



D1.6: Risk Management Plan

WP1 – Project Management & Quality Assurance

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Executive summary

Risk is defined as an event or condition that has a probability of occurring, and could have either a positive or a negative effect on the project's objectives. A risk may have one or more causes and if it occurs, one or more impacts. Risk Management is the process of identifying, assessing, responding to, monitoring, and reporting risks. This Risk Management Plan (RMP) is developed to ensure levels of risk and uncertainty and defines how risks associated with the BEACON project have been identified, analysed and managed.

The aim of this deliverable is to provide to the partners a useful tool for managing and reducing the risks, identified before and during the project, to document risk mitigation strategies being pursued in response to the identified risks and their grading in terms of likelihood and seriousness and, finally, to identify the mitigation actions required for implementation of the plan.

This deliverable is the first Risk Management Plan developed during the BEACON project and it records the risks faced so far (M9) and the potential new ones that may occur until the second Risk Management Plan which will be implemented at M17.

The BEACON project Coordinator (KARAVIAS) has provided on time all the work package leaders and rest of the partners with a template along with instructions on how to fill it in.

The current deliverable is structured in the following chapters:

Chapter 1: Risk Management Strategy – Includes the strategy that will be followed during the project implementation

Chapter 2: Risk analysis and management – Includes the identified risks (faced and potential new ones)

Chapter 3: Conclusion – Includes that following steps



1. Risk Management Strategy

Project risk management is one of the more crucial elements for successfully delivering a project's defined scope on time and within the budget limitations. Through risk management, the project's partners better understand the level risks, minimize the likelihood of negative events and maximise the likelihood of positive events on the project's outcomes.

Strategy sets the foundation for a RMP and defines how risks are addressed and managed. Specifically:

a Risk Management Strategy (RMS) provides a structured and coherent approach to identifying, assessing and managing risks.

The Project Manager has the overall responsibility for collecting and managing the project's risks, whereas the project team considers the risk monitoring as the inseparable part of the project management process. The main purpose of the RMS is to incorporate monitoring of the identified risks and the potential new ones, making sure of the accurate reaction occurrence and reviewing their effectiveness, as well as monitoring the risk changes in all the project's stages.

RMS includes the following activities and steps:

- ④ Assigning roles and responsibilities related to risk management activities;
- ④ Establishing common risk categories for identified risks.
- ④ Developing a risk matrix and assigning risk ratings to identify risks.

For the BEACON project, it is the Project Manager's responsibility to assist the project team with the risk identification, and to document the known, faced and potential risks in the RMP. Therefore, a template will be circulated to the partners every six months, in order for them to record any risk factor faced or potential new one per Work Package (WP). Based on the input, updates to the RMP will occur and risk management will be a topic of discussion during the regularly scheduled project meetings. Furthermore, the Project Manager will determine if any of the newly identified risks warrant further evaluation, and if so, imminent action will be undertaken.

BEACON's strategy will take into consideration:

- ④ Project's risk management guidelines;
- ④ Available resources;
- ④ Preferred reporting and communication protocols as specified in the D1.1 Project Management Handbook;
- ④ The project's objectives.



2. Risk analysis and management

Risk analysis is a phase of the BEACON project that enables the estimation and evaluation of all potential risks that may arise during its implementation. The project's risk analysis is an effective way of ensuring that the RMS used to monitor and control potential risks of the project are beneficial.

Risk analysis and management involves a series of steps to quantify the impact of uncertainty on the BEACON project. These steps are:

Risk identification

Comprehensive identification and recording of risks is critical for the project's successful outcome. In order to manage risks effectively, the BEACON partners have to know what risks are faced with and document their characteristics. The risk identification phase should cover all risks, regardless of whether or not such risks are within the direct control of the project. The key benefit of this process is the successfully capturing of all project's risks, identifying as early as possible inaccuracies, inconsistencies and negative assumptions regarding the project.

Risk Exposure

Risk Exposure is the value that is given to an identified risk based on the analysis of the probability and the impact of occurrence. The Risk Exposure should be continuously reevaluated and modified based on the project's phase and needs.

Risk occurrence timeframe

Risk occurrence timeframe (ROT) is the timeframe in which the identified risks will have impact.

Risk response plans

Risk response planning is the phase in which the project team develops response actions and alternative options to reduce project risks. This process enables the project team to decide ahead of time how they will address possible risk occurrences and how they will avoid, mitigate or accept project risks. The main purpose of the Risk response plans is to align risks with an appropriate response based on the severity of the risk along with feasible considerations.



2.1. BEACON Risk Analysis and management

2.1.1. Risk identification

Based on the following risk categories, the risks faced so far and the potential new ones are presented below.

Risk Category	Risks faced	Potential new risks
WP1 – Project Management & Quality assurance	RF1. Changes in the project team RF2. Delays in submission of project deliverables/ reports or requested input RF3. Lack of commitment from Lighthouse Customers (LHC) causing delays in deliverables RF4. Unavailability for monthly calls	PNR1. Financial issues with regards to resources and/ or overspending of budget.
WP2 – Structural Agri value chain collaboration and co-evolution of business models and services	RF5. Different needs of the insurance companies; some insurance companies have requirements that are incompatible with the others RF6. The end-users do not understand the potential and limitations of Earth Observation (EO) technology RF7. Lack of understanding of blockchain applications RF8. Failure to identify and clearly document the user requirements RF9. Users have difficulties in responding to the user requirements questionnaire RF10. Users concern about data protection RF11. Difficulties to elicit the requirements from the end-users, either due to the users did not understand the questions or they had difficulties to explain the requirements (e.g. in terms of completeness and accuracy) RF12. Inadequate minimum viable product definition – validation – learning process	PNR2. Failure to record how the identified user requirements have been addressed by the BEACON toolbox PNR3. No sufficient effort provided in order to explain the blockchain applications
WP3 – Servitisation of Agri Business: Creating value by adding EO	RF13. Failure on the integration of different components and fusion of different data types	PNR4. Claim-based Damage Assessment fails to provide timely results PNR5. Crop growth models fail to simulate real farming conditions



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<p>data products and services</p>	<p>RF14. Limitations in the acquisition and analysis of EO data, leave gaps in claim-based insurance product</p> <p>RF15. Transfer functions for biophysical parameters calculation are crop and region specific</p>	<p>PNR6. Short-term numerical weather prediction models fail to provide precise results for index-based insurance.</p> <p>PNR7. There is a risk of data unavailability due to service or mission interruption (Sentinels) or defective instruments.</p> <p>PNR8. Delay in the implementation of the BEACON services</p>
<p>WP4 – BEACON toolbox services & functions ecosystem: design and implementation</p>	<p>RF16. Possible workflow revision</p> <p>RF17. Products (triggers, thresholds) have not yet been defined</p> <p>RF18. Lack of understanding of how the blockchain technically works</p>	<p>PNR9. Possible technical failures that may occur during the integration of the platform and services</p> <p>PNR10. Possible technical failures that may occur during the integration/communication between the platform and the blockchain</p> <p>PNR11. Delay in the implementation of the BEACON toolbox</p>
<p>WP5 – Creating Business Experience & BEACON Accreditation path</p>		<p>PNR12. Pilot implementation will not be properly planned</p> <p>PNR13. Favourable weather conditions, thus low number of calamities that may occur</p> <p>PNR14. Difficulties in defining the appropriate regions for setting pilots and collecting the required information</p> <p>PNR15. Damage data not adequate or descriptive enough for the validation of the Damage Assessment Calculator</p> <p>PNR16. Partners will not sufficiently understand the evaluation methodology, validation and demonstration plan to assist later in the diffusion plan</p> <p>PNR17. Define metrics to compare quality of BEACON in comparison to current alternatives</p> <p>PNR18. Bottlenecks and delays in the pilot operation cases</p>
<p>WP6 – BEACON Commercialisation Playbook and Growth Hacking</p>	<p>RF19. Poor interest of potential LHC</p> <p>RF20. Busy schedule of LHC during season and slow response of LHC related to their inputs for BEACON</p> <p>RF21. Concern about data sharing</p> <p>RF22. Difficulties in developing trust between the BEACON solution and LHC</p>	<p>PNR19. No willingness of insurers to integrate the BEACON toolbox with their existing systems</p> <p>PNR20. Business plan of low quality</p> <p>PNR21. No interest from new LHC or no information provided to the LHC with regards to BEACON</p>



WP7 Dissemination, Communication and Diffusion of BEACON	RF23. Failure to engage into the Agricultural Insurance (AgI) enablers significant stakeholders and interest groups RF24. Lack of commitment – Unclear role from AgI enablers for achieving the desired feedback RF25. Delays in communication from connected organization – AgI enablers or other projects/ initiatives RF26. Low motivation of partners to actively engage in communication activities RF27. Inadequate reporting of partners for communication and dissemination activities	PNR22. Poor visibility of the impacts and benefits of the project’s activities and tool PNR23. Not able to promote the BEACON solution for the right audience PNR24. Failure to meet some Key Performance Indicators (KPIs) PNR25. Unbalanced geographical communication in the partners’ countries and the rest of European Union (EU) PNR26. Inadequate engagement of target audiences PNR27. Discontinuity and unbalanced effort by the partners
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2.1.2. Risk Exposure

The table below presents the probability and impact of occurrence for the potential new risks using the following approach:

Probability of risk Occurrence:

- ⊗ High probability – (80% ≤ x ≤ 100%)
- ⊗ Medium – high probability – (60% ≤ x < 80%)
- ⊗ Medium – low probability – (30% ≤ x < 60%)
- ⊗ Low probability (0% < x < 30%)

Risk impact:

- ⊗ High – Risk that has the potential to greatly impact project schedule or performance;
- ⊗ Medium – Risk that has the potential to slightly impact project schedule or performance;
- ⊗ Low – Risk that has relatively little impact on schedule or performance.



		Probability of Occurrence			
		1= high	2= medium-high	3= medium-low	4= low
Risk impact	A= high	RF7 PNR5, PNR15	RF13, RF14, RF15 PNR4, PNR7	RF22 PNR1, PNR2, PNR3, PNR6, PNR8, PNR9, PNR11, PNR12	
	B= medium	RF6	RF8, RF9, RF11, RF18, RF20	RF16, RF21, RF23, RF24, RF25, RF26, RF27 PNR10, PNR13, PNR19, PNR26	PNR14, PNR16, PNR20, PNR21, PNR24
	C= low			PNR25	RF1, RF2, RF3, RF4, RF5, RF10, RF12, RF17, RF19 PNR17, PNR18, PNR22, PNR23, PNR27

The colours represent the urgency of risk response planning and determine reporting levels.

2.1.3. Risk occurrence timeframe

The risks are classified based on the following timeframe:

Timeframe	Description
Near	Now- until one month
Mid	Next 2-6 months
Far	> 6 months

2.1.4. Risk response Plans

For each risk (faced or potential one), a risk response plan has been provided aiming to eliminate the risk, lower the probability of risk occurrence and depict the impact of the risk on the project’s objective.

FACED RISKS



Risk Event	Risk response
RF1. Changes in the project team	These challenges have been identified as soon as possible and the needed changes have been performed without minimizing the project’s impact. New partners included have equivalent (or higher) qualifications and experience.
RF2. Delays in submission of project deliverables/ reports or requested input	In order to minimize the risk of delays, the consortium applies a strict project management procedure. If an indication of a possible delay arises, the respective WP leader and the coordinator discuss the implications. They work on the development of an adequate strategy to counteract and minimize the negative impact of the delay.
RF3. Lack of commitment from LHC causing delays in deliverables	Continuous iterations and communications with the LHC, providing also them with results and outcomes of the project activities.
RF4. Unavailability for monthly calls	From the early stages of the project, the consortium agreed on a specific date for the every-month call. If a partner is not available to join the call, then the Project Manager is informed and they can arrange another call or read the minutes.
RF5. Different needs of the insurance companies; some insurance companies have requirements that are incompatible with the others	Although, there was noticed variability in the user requirements collected from different AgI companies, there was also a common concept, which was defined. All the specific requirements were also recorded.
RF6. The end-users do not understand the potential and limitations of EO technology	Several direct communications were performed among the AgI companies involved in the project and the responsible team for the user requirements collection in order to thorough explain how the EO technology works and the potential of its application in the AgI context.
RF7. Lack of understanding of blockchain applications	The end-users received detailed explanation (through presentations) of the advantages of using blockchain technology for smart contracts in AgI.
RF8. Failure to identify and clearly document the user requirements	To minimize this risk, the user requirements analysis was conducted in 3 stages (iterations). In the first stage, the basic understanding of the requirements was outlined. In the second stage, more detailed feedback from the end-users resulted in the first consolidated version of the user requirements which was further discussed and agreed with the end-users to produce the final version.
RF9. Users have difficulties in responding to user requirements questionnaire	The end-users were provided with the support when responding to the questionnaire. Furthermore, during the direct calls with the end-users, a thorough interview was performed based on the questionnaires provided to clarify the uncertainties.



	<p>the early months of the project the AgI companies were very open to attend and hear about BEACON activities and expected outcomes. Furthermore, to ease the communication and approach of AgI actors, the BEACON Business team applied a bifold approach, combining the circulation of communication material prior and after the person-to-person meetings.</p>
<p>RF20. Busy schedule of LHC during season and slow response of LHC related to their inputs for BEACON</p>	<p>Although all planned activities for the first semester have been successfully performed, mild alterations in the internally planning/calendar have been performed. The reasoning being the high workload of AgI personnel during this period, new contracts generation was undergoing, and a number of calamities caused a heavy workload for the AgI personnel. Future activities involving the LHC and new AgI members, shall take into consideration the timing and seasonality of their activities as well as include a time buffer in the activities' timeline.</p>
<p>RF21. Concern about the data sharing</p>	<p>AgI companies provided input, contains to an extent data of their and their client's interest. Since this input is very important for the development of BEACON solution, BEACON Business & Development team prepared and signed BEACON Confidentiality Agreement (CA) with AgI companies to secure all uncertainties regarding the data sharing.</p>
<p>RF22. Difficulties in developing trust between the BEACON solution and LHC</p>	<p>Nurturing good relationships among BEACON partners and LHC actors was a key aim and objective of BEACON. The team from day one placed significant effort to fully involve and commit AgI-LHC members to the cause by involving them in a co-development process approach, as well as to gather detail requirements from their side that will address their pain points. Those actions in parallel to CA and Non-disclosure Agreements (NDA), signed among the involved entities, lead to the successfully establishment of a fruitful and transparent environment of trust among the entities.</p>
<p>RF23. Failure to engage into the AgI enablers significant stakeholders and interest groups</p>	<p>Identification and selection of the BEACON AgI Enablers members was considered on the basis of the main concepts/sectors upon which BEACON is realized, i.e. Agricultural Insurance; Earth Observation/Remote sensing; Agricultural Risk Management/Weather Intelligence; Blockchain. Beyond the potential members identified at proposal stage, additional organizations and individuals were identified by the consortium partners, creating a pool of experts. Ice-breaking communications tailored to the sector/experience specifications of each selected member, aimed and succeeded to trigger the interest of AgI members</p>



	demonstrate the solution and how the blockchain is integrated into its workflow.	
PNR4. Claim-based Damage Assessment fails to provide timely results	Claim-based damage assessment is based on optical EO data analysis and processing. Reasons for delaying in providing data for the area of interest, could be cloud cover and cloud shadow in the collected images before and after an extreme event. The use of Synthetic Aperture Radar (SAR) data for detection of water on the earth's surface is well documented and validated. SAR data processing for floods detection and their usefulness will be investigated in BEACON. The use of SAR data and their ability to detect plants defoliation, due to hail or extreme winds, will also be investigated.	Mid
PNR5. Crop growth models fail to simulate real farming conditions	Crop growth models will simulate the growing conditions and expected yield based on weather, soil and farming data. Seasonal weather predictions will feed the meteorological input requirements of the models. SoilGrids will provide the crop models with the required soil data. Farming conditions information will be provided by the Lighthouse Customers of BEACON, for pilot countries.	Mid
PNR6. Short-term numerical weather prediction models fail to provide precise results for index-based insurance	The weather product has been adjusted to the highest spatial resolution for pilot countries. AgroApps provides high precision and field specific weather forecasting for the index insurance scheme of pilot countries.	Mid
PNR7. There is a risk of data unavailability due to service or mission interruption (Sentinels) or defective instruments	due to service or mission interruption or defective instruments, in this case alternative EO data procurement will be suggested from other available missions. For the time being no mission interruption was announced. Sentinel products have an operational status, unless clearly mentioned.	Near
PNR8. Delay in the implementation of the BEACON services	In order to minimize the risk of delays, the Task's or WP leaders will be asked to prepare a detailed document describing the process they intend to follow. If any delay may occur, then they will be required to clearly state the cause of it. In consultation with partners, coordinator and project manager will draw up a mitigation plan including adapted timetable and required additional resources.	Mid
PNR9. Possible technical failures that may occur during the integration of the platform and services	The technical team is highly experienced software engineers and they are able to handle any technical failure the soonest. Furthermore, the project is	Mid



3. Conclusions

The deliverable covered all the aspects related to what could go wrong (risks), which risks are important to deal with and what strategies should be implemented to deal with those risks. Moreover, this RMP aims to be a proactive decision making that avoids problems before they arise and a collaboration mean among the partners for managing all the identified risks. Further analysis will be implemented and illustrated in the 2nd version of the RMP.

