



**EUROPEAN COMMISSION
RESEARCH EXECUTIVE AGENCY**

REA.B – Industrial Leadership and Societal Challenges
B.4 – Safeguarding Secure Society

GENERAL PROJECT REVIEW INDIVIDUAL REPORT

Grant agreement (GA) number:	740593
Project¹ Acronym:	ROBORDER
Project title:	autonomous swarm of heterogeneous RObots for BORDER surveillance
Type of action:	IA
Start date of the project:	01/05/2017
Duration of the project:	46
Name of primary coordinator contact and organisation:	[REDACTED] (CERTH)
Period covered by the report:	from 01/05/2017 to 21/07/2020
Periodic report/Reporting period number:	Assessment not linked to the end of a reporting period
Date of first submission of the periodic report (if applicable):	Not applicable
Amendments (latest AMD concerning description of the action)²	17/03/2020 (AMD-740593-30)
Date of meeting with consortium (if applicable):	13/07/2020
Name of project officer:	[REDACTED]
Name(s) of monitors:	[REDACTED]

¹ ‘Project’ means the same thing as ‘action’.

² Only amendments to the description of the action (DoA; AT21) are relevant for general project reviews since they always have to be carried out against the latest version of the DoA

1. Overall assessment

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Project has achieved most of its objectives and milestones for the period with relatively minor deviations.
2. Significant results linked to dissemination, exploitation and impact potential
<p>Project will likely provide results with significant immediate or potential impact in the next reporting period (even if not all objectives mentioned in the Annex 1 to the GA were achieved).</p> <p>The dissemination activities have greatly improved with respect to the previous period with relevant publications. The production of dissemination material is not homogeneous within the Consortium and thus it could be improved with a more distributed effort among the project's participants. Communication actions have also been conducted however with mixed results due to wrong perceptions from the wide public and press and to difficulties in communicating sensitive and often restricted content. Considering this communication activities should be properly reviewed in its content and benefit for EU should be clearly highlighted such as the improvement for citizen safety thanks to more secure border control.</p> <p>The Project's exploitation activities carried in the current reporting period, including improvements recommended in the previous review have not been clearly reported (see also related recommendations listed in the following section 4).</p>
3. General comments
<p>The ROBORDER Project has managed to be back on track following the coordinator termination. The Project has indeed managed to properly replace the technical and coordination activities allocated to TEK-AS.</p> <p>In the last reporting period the consortium has achieved most of the objectives even if a second disruption, due to COVID-19 outbreak, has substantially reduced the impact and it has affected some of the technical activities, most notably the integration process.</p> <p>In ROBORDER the Integration process plays a pivotal role since one of its major objectives is to test on the field a set of innovative sensors and their cooperation in synergy.</p> <p>Eventually exploitation activities should be better clarified in order to assess their impact and the adherence to previous recommendations.</p>
4. Recommendations concerning the period covered by the report
<p>The second prototype has been tested in virtual environments due to the current scenario where it has been complex or impossible to perform real life tests. Such virtual tests have provided satisfactory results; however it is important to assess how such tests are representative of a real life scenario and of its possible variability. It is therefore recommended to include details of the simulated entities, most notably the strict adherence of the sub-systems interfaces in deliverable D5.4.</p> <p>It was not possible to assess the effectiveness of the exploitation activities and their adherence to the recommendation reported for the previous reporting period. The relevant deliverable is to be issued in the coming months; however in order to verify that the exploitation activities have been properly implemented it is strongly advised to re-issue the relevant progress report to include further details, such as: a) potential users/customers to be addressed outside the border security enforcement stakeholders b) marketing potentialities of each single module/sensor that compose ROBORDER system.</p> <p>The passive radar will not be embarked any more on a UAV due to the different UAV selection. The impact of this change and therefore the possible limitations should be reported.</p> <p>The risks table should include specific risks, if applicable, related to the recovery actions related to the termination of a TEK-AS (e.g. see previous point on passive radar) and Covid-19 outbreak.</p> <p>The project management should define an unambiguous approach to find the best trade off between the Project's security aspects and effective exploitation/communication activities.</p> <p>Clarify if the dissemination and communication activities and the related material produced so far clearly mention the ROBORDER project activities and the related EU funding.</p>
5. Recommendations concerning future work, if applicable
<p>A further intermediate review would be very useful if not mandatory to assess the test results of real scenario in order to assess the possible deviations from expected and simulated verification activities: final demonstration could lead to under-performing system and a very complex consequent final review. In line with this approach sensors performance in real-life tests should be reported in D2.3 in order to assess their actual effectiveness before the final review.</p>

Eventually, for the sake of system usability the mission generation could be:

- a) semi-automated: given the sensors findings (e.g. oil spill detection from Earth Observation data) the system could propose a possible mission configuration
- b) overlay the previous findings on the maps in order to facilitate the operator in the definition of consequent missions.

2. Objectives and workplan

1. Is the progress reported in line with objectives and work plan as specified in the DoA? If there are significant deviations, please comment.	Partially
<p>The major deviation from the DoA is due to the COVID-19 outbreak that forced a change in the project's methodology and approach. However this is deemed acceptable considering the unexpected and major-force nature of the current world-wide scenario.</p> <p>The termination of the previous coordinator has been properly managed with minor impact on the project timeline and technical scope (e.g. see comment on passive radar mentioned in previous section 4).</p>	
2. Are the objectives of the project still scientifically and /or technologically relevant?	Yes
<p>The challenges of EU border control and the technologies application proposed in the ROBORDER project are still technologically relevant .</p>	
3. Are the critical implementation risks and mitigation actions described in the DoA still relevant?	Yes
<p>The risks described in the DoA are still relevant and it has been appreciated the update following the identification of new risks.</p> <p>As mentioned further risks should be identified, if applicable, to take into account the two major deviations that occurred in the project life (coordinator termination and COVID-19 outbreak)</p>	
4. Have the pilots/case studies started to showcase innovative results as described in the DoA?	Not applicable
<p>As mentioned above, the preliminary pilots could not be performed in real-life due to the COVID-19 outbreak and the consequent slow-down or full blocking of on the ground activities.</p>	
5. Have the ethics deliverables due for the current period been adequately addressed and approved?	Yes
<p>As described in D8.6 issued in the current reporting period, the Consortium has well addressed the recommendations produced by the Ethics Committee.</p>	
6. Have the comments and recommendations from previous project reviews been taken into account?	Partially
<p>Most of the recommendation have been properly addressed and it has been very appreciated the coverage map provided in the periodic report.</p> <p>For few of them it has been not possible to assess their actual implementation; most notably the recommendation related to the exploitation activities (see comment in section 4 under "overall assessment") and to the KPIs (see. R11 in the periodic report) due to the postponement of D1.2 issue.</p>	

3. Impact

1. Does the work carried out contribute to the expected impacts detailed in the DoA?	Not applicable
The Project has still the potentialities to support the further development of the EUROSUR and the development of new technologies for autonomous surveillance. However, as mentioned above, the actual Project's impact has yet to be assessed due to the latest changes in the project's approach to verification and demonstration.	
2. Does the work carried out follow the plan detailed in the DoA to enhance innovation capacity, create new markets opportunities, strengthen competitiveness and growth of companies, address issues related to climate change or the environment, address industrial and/or societal needs at regional level or bring other important benefits for society? Give information on the relevant innovation activities carried out (prototypes, testing activities, standards, clinical trials) and/or new product, service, reference materials, process or method (to be) launched to the market, if any.	Partially
The project's activities carried so far provide a good confidence of innovation and market opportunities. However proper tests on the field will provide a clear view on these improvements of the related state-of-the-art and the actual impact on the competitiveness of the involved companies.	
3. Does the work carried out contribute towards European policy objectives and strategies and have an impact on policy making?	Not applicable
While it is not expected a major direct impact on EU policy making, the Project has the potentialities, not yet demonstrated on the field, to support the European objectives on border security and more in particular the strengthen of the EUROSUR integration.	
4. Does (or will) the work carried out have an impact on SMEs?	Yes
The three involved SMEs (ROBOTNIK, COPTING and CPT) will definitely benefit from improved competitiveness and know-how gained through the ROBORDER project.	
5. Have the beneficiaries reached gender balance at all levels of personnel assigned to the action? If not, have the reasons been explained in the periodic report?	No
It is not clear from the available deliverable if gender balance has been achieved and if the recommendation of the relevant report mentioned in DoA ("Science policies in the European Union: Promoting excellence through mainstreaming gender equality") have been properly addressed.	

4. Implementation

1. Has the project been efficiently and effectively managed?	Yes
In the current reporting period the new coordinator has managed to recover the project from the previous coordinator termination and it is now adequately facing the complex impact of the COVID-19 outbreak.	
2. Is the management of the project in line with the obligations of beneficiaries (including ethics and security requirements, risk and innovation management if applicable)?	Yes
The project management is adequately addressing all the project's needs and obligations that go beyond the actual system implementation. Some difficulties are being faced to find a trade-off between security needs and exploitation/communications obligations that however will be overcome in the next reporting period.	
3. Is the contribution of each beneficiary in line with the work committed in the DoA? (applicable only to multibeneficiary projects)	Yes
Each beneficiary is contributing to the Project according to the DoA with mismatches with respect to the expected planning mainly due to the impossibility of conducting real life tests.	
4. Have the beneficiaries disseminated project results (foreground) in scientific publications as planned in the DoA (including the deposition of publications in open access repositories)? Do they include a reference to EU funding?	Partially
During the current reporting period the Project has substantially improved the dissemination activities thanks mainly to the research entities involved in the project that have contributed to relevant journal and conferences. The reference to EU funding is however not clear from the available deliverables.	
5. Have the beneficiaries disseminated and communicated project activities and results by other means than scientific publications (social media, press-release, the project web site, video/film, etc) as planned in the DoA? Do they include a reference to EU funding?	Partially
The creation of project awareness aimed at wider audiences has led to mixed results raising concerns for privacy issue. It has been therefore agreed to proceed with caution in order to avoid misunderstanding and biased journalistic scoop.	
6. Has the plan for the exploitation and dissemination of the results (if required) been updated and implemented as described in the DoA, in particular as regards intellectual property rights? Is it appropriate?	Partially
The dissemination plan has been properly updated and implemented. The exploitation planning will be partially disclosed following the provided recommendation for the current period (see above in the related section) and it will be fully available at the beginning of the next reporting period through D7.8.	
7. Has the data management plan (DMP) (if required) been updated and implemented? Is it appropriate?	Yes
The data management plan has been properly updated and documented. Its actual implementation will be assessed following the adoption of the related recommendation on integration activities.	
8. Have the proposed institutional changes been appropriately promoted?	Not applicable
No institutional changes are promoted in the project.	

5. Resources

1. Were the resources used as described in the DoA and were they necessary to achieve its objectives? If there are deviations from planned budget, have they been satisfactorily explained? Have they been used in a manner consistent with the principle of sound financial management (in particular economy, efficiency and effectiveness)?	Partially
Major mismatches between planned and actually used resources are occurring through out the project lifespan so far. This mismatches have been however properly justified by the project coordinator being them mainly related to the changes occurred following the termination of the previous coordinator and the Covid-19 outbreak.	

Expert opinion on deliverables

Deliverable number	Deliverable name	Status	Comments
D1.2	Final Concept of Operation, Use Cases and Requirements	Not submitted	
D2.3	Final Sensors Implementations	Request for revision	The deliverable shall include figures related to the sensor performances
D2.4	Adaptability solutions for robotic platforms	Accepted	The deliverable content is coherent with the expectations.
D3.1	Event and Activity Detection and Recognition	Accepted	The deliverable is coherent with the expectations.
D3.2	Intrusion and illegal communications detection	Not submitted	
D4.1	UxVs tele-operation framework and interface	Accepted	The deliverable is coherent with the expectations.
D4.2	Visual analytics and decision support tools based on risk models and reasoning methods	Not submitted	
D4.3	Command and control unit	Not submitted	
D5.3	First integrated ROBORDER system	Accepted	The deliverable content is coherent with the expectations.
D5.4	Second integrated ROBORDER system	Request for revision	Actual data exchange, and possible deviation with expected data exchange wrt data exchange implemented in the tests (ref. D6.4) shall be further detailed.
D6.4	Second M&S based Test Bed Demonstration	Accepted	The deliverable content is coherent with the expectations.
D8.4	Self-assessment and data management plan V2	Accepted	The deliverable content is coherent with the expectations.
D8.6	Ethical Code and Updates on Data Protection	Accepted	The deliverable content is coherent with the expectations.

Expert opinion on milestones

Milestone number	Milestone name	Achieved	Comments
MS1	Project setup and platform development roadmap	Yes	Achieved, no significant delays (except D7.1, however the dissemination content has been present)
MS2	Operational Prototype	Yes	Achieved but with significant delay (e.g. D2.1 and D2.2 and D5.2: 105, 214, 77 days delay respectively)
MS3	1st Prototype	Yes	MS3 Milestone accomplished following substantial recovery actions.
MS4	2nd Prototype	Partially	To be accepted following the implementation of the recommendations related to the current period.