

## D1.7: Risk Management Plan (2)

## WP1 – Project Management & Quality Assurance

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# **Executive summary**

Risk is defined as an uncertain but potential element that always appears in the technical, human, social and political events, reflecting changes in the distribution of possible outcomes and subjective probability values and objectives, with possible damaging and irrelevant effects<sup>1</sup>. Therefore, the risk identification process is to ensure that all potential project risks are identified and reduces the number of surprises during the project delivery and thus, improves the chances of project success, allowing the team to meet the time, schedule, and quality objectives of the project.

The aim of the current deliverable is to provide further risks that were identified and documented during the project implementation and present the risk mitigation actions that were agreed among the consortium in order to prevent or mitigate the likelihood and seriousness of the risks.

This deliverable is the second Risk Management Plan developed during the BEACON project and it records the risks faced so far (M9 - M17) and the potential new ones that may occur until the third and last Risk Management Plan which will be implemented at M36.

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 analysis and management* – Includes the identified risks (faced and potential new ones)

Chapter 2: Conclusion – Includes the following steps

<sup>&</sup>lt;sup>11</sup> Opran, C., Paraipan. L, & Stan. S (2004). Risk management. Bucharest: Communicare.ro.



# 1. Risk analysis and management

## 1.1. BEACON Risk Analysis and management

## 1.1.1. 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	RF1. Delays in submission of	PNR1. Partners' reluctance to keep up
Management &	deliverables or reports	with the deadlines
Quality assurance	RF2. Changes in the Consortium	
	RF3. Alignment of the work done in	
	various work packages	
WP2 – Structural	RF4. Assessment needs questionnaire is	
Agl value chain	not effective and recipients have	
collaboration and	difficulties in responding.	
co-evolution of	RF5. Due to complexity of the	
business models	plockchain, it was difficult to identify the	
and services	users' requirements and needs.	
	RF6. Lighthouse Customers (LHC)	
	understanding the REACON functionalities	
	only from mockups	
\//P3	RE7 Limitations in the acquisition and	PNR2 Failure on the integration of
Servitisation of	analysis of EQ data, leave gaps in claim-	different components and fusion of
Agl Business:	based insurance product.	different data types
Creating value by		PNR3. Claim-based Damage Assessment
adding Earth(EO)		fails to provide timely results.
data products and		PNR4. Crop growth models fail to
services		simulate real farming conditions.
		PNR5. Short-term numerical weather
		prediction models fail to provide precise
		results for index-based insurance.
		PNR6. There is a risk of data unavailability
		due to service or mission interruption
		(Sentinels) or defective instruments.
WP4 – BEACON	KF8. Modifications/ Adaptations of the	PNR7. Need of pilots' workflow revision
toolbox services &	BEACON components	PINKS. Big number of issues that may be
iunctions	KF9. Failure of integration with the	reported on Trello
and	RE10 Overall architecture and	component
anu		component





implementation	ecosystem design and architecture	PNR10. The toolbox may not respond to
	RE11. Blockchain and Smart Contracts	the existing operational procedures.
		PNR11 Automating an insurance product
		with blockchain is clearly disrupting the
		role of the existing actors leading to a
		change in their own processes and maybe
		even the nature of their work. Is an insurer
		willing to make these changes?
		NINING to make these changes:
		completely automate an insurance product
		but upon request of the insurance product
		sive back the ention to the insurer to fully
		give back the option to the insurer to fully
		(development) for the income some room
		(days, weeks) for the insurance company to
		"claim" the decision made by the system.
WP5 – Creating	RF12. Data accessibility (meteorology,	PNR13. Insufficient data for the pilot
Experience &	PE12 Field work accessibility and	Implementation RNR14 Dolays of the pilot partners to
	tracking	provide the requested input
Accreditation nath	tracking	DND15 Dilot activities not going according
Accreditation path		to the plan
		to the plan DNP16 COVID 10 may cause delays in the
		pilot implementation
		DNP17 Insurance company post pandomic
		recovery period
		PNR18 Negative feedback received from
		the pilot users
		PNR19. No occurrence of any damage
		during the pilot implementation
		PNR20. Users do not complete evaluation
		forms and/ or quality of data is low
WP6 – BEACON	RF14. Slow response of Lighthouse	PNR21. Poor interest of new potential
Commercialisation	Customers related to their inputs for	Lighthouse Customers
Playbook and	BEACON	
Growth Hacking	RF15. Concern about the data sharing,	
	input providing, etc.	
	RF16. Difficulties in developing trust	
	between the BEACON solution and	
	Lighthouse Customers	
WP7 –	RF17. Low motivation of partners to	PNR22. Failure to meet some Key
Dissemination,	actively engage in communication	Performance Indicators (KPIs)
Communication	activities	PNR23. Unbalanced geographical
and Diffusion of	RF18. Inadequate reporting of partners	communication in the partners' countries
BEACON	for communication and dissemination	and the rest of European Union (EU)
	activities	PNR24. Discontinuity and unbalanced





RF19. Low performance in regard of the "Newsletter subscribers" and "Website page views" KPIs	effort by the partners PNR25. Insufficient native language content production
	PNR26. Inadequate target groups' engagement

## 1.1.2. 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:

BEACON

- $\bigcirc$  High probability (80%  $\leq x \leq 100\%$ )
- Ø Medium high probability (60% ≤ x < 80%)
- Ø Medium low probability (30% ≤ x 60%)
- O Low probability (0% < x < 30%)</p>

#### **Risk impact:**

- <sup>1</sup> 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;
- O Low Risk that has relatively little impact on schedule or performance.

	Probability of Occurrence				
		1= high	2= medium-high	3= medium-low	4= low
		RF6	RF11, RF12, RF13, RF15, RF17, RF19	RF10, RF14, RF16, RF18	
Risk impact	A= high		PNR13, PNR14, PNR16, PNR17, PNR19, PNR21, PNR22	PNR10, PNR15, PNR20	
	B= medium		PNR11, PNR12, PNR25	RF1, RF2, RF3, RF5, RF7, RF8, RF9 PNR1, PNR3, PNR4, PNR6, PNR7, PNR8, PNR9,	





		PNR18, PNR26	
			RF4
C= low			
	PNR23, PNR24		PNR2, PNR5

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

## 1.1.3. 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

## 1.1.4. 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.

Risk Event	Risk response
<b>RF1</b> Delays in submission of deliverables	There were delays in the submission of deliverables, which
or reports	were communicated to the Project Coordinator on a timely
	manner and did not impact the progress of the project.
<b>RF2</b> Changes in the Consortium	There was a change in the consortium that was handled in
	an effective manger. Despite that a partner was replaced by
	other beneficiary, the new one has the necessary resources
	and experienced personnel to fulfill all obligation for the
	project.
<b>RF3</b> Alignment of the work done in	At points the work done in the various work packages lacked
various work packages	alignment and needed more attention and effort in order to
	bring everything together.
<b>RF4</b> Assessment needs questionnaire is	The needs assessment questionnaire was tested with a
not effective and recipients have	small group of recipients for comprehension and
difficulties in responding.	completeness. If this first small round revealed problems or
	deficiencies, corrective measures were applied before
	opening the process to a wider user group.
<b>RF5</b> Due to complexity of the	A separate session was dedicated to the identification and
blockchain, it was difficult to identify	collection of users' requirements.
the users' requirements and needs.	
RF6 Lighthouse Customers (LHC)	The technical team provided live demonstrations during

## FACED RISKS





experienced difficulties with	teleconferences and produced video demonstration.
understanding the BEACON	
functionalities only from mockups	
<b>RF7</b> Limitations in the acquisition and	The developed methodologies aim in synergistically applying
analysis of EO data, leave gaps in claim-	optical and SAR data for both the qualitative and
based insurance product.	quantitative assessment of damage. This stands for bailstorm damage as well as flood damage.
<b>RES</b> Modifications/ Adaptations of the	Based on the results derived from the services validation
BEACON components	process, most of the services needed to be modified based
	on new advanced algorithms. Therefore, further adaptations
	have been made in the different components of the
	BEACON toolbox. However, the technical team are highly
	experienced software engineers and they were able to
	handle any technical issue quickly.
<b>RF9</b> Failure of integration with the	Several calls have been performed in order to better
blockchain	facilitate this process and clearly understand how the
	integration should be performed and which actions should
PE10 Overall architecture and	be done and by whom.
ecosystem design and integration	with each other it's always the question if this will work out
cosystem design and integration	well. We defined clear input agreements and deadlines
	amongst the development partners. Frequent calls and
	professional follow-up lead to an almost seamless
	integration.
RF11 Blockchain and Smart Contracts	The main problem around blockchain and smart contracts is
	the limited understanding of the technology itself. We
	dedicated a lot of our time on explaining the technology and
	demonstrating the technology during the development
<b>RF12</b> Data accessibility (meteorology	phase. Data request for meteorological data was slowdown
field visit, and plot follow-up)	because of pandemic period. It's planned that cereal
	harvesting period is around the 1st-2nd week of June. We
	cannot assure the pilot plot yields measurements could be
	taken because of pandemic circumstances. The field cross-
	checks at the end of the cereal season with the BEACON
	platform could be interrupted. However, during the next
	weeks, this could change. The pilot partners maintain
	and find alternative sources in order to monitor the
	requested information.
<b>RF13</b> Field work accessibility and	There are several governmental transportation restrictions
tracking	because of the pandemic period between provinces.
	However, during the next weeks, this could change. Field
	tracking of hazards is limited to farmer's claims reported to
	Agl companies. The monitoring process was performed





	through the toolbox and when the pandemic lockdown will
	be ended the needed information will be cross-checked.
<b>RF14</b> Slow response of Lighthouse Customers related to their inputs for BEACON	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.
<b>RF15</b> Concern about the data sharing, input providing, etc.	Agl 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 Toolbox, BEACON Business & Development team prepared and signed BEACON Confidentiality Agreement with Agl companies to secure all uncertainties regarding the data sharing.
<b>RF16</b> Difficulties in developing trust between the BEACON solution and Lighthouse Customers	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 Agl-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 Confidentiality Agreements 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.
RF17 Low motivation of partners to	In order to improve the overall performance, a horizontal
actively engage in communication activities	set of guidelines and recommendations has been prepared, as well as personalized recommendations convened in written and through on-line meetings.
<b>RF18</b> Inadequate reporting of partners for communication and dissemination activities	Regular reminders have been programmed using ICT alerts.
<b>RF19</b> Low performance in regard of the "Newsletter subscribers" and "Website page views" KPIs.	A two pillars relevant plan has been developed. One pillar concerned the design of activities to be undertaken by the WP leader. The second pillar concerned the rest of the partners.





## **POTENTIAL NEW RISKS**

Risk Event	Risk mitigation measure	ROT
<b>PNR1</b> Partners' reluctance to keep up with the deadlines.	In order to minimise the risk of delays, the PC requests the documents/ tasks needed from the responsible partner through directly communication either via emails or skype. Reminders are sent before the due to date. If an indication of possible delay arises, the project manager requests a meeting through skype in order to identify the reason of this delay and assist the partner in any required manner.	Mid
<b>PNR2</b> Failure on the integration of different components and fusion of different data types.	<ul> <li>Already a number of methodologies and automated workflows have been developed and implemented in OCTOPUSH operational system.</li> <li>BEACON's claim and index insurance schemes, fully exploit the following products and components: <ul> <li>i.) Sentinel-2;</li> <li>ii.) Sentinel-1;</li> <li>iii.) two MODIS satellite products (the MOD16A2 ET and the GMOD09Q1 NDVI);</li> </ul> </li> <li>iv.) gridded meteorological data for the calculation of monthly SPI for drought monitoring and alerting;</li> <li>v.) an advanced coupling of a land surface model (Noah-MP) and a crop growth model (Gecros);</li> <li>vi.) seasonal climate predictions for the estimation of seasonal yield variations and anomalies;</li> <li>vii.) a machine learning model (support vector regression) for the estimation of drought damage (expected yield) at the end of the growing season;</li> <li>viii.) a machine learning model (support vector classifier) that takes into account a number of EO derived indices and biophysical parameters, as well as the crops' growing degree days for the classification of damage.</li> </ul>	Mid
<b>PNR3</b> Claim-based Damage Assessment fails to provide timely results.	The machine learning models for hail and drought damage quantification and classification respectively, provide results at the end of the growing season, following the companies' actual workflows for planning reimbursements. The number of collected MODIS NDVI and S-2, S-1 images throughout the growing season, has been considered sufficient to provide results, even if half of the acquisitions (due to cloudiness limitations) become available. In the case of MODIS NDVI, a spline interpolation is applied to assign values for missing ones. Furthermore, the Agl companies can exploit a number of products provided through BEACON to prepare for	Mid





	possible damage occurrence, some of which are:	
	1. high resolution extreme weather events alerts:	
	2. visualization of MODIS NDVI Anomaly, providing the	
	ongoing vegetation anomaly compared to the average	
	NDVI from 2001, in the case of drought.	
PNR4 Crop growth models fail to	Crop growth models will simulate the growing	Mid
simulate real farming conditions	conditions and expected yield based on weather and	
Simulate rearraining conditions.	soil data. Crop management data like fertilizing will not	
	be used in model GECROS setup. Simulations with	
	historical meteorological data, will aim in providing a	
	mean expected yield for the particular crop type and	
	region. On the other hand, seasonal weather	
	predictions will feed the meteorological input	
	requirements of GECROS. Comparison of the historical	
	mean and the seasonally expected, will provide a	
	possible increase or decrease (anomaly) based on the	
	predicted climate conditions. Therefore, representative	
	or actual farming conditions and operations are of	
	secondary importance, setting the historical and	
	seasonal meteorological information of primary	
	importance to derive results on possible yield declines.	
	However, important parameters for crop growth, such	
	as soil characterizations and initial soil moisture are	
	provided as input in the coupled Noan-IVIP-Gecros	
	A reason that has lead GECROS selection for BEACON is	
	that the model has been modified appropriately to	
	account for both winter wheat and a summer cron	
	which is maize.	
PNR5 Short-term numerical weather	Index insurance has been developed on MODIS	Mid
prediction models fail to provide	satellite Actual Evapotranspiration (ETa) product.	-
precise results for index-based	This product can be customized based on the	
insurance	needs of an Agl company. The product's spatial	
	resolution at 250 m and temporal resolution of 10-	
	days can be considered satisfactory in both	
	detecting drought and quantifying the effect of	
	drought on agricultural production	
DNDC There is a rick of data	There is a risk of data upavailability due to service	Mid
unavailability due to convice or mission	ar mission interruption or defective instruments in	IVIIU
interruption (Continue) or defective	of mission interruption of defective instruments, in	
interruption (Sentineis) or delective	unis case alternative EO data procurement WIII De	
instruments.	suggested from other available missions. For the	
	ume being no mission interruption was	
	announced. Sentinel products have an operational	
	status, unless clearly mentioned.	
<b>PNR7</b> Need of pilots' workflow revision	The pilot partners are involved in the toolbox	Mid
	development phase from the early stages of the	
	project in order to avoid any modification during	
	the pilot implementation. Slightly adaptations only	





	performed with regards to each pilot case customizations and needs	
PNR8 Big number of issues that may	Since the nilot implementation is initiated in the	Mid
be reported on Trello	following month, several calls have been organized	iviid
	in order to minimize the potential modifications	
	and reduce the reported issues. However, Trello is	
	connected with the Jira, the reporting system that	
	the technical team works with and there will be no	
	major issue in handling the issues efficiently.	
<b>PNR9</b> Failure of integration with the	The components and the services are based on the	Mid
components	internal service infrastructure. The technical team	
	handles the components integration with the	
	toolbox efficiently. Slightly delays have been	
	noticed, with no major impact on the toolbox's	
	development.	
PNR10 The toolbox may not respond	The toolbox has been developed with the users for	Mid
to the existing operational procedures.	the users through several iteration during the user	
	requirements and co-creation phase. However, if	
	any issue may arise with respect to modifications	
	in order to better adapt to their existing	
	procedures, the technical team will investigate	
	further on these and will implement the required	
	ones.	
PNR11 Automating an insurance	During the Thessaloniki workshop it became clear	Mid/Far
product with blockchain is clearly	that some insurers and employees fear to lose	
disrupting the role of the existing	their job due to automation. We need to show	
actors, leading to a change in their	clearly that this new approach creates an	
own processes and maybe even the	opportunity that automation may lead to the	
nature of their work. Is an insurer	opening of new markets.	
willing to make these changes?		
<b>PNR12</b> We have made it possible to	1. We need to build trust at insurer level in the fact	Mid/Far
completely automate an insurance	that an insurance product can be automated and	
product but upon request of the	make pay-out decisions without human	
insurers we had to give back the	Interference.	
option to the insurer to fully control	2. Key is to run a product for a certain period in a	
the process to leave some room (days,	pilot. Perhaps while comparing it with an already	
"claim" the desision made by the	existing product at insurer.	
cualing the decision made by the	s. Other the option to perform key process steps by	
PNR13 Insufficient data for the pilot	There is a plan to collect the required information	Mid
implementation	and several meetings were held in order to	ivitu
	address this issue as much as nossible. However	
	more effort is needed in order to collect further	
	pilot cases.	
PNR14 Delays of the pilot partners to	The technical team works closely with the pilot	Mid





provide the requested input	partners in order to facilitate them importing the fields into the toolbox. Furthermore, the scientific team is also in contact with the pilot partners so as to provide as much information as possible with regards to the requirements of the pilot implementation.	
<b>PNR15</b> Pilot activities not going according to the plan	Weekly calls will be organized by the Task leader to monitor the pilots' progress.	Near
<b>PNR16</b> COVID-19 may cause delays in the pilot implementation	Taking into consideration the new difficult situation posed by the COVID-19, BEACON tries to find alternative sources in order to validate the services from the pilot countries (such as ground stations, etc.). However, if this situation continues for a long period and the pilot implementation may be jeopardized, the Project Coordinator will instantly communicate it to the Project Officer.	Mid
<b>PNR17</b> Insurance company post- pandemic recovery period	Until now, there is no clarity about logistics for yield measurements for claimed plots because of pandemic circumstances. Recovery of this situation could be slow and we don't know when and how this is going to be done by insurance companies inspectors. However, the pilot users are trying to include the BEACON pilots in their logistic schema to get yield values.	Near
<b>PNR18</b> Negative feedback received from the pilot users	The BEACON team will take them into consideration and will put effort to address them in order to maximise the toolbox's effectiveness.	Mid
<b>PNR19</b> No occurrence of any damage during the pilot implementation	In order to secure that the toolbox will be tested and validated in real-life conditions, the pilot implementation will be deployed for two years and in several different geographical areas.	Far
<b>PNR20</b> Users do not complete evaluation forms and/ or quality of data is low	The evaluation forms will be structured in close collaboration with the users in order to fit the purpose of the pilot and be acceptable by the end- users. Furthermore, several iterations will be held in order to facilitate in the evaluation collection process.	Far
<b>PNR21</b> Poor interest of new potential Lighthouse Customers	Although the Agl sector is heavily traditional, both in terms of operations as well as in terms of innovation adoption, during the early months of the project the Agl companies were very open to attend and hear about BEACON activities and expected outcomes. Furthermore, to ease the communication and approach of Agl actors, the BEACON Business team	Near





PNR22 Failure to meet some Key	applied a bifold approach, combining the circulation of communication material prior and after the P2P meetings.	Far
Performance Indicators (KPIs)	be continued reinforced by the detailed action plan in regard of the KPIs.	Tai
<b>PNR23</b> Unbalanced geographical communication in the partners' countries and the rest of European Union (EU)	If necessary, new specific and tailormade recommendations will be addressed to the partners.	Far
<b>PNR24</b> Discontinuity and unbalanced effort by the partners	The response following the recommendation mentioned in the Periodic Report 1 in regard of the engagement of the 3 target end-users (farmers, insurance companies, scientific community) will secure a sufficient geographical balance. In parallel, analytics and relevant monitoring input, will generate targeted actions in the following months.	Far
<b>PNR25</b> Insufficient native language content production	Regular reminders and personalized recommendations will be exercised and sustained in order to ensure balanced contributions.	Far
<b>PNR26</b> Inadequate target groups' engagement	The WP leader will prepare and/or indicate suitable content for translations in the partners' countries languages, and then partners will be also encouraged and reminded to carry out the task.	Far



# 2. Conclusions

The deliverable is an update of the fist Risk Management Plan that was delivered on M6 and covers 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. Further analysis will be implemented and illustrated in the last version of the Risk Management Plan (M36).

