the Risk Management Plan and resolved through the project steering committee. Additionally, GYR team has foreseen the development of a number of monitoring tools which in addition to the one suggested by LIFE program. COVID-19 pandemic introduced several difficulties in the project management due to remote work (working from home) or unsychronised work in some cases. The implementation of several tasks during the

COVID-19 pandemic requires more effort, thus more working hours, due to cases of unsynchronized working and reduced productivity in cases of working from home (e.g. problems in internet connection, PCs with less capacity, disruptions from home environment etc.) . The consortium is planning to encounter these extra hours of workload with use of lower personnel rates when possible. To some extent, the extra cost resulting from reduced productivity and the extension of the timeline of the project will be manageable with reduced rates. However, since the results of the COVID-19 crisis are not finalized in the time of the production of the present document, it is assessed that extra funds may be needed.

2.4.1   Timeline – Buffer times

Provisions have been made so that LIFE GYR timeline is always respected. In all critical activities proper buffer time (BT) has been considered without affecting the total duration of LIFE GYR. The most critical activity is the real life practice of GYR platform (more details in Sub-action B5.2) to 5 SMEs for a period of 12 months. The timeline is seriously affected due to COVID-19 crisis.

2.4.2   Response on Timeline – Buffer times

GYR team rescheduled its plan, resulting to 14 months prolongation and rescheduling of certain Actions and milestones.

GYR team setup as starting date of the real practice M40 (Dec-2021) and ending date M51 (Nov-2022). In order to guarantee this timeline the pre-final version of GYR platform (more details in Action B3) should be ready on M37 (Sep-2021), and the final version of GYR platform will be ready on Feb-2023, and as soon as the real life practice is completed.

This also serves the implementation of the workshops. Organization of workshops begin on M45 (May-2022).

Finally, GYR team added to the time planning of the project an appropriate safety margin of two months at the end of the project to allow its timely implementation for the inevitable unforeseen delays to the rest of the actions due to COVID-19 or other unforeseen issues.

2.5   Socio-economic Risks

2.5.1   Logistics providers' interests

The goals of logistics providers often conflict with environmental friendly operations. For instance, a freight distributor may decide to collect or deliver freight during peak hours, therefore contributing to road congestion.

2.5.2   Response on Logistics providers' interests

When performing optimisation routing planning, GYR service will clearly cater to also minimizing the cost of logistics operations, by minimising the distances travelled, the vehicle utilization and empty runs and by considering trade-offs and decide which scenario will yield the optimal balance between the competing interests. This is achieved by using the novel environmental externality score function. Additionally, promotional videos, workshops and other dissemination activities will show to additional customers of GYR Company (drivers

and managers of SMEs) that the solution obtained by GYR platform is far way better than the one obtained based on experience not only from environmental point of view but also from time and cost point of view.

2.5.3 Noncompliance with the Memorandum of Understanding for Green Procurement

All associated beneficiaries are private companies which do not follow specific procedures for Green Procurement, but partially implement general "green" rules. The application of Green Procurement rules under the frame of a Memorandum of Understanding as a common practice in their operations is a challenge.

2.5.4 Response on noncompliance with the Memorandum of Understanding for Green Procurement

GYR team developed a Memorandum of Understanding for Green Procurement taking into account the environmental performance of the beneficiaries, cost considerations, market availability and ease of verification.

For instance, although applicable, the criteria included in the copying and graphic paper list were not considered in the Memorandum of Understanding. This was decided after a market research in the Greek market: recycled paper is very rare to find and very expensive to purchase. For instance, in an online shop out of 3,522 results for copying and graphic paper, only two results were returned for recycled paper. Furthermore, while regular paper 80 gr cost was €2.95 for 500 pieces, recycled paper 80gr cost was €5.00 for 500 pieces; recycled paper was found to be 41% more expensive than regular paper.

The criteria included were decided with respect to the participating companies' nature, i.e. companies performing logistics operations, IT companies and a consulting company. These criteria are easy to implement and refer to products which are available in the market and their procurement will not create considerable cost deviations.

Finally, for the implementation of Green Procurement rules GYR team developed Guidelines for Green Procurement implementation and also self-assessment forms to evaluate proper compliance to Green Procurement rules and take corrective measures when necessary.

2.5.5 Implementation of the produced routing requests

Drivers are usually staff with great experience on routing operations. They also know very well their network, i.e. roads, one-way streets, etc. It is possible that they will not execute the routing plans the way they were indicated to, but perform the transport operations the way they believe is more convenient.

2.5.6 Response on the implementation of the produced routing requests

Trained and authorized demonstrators' or GYR company's customers staff monitors the implementation of routing optimal plan and the potential re-routing needs. GYR certificate will also depend on levels of compliance of the client of GYR service with several factors, including means taken by the demonstrator or GYR company's customer to ensure that drivers follow the routing instructions.

2.6   After life communication plan

2.6.1   After-life Communication Plan

There is a risk that the beneficiaries will not eventually undertake all the tasks described in the After-life Communication Plan, e.g. commitment to purchase GYR service for three years after the end of the project. However, beneficiaries are committed to fulfill their LIFE GYR after-life communication tasks, since all of them are actually beneficial for their own research or business profile. The After Life Communication Plan is affected by the new reality introduced after the COVID-19 pandemic era.

2.6.2   Response on After-life Communication Plan

GYR team will develop a business plan for the establishment of a new organization which will run GYR platform after the end of the project. The main objective of this new organization will be to keep GYR platform online and attracting new contractors of GYR service.

3   Risk Assessment Process

3.1   Sample Risk Assessment Form

The assessment of every identified risk will be done using an assessment form like the sample demonstrated in Table 1:

The assessment form will be designed in .xls file and the risks will be categorized according to their type (technical, methodological, dissemination, managerial, socio-economical or miscellaneous) in different thematic sheets (one type per sheet).

Moreover, every risk will be briefly described and categorized depending on its probability of occurring (null, low, medium, high) and its impact that upon occurrence may have on the project in terms of scope, cost and outcomes (null, low, high, medium). In addition, details of the individual in charge of handling this risk, the action under which this risk may arise and the current status of the aforementioned risk (inactive, active, partially solved, resolved) would be completed as well as a brief description of how the consortium faced with each of the risks.

The content of this file will be revised periodically in order to keep track of the risks and manage it efficiently.

Table 1: Sample risk assessment form to be filled in in case of risk identification

RISK SUMMARY	RISK PROBABILITY	RISK IMPACT	RISK RESPONSIBLE PARTNER	RISK STATUS	RISK ACTION	RISK TREATMENT
(Name	(Null)	(Null)	(Beneficiary	(Inactive)	(Number	(Brief
and short	(Low)	(Low)	responsible	(Active)	of Action)	description
description	(Medium)	(Medium)	for the risk)	(Partially Solved)		of how the
of the risk)	(High)	(High)		(Resolved)		consortium
						faced with
						this Risk)

3.2   Probability and impact Matrix

To be more precise, the probability – impact Matrix that will be used in order to measure the importance of each risk and prioritize the project team actions is presented below.

Table 2 The probability – impact Matrix that will be used for the estimation of risks' importance

		IMPACT		
		HIGH	MEDIUM	LOW
PROBABILITY	HIGH			
	MEDIUM			
	LOW			
	NULL			

4 Conclusions

In the above Risk Management Plan the project team tried to summarize all the potential risks that may arise during the project's implementation. For each of them, the authors gave a detailed description and proposed the best way for their solution.

Apart from the above Plan, the project team designed the Risks Assessment Form, in .xls format, in order to be able to monitor the project's risks throughout the project's life. In this file, all the potential risks are classified in six different categories according to their type and for each of them all the necessary fields regarding their probability, impact, responsible partner, status, action and treatment are added.

Both files will be updated periodically, each time an action will start or end, in order to change the status of the relevant risk or its impact/probability and to add its treatment or every time the consortium decides that it is necessary (e.g. to add a new risk etc.).