

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D2.1	D2.1.1, v1.0EGNOS SP Framework Training Document	1 - ESSP	Report	Confidential, only for members of the consortium (including the Commission Services)	2
D2.2	D2.1.3, v1.0 LPV Procedure Design Training Document	12 - INGENIERIA Y ECONOMIA DEL TRANSPORTE S.A.	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D2.3	D2.1.4, v1.0 LPV Safety Assessment Training Document	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	5
D2.4	D2.1.5, v1.0 GNSS Monitoring and Ground Validation Training Document	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D2.5	D2.1.6, v1.0 Flight Validation Training Document	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	13
D2.6	D2.1.7, v1.0 Future Scenarios Training Document	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	14
D2.7	D2.2.1-N, v1.0 Preliminary PBN Strategy	1 - ESSP	Report	Confidential, only for members of the consortium (including the Commission Services)	9
D2.8	D2.2.2-N, v1.0 Preliminary LPV Procedure design	12 - INGENIERIA Y ECONOMIA DEL TRANSPORTE S.A.	Report	Confidential, only for members of the consortium (including the Commission Services)	15

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Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D2.9	D2.2.3-N, v1.0 Preliminary LPV Safety Assessment	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	17
D2.10	D2.2.4-N, v1.0 GNSS Monitoring and Ground Validation	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	13
D2.11	D2.2.5-N, v1.0 Preliminary LPV Flight Validation	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	19
D2.12	D2.2.6-N, v1.0 Future Scenarios assessment	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	21
D2.13	D2.2.7-N, v1.0 Flight Trials Planning and Results	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	17
D2.14	D2.3.1, v1.0 PBN Strategy workshop report	1 - ESSP	Report	Confidential, only for members of the consortium (including the Commission Services)	10
D2.15	D2.3.2, v1.0 LPV Procedure design workshop report	12 - INGENIERIA Y ECONOMIA DEL TRANSPORTE S.A.	Report	Confidential, only for members of the consortium (including the Commission Services)	17
D2.16	D2.3.3, v1.0 LPV Safety assessment workshop report	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	18

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D2.17	D2.3.4, v1.0 GNSS Monitoring and Ground Validation workshop report	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	16
D2.18	D2.3.5, v1.0 Flight Validation workshop report	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	20
D2.19	D2.3.6, v1.0 Future Scenarios workshop report	2 - GMV A&D	Report	Confidential, only for members of the consortium (including the Commission Services)	22
D2.20	D2.4.1 Event 3 - "East- EU Event" in combination with D3.4.5 Event 3 "Turkey/Israel Event"	3 - TELESPAZIO SPA	Websites, patents filling, etc.	Confidential, only for members of the consortium (including the Commission Services)	21
D2.21	D2.4.2 Event 3 - "East- EU Event Report"	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	21
D2.22	D3.5.5 "Roadmap for EGNSS introduction in Turkey"	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	20
D2.23	D3.1.1, v1.0 "GNSS performance assessment and data recording guidelines for Tunisia"	9 - ENAV	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D2.24	D3.1.1, v2.0 "GNSS performance assessment and data recording"	9 - ENAV	Report	Confidential, only for members of the consortium (including the Commission Services)	18

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Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
	guidelines for Tunisia”				
D2.25	D2.1.2, v1.0 PBN Strategy Training Document	1 - ESSP	Report	Confidential, only for members of the consortium (including the Commission Services)	3

Description of deliverables

D2.1.1, v1.0 EGNOS SP Framework Training Document D2.1.2, v1.0 PBN Strategy Training Document D2.1.3, v1.0 LPV Procedure Design Training Document D2.1.4, v1.0 LPV Safety Assessment Training Document D2.1.5, v1.0 GNSS Monitoring and Ground Validation, Training Document D2.1.6, v1.0 Flight Validation Training Document D2.1.7, v1.0 Future Scenarios Training Document D2.2.1-N, v1.0 Preliminary PBN Strategy D2.2.2-N, v1.0 Preliminary LPV Procedure design D2.2.3-N, v1.0 Preliminary LPV Safety Assessment D2.2.4-N, v1.0 GNSS Monitoring and Ground Validation D2.2.5-N, v1.0 Preliminary LPV Flight Validation D2.2.6-N, v1.0 Future Scenarios assessment D2.2.7-N, v1.0 Flight Trials Planning and Results D2.3.1, v1.0 PBN Strategy workshop report D2.3.2, v1.0 LPV Procedure design workshop report D2.3.3, v1.0 LPV Safety assessment workshop report D2.3.4, v1.0 GNSS Monitoring and Ground Validation workshop report D2.3.5, v1.0 Flight Validation workshop report D2.3.6, v1.0 Future Scenarios workshop report D2.4.1 Event 3 - “East- EU Event” in combination with D3.4.5 Event 3 “Turkey/Israel Event” D2.4.2 Event 3 - “East- EU Event Report”

D2.1 : D2.1.1, v1.0EGNOS SP Framework Training Document [2]

See title

D2.2 : D2.1.3, v1.0 LPV Procedure Design Training Document [6]

See title

D2.3 : D2.1.4, v1.0 LPV Safety Assessment Training Document [5]

See title

D2.4 : D2.1.5, v1.0 GNSS Monitoring and Ground Validation Training Document [4]

See title

D2.5 : D2.1.6, v1.0 Flight Validation Training Document [13]

See title

D2.6 : D2.1.7, v1.0 Future Scenarios Training Document [14]

See title

D2.7 : D2.2.1-N, v1.0 Preliminary PBN Strategy [9]

See title

D2.8 : D2.2.2-N, v1.0 Preliminary LPV Procedure design [15]

See title

D2.9 : D2.2.3-N, v1.0 Preliminary LPV Safety Assessment [17]

See title

D2.10 : D2.2.4-N, v1.0 GNSS Monitoring and Ground Validation [13]

See title

D2.11 : D2.2.5-N, v1.0 Preliminary LPV Flight Validation [19]

See title

D2.12 : D2.2.6-N, v1.0 Future Scenarios assessment [21]

See title
D2.13 : D2.2.7-N, v1.0 Flight Trials Planning and Results [17]
See title
D2.14 : D2.3.1, v1.0 PBN Strategy workshop report [10]
See title
D2.15 : D2.3.2, v1.0 LPV Procedure design workshop report [17]
See title
D2.16 : D2.3.3, v1.0 LPV Safety assessment workshop report [18]
See title
D2.17 : D2.3.4, v1.0 GNSS Monitoring and Ground Validation workshop report [16]
See title
D2.18 : D2.3.5, v1.0 Flight Validation workshop report [20]
See title
D2.19 : D2.3.6, v1.0 Future Scenarios workshop report [22]
See title
D2.20 : D2.4.1 Event 3 - "East- EU Event" in combination with D3.4.5 Event 3 "Turkey/Israel Event" [21]
See title
D2.21 : D2.4.2 Event 3 - "East- EU Event Report" [21]
See title
D2.22 : D3.5.5 "Roadmap for EGNSS introduction in Turkey" [20]
See title
D2.23 : D3.1.1, v1.0 "GNSS performance assessment and data recording guidelines for Tunisia" [12]
See title
D2.24 : D3.1.1, v2.0 "GNSS performance assessment and data recording guidelines for Tunisia" [18]
See title
D2.25 : D2.1.2, v1.0 PBN Strategy Training Document [3]
See title

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
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Work package number ⁹	WP3	Lead beneficiary ¹⁰	3 - TELESPAZIO SPA
Work package title	Capacity building in Mediterranean countries		
Start month	1	End month	24

Objectives

The WP3000 is focused on the non-EU Mediterranean countries, and involves local partners from Morocco, Tunisia, Egypt, Palestine, Israel, Turkey.

It target aviation and non-aviation domains.

It is aimed at:

- Implementing awareness and promotion on GNSS and in particular EGNSS;
- Developing actions for training, technology transfer, assisting the local partners in empowering their knowledge and their capacity in relation to the use of GNSS and EGNSS in the relevant application domains;
- Supporting the local partners in setting-up the basis for a suitable decision making process in the direction of EGNSS;
- Creating a network of individuals, institutions, and communities potentially involved and interested in GNSS innovative products and services (and also possibly interested in investments);
- Generating favourable condition for cross-fertilization between the private and public sectors in the sub- regions, and business incubation/entrepreneurship;
- Setting the stage for systematic processes in innovation and business matching in the target countries in relation to EGNSS;
- Opening the way for market opportunities for cooperation between EU industry involved in EGNSS and relevant players in the target countries.

Description of work and role of partners

WP3 - Capacity building in Mediterranean countries [Months: 1-24]

TELESPAZIO SPA, ENAV, CRASTE LF , Arab Institute of Navigation, ARIJ, HELIOS, TECHNION ISRAEL INSTITUTE OF TECHNOLOGY, Bites

The WP is composed by 5 sub-WPs:

- GNSS monitoring (focused on aviation);
- GNSS strategy for RNP approaches (focused on aviation);
- GNSS stations networks (focused on aviation and non-aviation domains);
- GNSS Commercialization Tour (focused on non-aviation domains);
- GNSS virtual incubator (focused on aviation and non-aviation domains).

Participation per Partner

Partner number and short name	WP3 effort
3 - TELESPAZIO SPA	29.00
9 - ENAV	11.50
14 - CRASTE LF	6.00
15 - Arab Institute of Navigation	8.00
16 - ARIJ	6.00
17 - HELIOS	6.50
18 - TECHNION ISRAEL INSTITUTE OF TECHNOLOGY	3.00
19 - Bites	3.00
Total	73.00

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D3.1	D3.1.5 “Demonstration/ workshop on GNSS performance assessment and data recording for Morocco”	3 - TELESPAZIO SPA	Websites, patents filling, etc.	Confidential, only for members of the consortium (including the Commission Services)	22
D3.2	D3.1.6 “Report on demonstration/ workshop on GNSS performance assessment and data recording for Morocco”	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	22
D3.3	D3.2.1, v1.0 “GNSS strategy for RNP approaches”	9 - ENAV	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D3.4	D3.2.1, v2.0 “GNSS strategy for RNP approaches”	9 - ENAV	Report	Confidential, only for members of the consortium (including the Commission Services)	21
D3.5	D3.2.2 “Workshop on GNSS strategy for RNP approaches”	3 - TELESPAZIO SPA	Websites, patents filling, etc.	Confidential, only for members of the consortium (including the Commission Services)	12
D3.6	D3.2.3 “Workshop on GNSS strategy for RNP approaches Report”	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D3.7	D3.2.4 “Final User Forum - report on GNSS strategy for RNP approaches”	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D3.8	D3.3.1, v2.0 “Catalogue of GNSS datasources in the Euromed region”	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the	21

List of deliverables

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				Commission Services)	
D3.9	D3.3.1, v1.0 "Catalogue of GNSS datasources in the Euromed region"	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D3.10	D3.4.1 Event 1 - "Middle-East Event"	3 - TELESPAZIO SPA	Websites, patents filling, etc.	Confidential, only for members of the consortium (including the Commission Services)	2
D3.11	D3.4.2 Event 1 - "Middle-East event report"	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	2
D3.12	D3.1.2, v1.0 "GNSS performance assessment and data recording guidelines for Morocco"	9 - ENAV	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D3.13	D3.1.2, v2.0 "GNSS performance assessment and data recording guidelines for Morocco"	9 - ENAV	Report	Confidential, only for members of the consortium (including the Commission Services)	18
D3.14	D3.1.3 "Demonstration/ workshop on GNSS performance assessment and data recording for Tunisia"	3 - TELESPAZIO SPA	Websites, patents filling, etc.	Confidential, only for members of the consortium (including the Commission Services)	22
D3.15	D3.1.4 "Report on demonstration/ workshop on GNSS performance assessment and data recording for Tunisia"	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	22

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D3.16	D3.5.4 “Deep dive day in Middle-East focused on the use of EGNOS for maritime and freight transport applications report”	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D3.17	D3.5.3 “Deep dive day in Middle-East focused on the use of EGNOS for maritime and freight transport applications”	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D3.18	D3.5.2 “Deep dive day in North Africa/Maghreb focused on the use of EGNOS for road and ITS applications report”	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D3.19	D3.5.1 “Deep dive day in North Africa/Maghreb focused on the use of EGNOS for road and ITS applications”	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D3.20	D3.4.6 Event 3 - “Turkey/Israel Event report”	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	21
D3.21	D3.4.5 Event 3 - “Turkey/Israel Event”	3 - TELESPAZIO SPA	Websites, patents filling, etc.	Confidential, only for members of the consortium (including the Commission Services)	2
D3.22	D3.4.4 Event 2 - “Maghreb/ North Africa Event Report	3 - TELESPAZIO SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	12

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D3.23	D3.4.3 Event 2 - "Maghreb/North Africa Event"	3 - TELESPAZIO SPA	Websites, patents filling, etc.	Confidential, only for members of the consortium (including the Commission Services)	12

Description of deliverables

D3.1.1, v1.0 "GNSS performance assessment and data recording guidelines for Tunisia" D3.1.1, v2.0 "GNSS performance assessment and data recording guidelines for Tunisia" D3.1.2, v1.0 "GNSS performance assessment and data recording guidelines for Morocco" D3.1.2, v2.0 "GNSS performance assessment and data recording guidelines for Morocco" D3.1.3 "Demonstration/workshop on GNSS performance assessment and data recording for Tunisia" D3.1.4 "Report on demonstration/workshop on GNSS performance assessment and data recording for Tunisia" D3.1.5 "Demonstration/workshop on GNSS performance assessment and data recording for Morocco" D3.1.6 "Report on demonstration/workshop on GNSS performance assessment and data recording for Morocco" D3.2.1, v1.0 "GNSS strategy for RNP approaches" D3.2.1, v2.0 "GNSS strategy for RNP approaches" D3.2.2 "Workshop on GNSS strategy for RNP approaches" D3.2.3 "Workshop on GNSS strategy for RNP approaches Report" D3.2.4 "Final User Forum - report on GNSS strategy for RNP approaches" D3.3.1, v1.0 "Catalogue of GNSS datasources in the Euromed region" D3.3.1, v2.0 "Catalogue of GNSS datasources in the Euromed region" D3.4.1 Event 1 - "Middle-East Event" D3.4.2 Event 1 - "Middle-East event report" D3.4.3 Event 2 - "Maghreb/North Africa Event" D3.4.4 Event 2 - "Maghreb/North Africa Event Report" D3.4.5 Event 3 - "Turkey/Israel Event" D3.4.6 Event 3 - "Turkey/Israel Event report" D3.5.1 "Deep dive day in North Africa/Maghreb focused on the use of EGNOS for road and ITS applications" D3.5.2 "Deep dive day in North Africa/Maghreb focused on the use of EGNOS for road and ITS applications report" D3.5.3 "Deep dive day in Middle-East focused on the use of EGNOS for maritime and freight transport applications" D3.5.4 "Deep dive day in Middle-East focused on the use of EGNOS for maritime and freight transport applications report" D3.5.5 "Roadmap for EGNSS introduction in Turkey"

D3.1 : D3.1.5 "Demonstration/workshop on GNSS performance assessment and data recording for Morocco" [22]
See title

D3.2 : D3.1.6 "Report on demonstration/workshop on GNSS performance assessment and data recording for Morocco" [22]
See title

D3.3 : D3.2.1, v1.0 "GNSS strategy for RNP approaches" [12]
See title

D3.4 : D3.2.1, v2.0 "GNSS strategy for RNP approaches" [21]
See title

D3.5 : D3.2.2 "Workshop on GNSS strategy for RNP approaches" [12]
See title

D3.6 : D3.2.3 "Workshop on GNSS strategy for RNP approaches Report" [12]
See title

D3.7 : D3.2.4 "Final User Forum - report on GNSS strategy for RNP approaches" [12]
See title

D3.8 : D3.3.1, v2.0 "Catalogue of GNSS datasources in the Euromed region" [21]
See title

D3.9 : D3.3.1, v1.0 "Catalogue of GNSS datasources in the Euromed region" [12]
See title

D3.10 : D3.4.1 Event 1 - "Middle-East Event" [2]

See title
D3.11 : D3.4.2 Event 1 - "Middle-East event report" [2]
See title
D3.12 : D3.1.2, v1.0 "GNSS performance assessment and data recording guidelines for Morocco" [12]
See title
D3.13 : D3.1.2, v2.0 "GNSS performance assessment and data recording guidelines for Morocco" [18]
See title
D3.14 : D3.1.3 "Demonstration/workshop on GNSS performance assessment and data recording for Tunisia" [22]
See title
D3.15 : D3.1.4 "Report on demonstration/workshop on GNSS performance assessment and data recording for Tunisia" [22]
See title
D3.16 : D3.5.4 "Deep dive day in Middle-East focused on the use of EGNOS for maritime and freight transport applications report" [15]
See title
D3.17 : D3.5.3 "Deep dive day in Middle-East focused on the use of EGNOS for maritime and freight transport applications" [15]
See title
D3.18 : D3.5.2 "Deep dive day in North Africa/Maghreb focused on the use of EGNOS for road and ITS applications report" [6]
See title
D3.19 : D3.5.1 "Deep dive day in North Africa/Maghreb focused on the use of EGNOS for road and ITS applications" [6]
See title
D3.20 : D3.4.6 Event 3 - "Turkey/Israel Event report" [21]
See title
D3.21 : D3.4.5 Event 3 - "Turkey/Israel Event" [2]
See title
D3.22 : D3.4.4 Event 2 - "Maghreb/North Africa Event Report [12]
See title
D3.23 : D3.4.3 Event 2 - "Maghreb/North Africa Event" [12]
See title

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
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Work package number ⁹	WP4	Lead beneficiary ¹⁰	1 - ESSP
Work package title	Dissemination and Awareness		
Start month	1	End month	24

Objectives

The objective of this WP is to carry out the BEYOND Dissemination activities in order to ensure that relevant audiences the suitable understanding about what will be done within the project, and how they might use the lessons learned in order to meet their own needs.

The work to be developed within WP4000 will include a dissemination plan as the best way of describing how dissemination objectives will be achieved, and will suggest some guiding principles and tools for dissemination. It will describe the global strategy of the dissemination activities that will be undertaken by the project and a detailed description of those dissemination activities depending of the intended different dissemination levels. With this aim in mind, the dissemination plan will be split into two specific sections, the first part devoted to East EU dissemination activities and the last one for Mediterranean Area activities.

Within the dissemination plan the target audience or group will be clearly identified. Special importance to discriminate between the target audience candidates will have the BEYOND stakeholders effort as part of the multimodal communities: Industries, Authorities, Research bodies, Policy Decision Makers, Services Providers, end users, etc.

To carry out the activities included in the dissemination plan will be used different dissemination tools as conferences, presentations, papers, specialized publications, specialized websites, leaflets, etc.

On the other hand, as part of the support to H2020 Coordination, BEYOND will also provide, as mentioned, the appropriate instruments to disseminate the findings of the project and support other H2020 projects in order to advocate EGNOS/Galileo towards multimodal users.

Therefore, within WP4000 the three BEYOND high level objectives will be covered that means:

- Support the dissemination of project outcome and results to general public and GNSS community
- Advocating EGNOS/Galileo towards multimodal users
- Support to GSA H2020 coordination

Description of work and role of partners

WP4 - Dissemination and Awareness [Months: 1-24]

ESSP, GMV A&D, TELESPAZIO SPA, INGENIERIA Y ECONOMIA DEL TRANSPORTE S.A.

In order to achieve WP4000 objectives, WP4000 has been split into the following four activities:

1. Dissemination Plan (ESSP-GMV-TPZ)

To take into account the dissemination activities within the BEYOND dissemination plan will be considered three different dissemination levels:

- Dissemination for awareness:
- Dissemination for understanding:
- Dissemination for action:

For promoting GNSS activities/applications associated for both aviation and multimodal and in order to promote the project and the actions, the dissemination plan shall include social media activities e.g. twitter, linkedin, etc.) In order to reach the aforementioned dissemination levels goals, the tasks to be tackled are:

- To identify all the awareness and dissemination targets. A contact distribution list will be created, and regularly updated, with key Points of Contact of the identified target communities, groups, organizations and associations.
- To produce the materials needed to implement the dissemination and awareness strategy, including:
 - o The preparation of a public Project presentation with the project information and results to be delivered at related Workshops.
 - o The preparation of a newsletter with the latest project outputs and results to be delivered to the identified Points of Contact of the distribution list.
 - o The preparation of the necessary presentations and papers for the selected events and publications.

<p>o Other material as agreed with the GSA.</p> <p>2. Project Website (GMV)</p> <p>As an important dissemination platform for the project activities, a BEYOND website will be established with public and internal sites, with the suitable management and regular update of the technical activities, tasks, planning, status, meeting minutes, deliverables, ad-hoc working documents by the corresponding WP leaders, including WP1000, with delegation to the Sub-WP leaders as necessary.</p> <p>The public part will be regularly updated including the project description, list of external events public deliverables, list of external events, public deliverables, external cooperation, etc.</p> <p>This WP is composed of the following tasks:</p> <ul style="list-style-type: none"> • Project Website creation • Project Website maintenance <p>3. Publications & Events(ESSP)</p> <p>To identify and agree with the GSA on the international / European events for which its involvement is planned for the different activities and for the whole project schedule. Among the identified important events related to BEYOND are the following ones: ENC, ION, ESSP Yearly Meeting, etc. For these events and other agreed with GSA and its communication officer, the project will prepare abstract/papers for the attendance.</p> <p>4. BEYOND Final User Forum</p> <ul style="list-style-type: none"> • At the final stages of the project the BEYOND Workshop will be held for participants in other H2020 projects, aviation authorities, multimodal community, and all stakeholders. Special emphasis will be devoted to the presentation of the project's main achievements and lessons learnt during the project, especially from WP2000 & WP3000 actors.Related Public Deliverables • Inputs and lessons learnt from all partners

Participation per Partner

Partner number and short name	WP4 effort
1 - ESSP	10.55
2 - GMV A&D	3.60
3 - TELESPAZIO SPA	3.50
12 - INGENIERIA Y ECONOMIA DEL TRANSPORTE S.A.	0.10
Total	17.75

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D4.1	D4.2, v1.0 Project Public Presentation	1 - ESSP	Report	Public	12
D4.2	D4.2, v2.0 Project Public Presentation	1 - ESSP	Report	Public	22
D4.3	D4.3, v1.0 Project Newsletter	1 - ESSP	Report	Public	12
D4.4	D4.3, v2.0 Project Newsletter	1 - ESSP	Report	Public	22

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D4.5	D4.4, v1.0 BEYOND Contact List	1 - ESSP	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D4.6	D4.4, v2.0 BEYOND Contact List	1 - ESSP	Report	Confidential, only for members of the consortium (including the Commission Services)	22
D4.7	D4.5, v1.0 Final User Forum Report	1 - ESSP	Report	Public	23
D4.8	D4.6, v1.0 Project Website	2 - GMV A&D	Websites, patents filling, etc.	Public	6
D4.9	D4.1, v1.0 Dissemination Plan	1 - ESSP	Report	Public	6
D4.10	D4.1, v2.0 Dissemination Plan	1 - ESSP	Report	Public	15

Description of deliverables

D4.1, v1.0 - Dissemination Plan Month 7 (T0+6) D4.1, v2.0 - Dissemination Plan Month 16 (T0+15) D4.2, v1.0 - Project Public Presentation Month 13 (T0+12) D4.2, v2.0 - Project Public Presentation Month 23 (T0+22) D4.3, v1.0 - Project Newsletter Month 13(T0+12) D4.3, v2.0 - Project Newsletter Month 23 (T0+22) D4.4, v1.0 - BEYOND Contact List Month 13 (T0+12) D4.4, v2.0 - BEYOND Contact List Month 23 (T0+22) D4.5, v1.0 – Final User Forum Report Month 24 (T0+23) D4.6, v1.0 – Project Website Month 7 (T0+6)

D4.1 : D4.2, v1.0 Project Public Presentation [12]

See title

D4.2 : D4.2, v2.0 Project Public Presentation [22]

See title

D4.3 : D4.3, v1.0 Project Newsletter [12]

See title

D4.4 : D4.3, v2.0 Project Newsletter [22]

See title

D4.5 : D4.4, v1.0 BEYOND Contact List [12]

See title

D4.6 : D4.4, v2.0 BEYOND Contact List [22]

See title

D4.7 : D4.5, v1.0 Final User Forum Report [23]

See title

D4.8 : D4.6, v1.0 Project Website [6]

See title

D4.9 : D4.1, v1.0 Dissemination Plan [6]

See title

D4.10 : D4.1, v2.0 Dissemination Plan [15]

See title

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
--------------------------------	-----------------	------------------	----------------------	-----------------------

1.3.4. WT4 List of milestones

Milestone number ¹⁸	Milestone title	WP number ⁹	Lead beneficiary	Due Date (in months) ¹⁷	Means of verification
MS1	Contract Signature (CS)	WP1	1 - ESSP	1	Signature of the contract
MS2	Kick Off Meeting	WP1	1 - ESSP	1	Meeting held
MS3	Mid Term Review	WP1	1 - ESSP	13	Meeting held
MS4	Training Sessions I		2 - GMV A&D	7	Training (part I) executed
MS5	Training Sessions II		2 - GMV A&D	15	Training (part II) executed
MS6	Guided Exercises		2 - GMV A&D	22	Guided exercises executed
MS7	Technical Workshops		2 - GMV A&D	23	Technical workshops executed
MS8	GNSS mon WS/ demo		3 - TELESPAZIO SPA	23	Workshops/demonstrations executed
MS9	GNSS strategy WS		3 - TELESPAZIO SPA	13	Workshop executed
MS10	Commercialization tours completed		3 - TELESPAZIO SPA	22	Event1/event2/event 3 executed
MS11	GNSS Virtual Incubator		3 - TELESPAZIO SPA	16	Deep dive workshop 1/ workshop 2 executed
MS12	BEYOND Workshop		1 - ESSP	24	Final User Forum conclusions
MS13	End of project	WP1	1 - ESSP	24	Acceptance of all deliverables and completion of all Call objectives

1.3.5. WT5 Critical Implementation risks and mitigation actions

Risk number	Description of risk	WP Number	Proposed risk-mitigation measures
R1	Multiple partners (countries) with different level of knowledge and expertise in GNSS		To define roles and responsibilities of each partner. To ensure the appropriate follow-up of the activity. ESSP, GMV and TPZ as WP Leaders will provide knowledge. and expertise when required to the rest of the partners.
R2	Delay in Flight Trials due to not availability of the aircraft		Close coordination with ANSP from Hungary, Montenegro and Kosovo

1.3.6. WT6 Summary of project effort in person-months

	WP1	WP2	WP3	WP4	Total Person/Months per Participant
1 - ESSP	21.40	12.88	0	10.55	44.83
2 - GMV A&D	0	38.70	0	3.60	42.30
3 - TELESPAZIO SPA	0	4	29	3.50	36.50
4 - MoldATSA	0	7	0	0	7
5 - Montenegro CAA	0	0.75	0	0	0.75
6 - HungaroControl Zrt	0	7.50	0	0	7.50
7 - NKH Légügyi Hivatal	0	0.75	0	0	0.75
8 - Macedonia ANSP	0	7	0	0	7
9 - ENAV	0	0	11.50	0	11.50
10 - CAAK	0	0.75	0	0	0.75
11 - PIA-Air Control	0	7.50	0	0	7.50
12 - INGENIERIA Y ECONOMIA DEL TRANSPORTE S.A.	0	3.45	0	0.10	3.55
13 - Turkey Ministry of Transport	0	0	0	0	0
14 - CRASTE LF	0	0	6	0	6
15 - Arab Institute of Navigation	0	0	8	0	8
16 - ARIJ	0	0	6	0	6
17 - HELIOS	0	0	6.50	0	6.50
18 - TECHNION ISRAEL INSTITUTE OF TECHNOLOGY	0	0	3	0	3
19 - Bites	0	0	3	0	3
Total Person/Months	21.40	90.28	73	17.75	202.43

1.3.7. WT7 Tentative schedule of project reviews

Review number ¹⁹	Tentative timing	Planned venue of review	Comments, if any
RV1	12	Madrid-ESSP	Aligned with Mid Term Review (PM2)
RV2	24	Prague-GSA	After taking place the Final User Forum and aligned with Final Meeting

1.4. Ethics Requirements

Ethics Issue Category	Ethics Requirement Description
NON-EU COUNTRIES	<p>- According to the Ethics Screening Report: The applicant must confirm that the ethical standards and guidelines of Horizon2020 will be rigorously applied, regardless of the country in which the research is carried out. Detailed information must be provided to confirm that fair benefit-sharing arrangements with stakeholders from ICPC are ensured during the project. The applicant must provide details on the material which will be imported to/exported from EU and provide the adequate authorisations. Detailed information must be provided on foreseen measures to minimise the risks to research participants and staff involved in this project.</p>

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project. It cannot be changed. The project number **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

2. Project acronym

Use the project acronym as given in the submitted proposal. It can generally not be changed. The same acronym **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

3. Project title

Use the title (preferably no longer than 200 characters) as indicated in the submitted proposal. Minor corrections are possible if agreed during the preparation of the grant agreement.

4. Starting date

Unless a specific (fixed) starting date is duly justified and agreed upon during the preparation of the Grant Agreement, the project will start on the first day of the month following the entry into force of the Grant Agreement (NB : entry into force = signature by the Commission). Please note that if a fixed starting date is used, you will be required to provide a written justification.

5. Duration

Insert the duration of the project in full months.

6. Call (part) identifier

The Call (part) identifier is the reference number given in the call or part of the call you were addressing, as indicated in the publication of the call in the Official Journal of the European Union. You have to use the identifier given by the Commission in the letter inviting to prepare the grant agreement.

7. Abstract

8. Project Entry Month

The month at which the participant joined the consortium, month 1 marking the start date of the project, and all other start dates being relative to this start date.

9. Work Package number

Work package number: WP1, WP2, WP3, ..., WPn

10. Lead beneficiary

This must be one of the beneficiaries in the grant (not a third party) - Number of the beneficiary leading the work in this work package

11. Person-months per work package

The total number of person-months allocated to each work package.

12. Start month

Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

13. End month

Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

14. Deliverable number

Deliverable numbers: D1 - Dn

15. Type

Please indicate the type of the deliverable using one of the following codes:

- R Document, report
- DEM Demonstrator, pilot, prototype
- DEC Websites, patent filings, videos, etc.
- OTHER

16. Dissemination level

Please indicate the dissemination level using one of the following codes:

- PU Public

CO Confidential, only for members of the consortium (including the Commission Services)

CI Classified, as referred to in Commission Decision 2001/844/EC

17. Delivery date for Deliverable

Month in which the deliverables will be available, month 1 marking the start date of the project, and all delivery dates being relative to this start date.

18. Milestone number

Milestone number:MS1, MS2, ..., MSn

19. Review number

Review number: RV1, RV2, ..., RVn

20. Installation Number

Number progressively the installations of a same infrastructure. An installation is a part of an infrastructure that could be used independently from the rest.

21. Installation country

Code of the country where the installation is located or IO if the access provider (the beneficiary or linked third party) is an international organization, an ERIC or a similar legal entity.

22. Type of access

VA if virtual access,

TA-uc if trans-national access with access costs declared on the basis of unit cost,

TA-ac if trans-national access with access costs declared as actual costs, and

TA-cb if trans-national access with access costs declared as a combination of actual costs and costs on the basis of unit cost.

23. Access costs

Cost of the access provided under the project. For virtual access fill only the second column. For trans-national access fill one of the two columns or both according to the way access costs are declared. Trans-national access costs on the basis of unit cost will result from the unit cost by the quantity of access to be provided.

Annex 1 to the Grant Agreement (Description of the Action)

*- Template with instructions -
Version 1.1 (05/09/2014)*

H2020 Research and Innovation Actions (RIA) Innovation Actions (IA) Coordination and Support Actions (CSA)

Structure of the description of the action

The description of the action, which is **Annex 1 to the Grant Agreement**, contains the details of the implementation of the action (project) with regard to the **work packages, deliverables, milestones, and resources** – organised in a table format - and a detailed **narrative description** of the work.

It consists of two parts, which can be directly generated from the submitted proposal:

- **Part A** of Annex 1 contains the cover page, the project summary, the list of participants and the work plan tables, which provide details on the implementation of the action. **Part A is generated automatically by the system through online forms.**
- **Part B** of Annex 1 is the narrative part of the description of the action. *It has to be uploaded by the coordinator as a PDF document. All pages must be numbered and each page should be headed with the project acronym and proposal number. The content of Part B should be copied from the respective section of the submitted proposal, as indicated in the structure below. The structure and the order of chapters and sections should be followed as indicated below.*

The IT system will create the description of the action (Annex 1) composed of two files:

- *one file generated through online forms containing **PART A***
- *a second file **PART B "the narrative part"** uploaded in PDF format*

PART A

NOTE that PART A will be generated by the IT system once you have filled in the obligatory grant preparation data in the Participant Portal.

Cover Page

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1.1. The project summary *(Automated - Based on proposal table A1)*

1.2. The list of beneficiaries *(Automated - Based on proposal table A2)*

1.3. Work plan tables *(Please fill in the data in the Participant Portal based on the tables in your proposal)*

1.3.1. WT1 list of Work packages (based on Proposal table 3.1b)

1.3.2. WT2 list of deliverables (based on Proposal table 3.1c)

1.3.3. WT3 Work package descriptions (based on Proposal table 3.1a)

1.3.4. WT4 list of milestones (based on Proposal table 3.2a)

1.3.5. WT5 Critical Implementation risks and mitigation actions (based on Proposal table 3.2b)

1.3.6. WT6 Summary of project efforts in person months (based on Proposal table 3.4a)

1.3.7. WT7 tentative schedule of project reviews (set by Commission/Agency)

1.3.8. [if applicable (Research Infrastructures)] WT8 Summary of transnational / virtual access provision per installation]

1.4. *[if applicable]* **Ethics requirements** *(set by Commission/Agency)*

The applicant must confirm that the ethical standards and guidelines of Horizon2020 will be rigorously applied, regardless of the country in which the research is carried out.

Detailed information must be provided to confirm that fair benefit-sharing arrangements with stakeholders from ICPC are ensured during the project.

The applicant must provide details on the material which will be imported to/exported from EU and provide the adequate authorisations.

Detailed information must be provided on foreseen measures to minimise the risks to research participants and staff involved in this project.

PART B

History of changes

25-09-2014: Initial Issue

21-11-2014: Update with Third Parties, Ethics, milestones and review, risk

12-01-2015: ONDA and OACA as TPZ subcontractors

15-01-2015: SMATSA and Serbia CAA removed as they withdrew from the project

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2.1. Excellence

2.1.1. Objectives

1) *Concept*

The overall project concept consists of building capacity in the field of multimodal applications, especially focused on aviation using EGNSS (EGNOS and Galileo) in different Eastern European and Mediterranean countries. These countries are located at boundaries of the EGNOS SoL coverage area with limited experience of EGNSS; the projects will promote the development of multimodal applications, building on the lessons learnt in this and previous European R&D activities. The present EGNOS service coverage reaches the northern fringe of North Africa and the eastern fringe of Turkey. This means that BEYOND target countries can already experiment and prove the use of EGNOS, and/or are likely have a medium-term perspective of the EGNOS coverage.

Capitalising on the lessons learnt and the knowledge acquired through past and on-going projects, BEYOND continues what was already initiated in the target countries/regions, and puts in place an intensive/extensive programme of activities/actions, tailored on the specific needs/maturity and addressing both aviation and non-aviation domains.

With relation to the call's objectives, the ultimate goal of BEYOND is threefold:

1. Promoting the use of EGNSS and growing the interest towards EGNSS outside EU (i.e. in EU-neighbouring countries), and thus possibly stimulating investments in relation to EGNSS;
2. Preparing them towards an optimal adoption of EGNSS, and thus contributing to the growing of know-how, capacity and knowledge in relation to EGNSS outside EU;
3. Supporting networking and liaisons between EU and non-EU players (from different sectors industry, institutions/authorities and research/academia/university – and communities - aviation and non-aviation), thus creating the basis for cooperation, the establishment of relationships possibly evolving into business opportunities.

BEYOND' consortium is purposely set-up to include an integrated team of EU and non-EU partners, led by the ESSP (European Satellite Services Provider) and involving different domains and communities (authorities, regulators, users, Service Providers, industries, researchers, ANSPs, consultants) throughout the target regions. The EU partners have a sound and consolidated experience in projects dealing with the introduction of EGNSS in international contexts, and all the non-EU partners are familiar with EGNSS initiatives.

Finally the project is intended to achieve a critical mass of new EGNSS applications in the multimodal domain, mainly focused on aviation, providing crucial seed financing and increasing the visibility of the EGNSS in the different countries involved in the project.

BEYOND project represents an important asset in supporting the GSA in the implementation of EGNSS applications in the wider Europe.

2) Objective

Taking advantage of the heritage acquired by its partners, BEYOND implements specific actions/activities in the various countries. The actions/activities are tailored on the specific needs of the target countries, and are conceived to cope with the relevant maturity, with the purpose to progress starting from the outcomes of the previously implemented or on-going initiatives in the target regions.

In doing this, BEYOND main principle is that the two regions, i.e. the East-EU region and the Mediterranean region, have substantial heterogeneity and need to be addressed in a different way. Moreover, the two regions have also a different maturity in relation to the use of EGNSS. Therefore the project is organized into two streamlines, one for each region. Yet, previous experiences have also shows that there are commonalities in the interests/priorities related to the introduction of EGNSS. In this respect, the transport domain is a common priority, primarily aviation, where the use of EGNOS at first can generate benefits (both direct economical and indirect social).

In order to achieve these objectives, this methodology is proposed for the execution of different activities to be carried out in WP2000:

- *Training sessions*: will be provided during the first phase of the project for capacity building on EGNSS issues to learn theoretical foundations of each subject, supporting the participants/partners to solve any existing difficulty and to launch the corresponding in house processes. Additionally the practical utilization of some SW/HW tools developed by industry, in that case provided by some partners, would be put at the disposal of the participants (ANSP/CAA/others) during the project, where applicable. The training tools will be installed at partners' premises during the part of the lifetime of the project. Industry partners like GMV or ESSP will provide the necessary support and maintenance for the optimum use of the tools.
- *Guided exercises*: in this case ESSP/GMV and Ineco would lead the exercise with the collaboration/feedback of the ANSP/CAA/others.
- *Technical workshops* (hosted by some participant ANSP/CAA/others): will be devoted to share experiences and lessons learned in the execution of the project activities and towards the implementation of EGNSS , in that case for EGNOS based operations.

In addition to the methodology proposed some trials could be conducted during the second phase of the project assessing future operational scenarios. Some trials could already be identified although some others may come up along the project. The goal of these trials is to become aware of the services and performances that EGNSS can bring to European Eastern and Mediterranean countries.

The methodology has been designed taking into account a set of activities to be carried out during the project execution, such us dissemination, awareness-raising, communication, networking, coordination or support services, policy dialogues and mutual learning/training exercises and preliminary studies within the different countries involved in the project.

Finally, these objectives and methodology are consistent with expected exploitation and impact of the BEYOND project and contribute to the cooperation schemes established with partner countries worldwide.

For the Mediterranean region, the Euromed GNSS projects¹ are already heading the breakthrough of EGNSS in these countries. These projects have carried out and are presently completing a set of activities with the objective of promoting EGNSS services, performing technology transfer, educating to the use of EGNSS and demonstrating the relevant added values in all domains. Through these activities, the projects have raised the interest from the countries' stakeholders, gathered the attention of the key players and decision-makers, fostered networking and cross-fertilization with local/regional related initiatives, carried out promotion and training programmes, showcased best practices related to the use of EGNSS in main applications and domains, including benefits validation. Moreover, thanks to the availability of the EGNOS service coverage in the borders of some countries, these have had the opportunity to concretely use and experiment EGNOS.

The heritage acquired in these projects allows to take stock of some lessons learnt and to implement more efficiently new actions capitalising on the following main pillars:

- In order to be *effective*, an action shall focus on regional needs and on spreading know-how benefitting from the heritage already existing in each country and not to export technologies or simply to implement promotion;
- *Exploit countries' commonalities* is a win-win factor. Though the countries have cultural, societal, institutional differences, there are also several/sub-regional commonalities mainly in the needs, interests/priorities and strategies related to the introduction of technologies (as EGNSS) in real life, considering the benefits (both direct economical and indirect social) they can generate.
- *One country can act as a carrier for the others ("Halo effect")*. The exploitation of commonalities does not mean that the development of all the countries has to go hand-by-hand. This risks slowing down and blocking the advancement of those countries that are in a more mature stage. On the contrary, the experience teaches that one country's progress has the beneficial effect of carrying on all the others so that to create a sort of "snow-ball" effect impacting the closest (geographically and culturally) countries at first and progressively the specific sub-region and then the full region. A pioneer country can open the path to all the others and becomes a reference/a study case on the top of which to elaborate other actions for other countries.
- *Filling the gap between research and industry, creating linkages between supply and demand, identifying priorities & diffusing best practices* are key factors.

Finally, the above objectives and concept are consistent with expected exploitation and impact of the BEYOND project and contribute to the cooperation schemes established with partner countries worldwide.

Once BEYOND objectives have been presented, it will be shown next how these objectives relate to the topic "Coordination and Support Actions (CSA)" and its objectives.

In relation with the topic **GALILEO-4-2014**: "*EGNSS awareness raising, capacity building and/or promotion activities, inside or outside of the European Union*", BEYOND project meets the general objective/expected outcome:

- ✓ *Capacity building for EGNSS solutions*

¹ METIS (MEdiTerranean Introduction of GNSS Services), Euromed GNSS I project, 2006-2009
MEDUSA (MEDiterranean follow-Up for EGNOS Adoption), Euromed GNSS II project, 2012-2014 (on-going)

The project will support Eastern European countries in building up local capacity with regard to EGNSS knowledge and technical know-how to better manage EGNSS and its multimodal applications.

- ✓ *Increasing awareness of EGNSS solutions*

The project will foster the emergence of new downstream applications based on EGNSS (EGNOS and/or Galileo) therefore to support the EU GNSS industry and increasing the visibility of the EGNSS. Moreover, BEYOND promotes Europe and its GNSS technologies also to the rest of the world through the appropriate dissemination of the project results.

- ✓ *Foster international cooperation for increasing the number of opportunities for future collaboration between European and non-European GNSS entities*

The project aims to foster international cooperation between countries (mainly North Africa) and non EU countries with EU countries in EGNSS technology by considering these countries as an equal and allowing them to be able to decide on the best way forward for the introduction of EGNSS in the region. In this line, the benefits of EGNSS technology will be shown and their advantages will be provided and exercised through the proposed methodology.

- ✓ *Competitiveness of EU industry by identifying strategic partners and by developing market opportunities.*

The consortium is composed of strategic partners who will establish industrial relationships by gathering private and public institutions around services offered by EGNSS and related applications and providing networking opportunities among themselves.

- ✓ *Development of applications and implementation of pilot projects with a potential to contribute to the growth and strengthening of the European GNSS market and to have an impact on sectors where the EU's added value and cost effectiveness are the greatest.*

The project will perform specific pilot project for each country in order to develop capacity building for EGNSS applications in different markets and proposing for each country a realistic and pragmatic EGNSS roadmap mainly focused on EGNOS coverage extension.

In addition to that, by the promotion and use of EGNOS and Galileo technologies, the activities of the project promote European GNSS services and applications to EU and non EU members. BEYOND envisages also including the analysis of new application markets in EU and non EU members with a particular focus on business case analyses for multimodal sectors.

2.1.2. Concept and Approach

Taking into account the current EGNSS status and the significant work carried out by GSA in order to promote and foster EGNSS applications, it is now time to encourage potential future users inside and outside Europe.

With this idea in mind, the created consortium considers that this 'coordination and support action' will ease the development of capacity building in Eastern Europe and Mediterranean countries and increase of the awareness of EGNSS solutions thought several workshops, by individually identifying current barriers, different level of EGNSS coverage and the different maturity of these countries in EGNSS multimodal applications.

The Eastern European region and Mediterranean countries are considered one of the regions where GNSS, and in particular EGNOS, could provide important benefits due to the existence of a much

less evolved ground infrastructure compared to the rest of Europe. Those areas are today underserved as for GNSS services concerns. The implementation of EGNOS enhanced operations could result in an important improvement on the existing Air Navigation capacities and infrastructure, and therefore contribute to the regional economic growth towards a balance with the rest of European Union members. This is seen a priority by the European Commission. For that reason one specific activity will be devoted and focused only in aviation towards the implementation of EGNSS operations, although other applications will by default also be covered, and might be evaluated further upon States' interests. It is very important the coordination with the ANSPs and CAA involved in the project and to share the lessons learnt and outcomes after execution of the activities. At the end of the project, the support actions provided by this consortium could imply networking opportunities and industrial collaboration for European companies.

The methodology to be put in place in BEYOND starts with the assessment and assumptions of different level of maturity of these partners in EGNSS and the main outcomes from other similar experiences in several successful related projects led by partners of the consortium, such as SHERPA, EEGS and MEDUSA.

In the case of aviation, the BEYOND project will hold **training sessions** with the attendance of main actors and decision makers, after that, each ANSP will perform **guided exercises** for the fields trained, and finally, the project will hold **technical workshops** for each specific theme, gathering and sharing outcomes and lessons learnt from the participants.

In the case of non-aviation domain, the BEYOND project will hold commercialization tour in East Europe and non-EU Mediterranean countries for assisting these countries and their public and private organizations to acquire the necessary tools and capabilities for:

- Facilitating and promoting a wider use of EGNSS;
- Preparing for an optimal and successful adoption of EGNSS technologies and services;
- Fostering partnerships and cooperation, exchange of ideas on GNSS (and primarily EGNSS) technologies, services and applications;
- Capturing possible funding opportunities and financial instruments to support the incubation and possible go-to-the market of GNSS (and specifically EGNSS) related initiatives.
- Creating a network of individuals, institutions, and communities potentially involved and interested in GNSS innovative products and services (and also possibly interested in investments);
- Generating favourable condition for cross-fertilization between the private and public sectors in the sub-regions, and business incubation/entrepreneurship;
- Setting the stage for systematic processes in innovation and business matching in the target countries in relation to EGNSS
- Opening the way for market opportunities for cooperation between EU industry involved in EGNSS and relevant players in the target countries.

In order to maximise the relevant impacts, the actions/"brokerage" activities are carried out:

- By an EU partner with the support of the local partners;
- At sub-regional level in order to:
 - Consider the specific countries' maturity (also in terms of EGNOS service coverage availability and perspective) and the requests/needs of the local/sub-regional markets;
 - Take advantage of local components and exploit sub-regional drivers.

These activities culminate with the organization of a tour of events (three events) organized at sub-regional level, tailored on the specific maturity and in order to maximize the exploitation of the relevant capability.

The events give the occasion for networking, fostering partnerships and cooperation, facilitating the exchange of ideas on the use and the exploitation of EGNOS and Galileo in most attractive applications and thus opening the way for market opportunities for EU industry in the target countries. Therefore, also EU players (both private and public players) involved in EGNSS can take advantages from this action, since the establishment of industrial relationships and business cooperation can be generated. During the events, experiences engendered by success stories and from technology successful commercialization initiatives can be showcased, concrete examples of proven best practices can be presented also in terms of research efforts and benefits, financial advice can possibly be given. EU experiences and best practices based on the use of EGNSS technology/products and services will be presented.

When possible, the events are organized back-to-back with already planned events/exhibitions for increasing the impact of the action and ensuring a large participation and audience. Moreover, the organization of these events is done in coordination with the project dissemination tasks. The final purpose is opening the way for market opportunities for cooperation between EU industry involved in EGNSS and relevant players in the target countries.

Consideration of gender aspects

However, we feel BEYOND is well balanced considering gender aspects. Mostly all consortium participants includes in their teams prestigious female engineers and in some cases responsible for the whole local project team. Each organization involved in the workshops will be reminded on the importance of gender balance and the BEYOND team will insist on the importance of women participation.

More generally, in the BEYOND project, we will take care of the application of all relevant actions improving the gender balance, taking into consideration the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW, adopted in 1979 by the UN General Assembly, ref <http://www.un.org/womenwatch/daw/cedaw/>)”.

2.2. Impact

2.2.1. Expected impact

Next sections present the expected impact of BEYOND in aviation and other modes of transport, consistently with the expected impact defined in the work programme

A) Expected impact in Aviation

The following table describe the expected impact of the BEYOND in Aviation

Expected Impact in Work Programme	Expected Project Impact
<i>The main aim of this topic is to support building of industrial relationships by gathering private and public institutions around services offered by EGNSS and</i>	This project will engage different organizations of two geographical areas with the main aim of fostering the implementation of EGNSS-based PBN approach operations in the countries concerned. On the one hand, the Eastern Europe, where the group of companies formed by the ESSP, GMV and INECO are going to start brand new relationships with as many as five Air Navigation Service Providers (ANSPs) and five Civil Aviation Authorities (CAAs), from six different countries.

<i>related applications</i>	<p>For the Mediterranean region, thanks to the Euromed GNSS projects METIS and MEDUSA, the countries had the opportunity to get acquainted with EGNSS and to acknowledge the significant benefits to be expected by EGNSS implementation in the aviation and non-aviation domains, and particularly by the use of EGNOS.</p> <p>In aviation, two Mediterranean countries have shown a high maturity level and are presently considering the introduction of GNSS in their operations. In the frame of MEDUSA, these countries have already done some preliminary activities, and have requested to be aided in the further steps. To cope with these requests, following and continuing what initiated in MEDUSA, BEYOND implements with these countries' ANSPs two actions oriented at accompanying them in this path, while transferring knowledge and empowering their capability. These results of these actions have a wider validity also for the ANSPs of the other Euromed countries.</p>
<i>This topic should support the competitiveness of EU industry by identifying strategic partners and by developing market opportunities</i>	<p>The two groups of companies that participate in this project providing consultancy services for aviation have been strengthening their cooperation in the last years, and see the BEYOND project as a new opportunity to widen their strategic partnership and to develop together the new market opportunities that will open up in this project.</p> <p>In this respect, it is worth mentioning, in the first place, the group formed by the ESSP, GMV and INECO, that together currently leads for the GSA the project EGUS for the provision of specialised support to market development activities in the user segment development, management and coordination of stakeholder relations in the frame of European GNSS programme (GSA/OP/08/12/Lot3 "EGNSS User Support").</p> <p>In turn, the group formed by Telespazio, ENAV and Helios, will continue working together in the Mediterranean area, exploring new market opportunities that will build up on top of the experience they shared in the FP7 METIS and its follow-up MEDUSA projects, seeking again for institutional support such as what they have obtained recently from the Galileo Euromed Cooperation Office (GEMCO) to host a MEDUSA public workshop scheduled for June 2014 in Tunis.</p>
<i>The support to incentive schemes should foster the emergence of new downstream applications based on either Galileo and/or EGNOS and therefore to support the EU GNSS industry</i>	<p>The main goal of the BEYOND project in the aviation domain is to build the capacities of seven eastern European countries and two northern African countries to foster the operational implementation of EGNOS-based instrument approach procedures.</p> <p>In this respect (as it is described in detail later in this section), it is notorious that the BEYOND project targets in particular those European countries that are lagging behind the core European process of EGNOS-based PBN approaches implementation.</p> <p>Consequently, the BEYOND project will make a leap forward for those countries to catch up that process, and end up increasing the number of APV SBAS approaches published in Europe. Note, for instance, that the ANSPs involved in this project have identified all together a total number of 10 aerodromes and 17 runway ends where they wish to publish LPV approach procedures (see the details later in this section)</p> <p>A secondary goal of the BEYOND project in the aviation domain is for awareness raising on the mid-term European GNSS scenarios and the operational benefits they would bring to airspace users and aerodrome operators. These mid-term scenarios include potential extensions of the EGNOS service area (both for APV-I and LPV-200 levels of service). The final objective of this awareness raising campaign is twofold: first of all, to promote the extension of EGNOS service area, in particular with the ultimately goal of serving all the members of Eurocontrol and/or the</p>

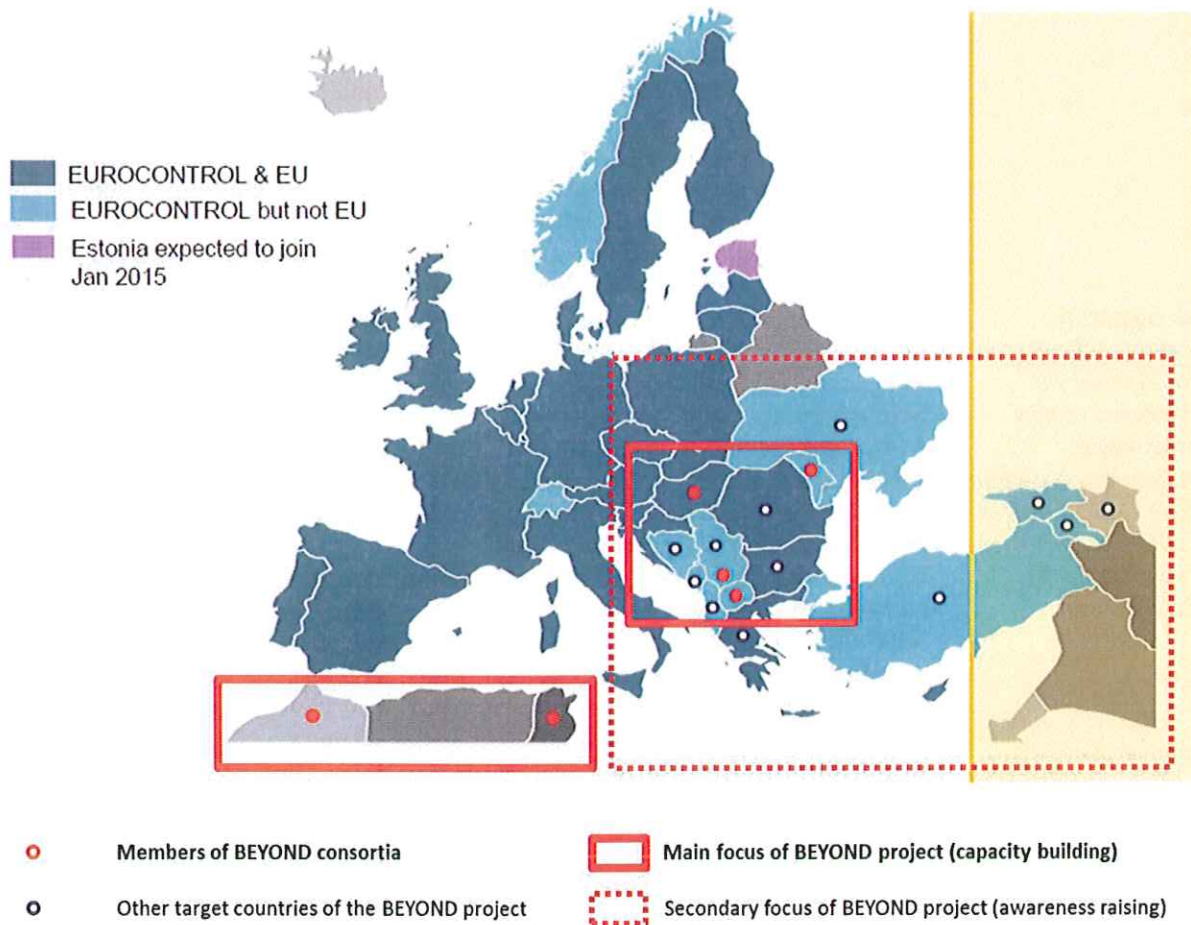
	ECAC and so increasing the number of countries that adopt EGNOS for their PBN operations; and, secondly, to promote the early operational adoption of Galileo, in order to overcome the current SESAR vision for 2020 that stills rely only on a GPS L1 + EGNOS solution for European Aviation, and to enable enhanced operations (e.g. LPV-100 supporting CAT II) that are demanding by some aircraft manufacturers and operators (in other words, new EGNSS downstream applications for Aviation)
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Table 1: Expected BEYOND impacts as per work programme (Aviation)

To clarify further the expected impact of the BEYOND project, we present in the following figure a map of Europe and its neighbouring countries, identifying EU and Eurocontrol members.

Besides, on this map we also represent those countries (Iceland, Azerbaijan) that are members of the ECAC but not of Eurocontrol, the eastern border of the current EGNOS service area (as constrained by the EGNOS message type 27), the ANSP and/or CAA partners of the BEYOND project, as well as other countries that we have identified as secondary target countries for the dissemination activities.

Finally, this map also illustrates the main focus of the BEYOND project (capacity building), as well as the secondary focus (awareness raising for mid-term EGNSS scenarios).



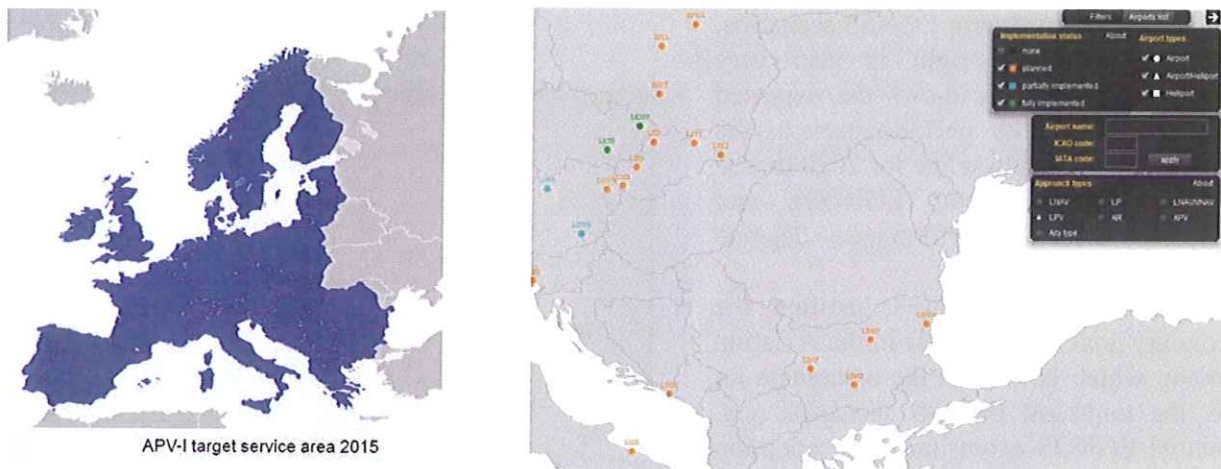


Figure 1: EGNOS APV-I target service area in 2015 (left) / Planned LPV approaches (right)

The BEYOND project will have a remarkable impact on those European countries that most need to build-up their capacities for the adoption of EGNOS in aviation

To support this claim, next table presents the objectives expressed by the European countries that participate in the BEYOND project in terms of the number of aerodromes and the number of LPV procedures they intend to address in their PBN implementation plans for the adoption of EGNOS

Country (BEYOND partner)	Number of aerodromes	Number of LPV procedures
Moldova (MOLDATSA)	3	6
Joint Service Area Provision (JSPA) Initiative, gathering together the following members: <ul style="list-style-type: none"> • Kosovo (CAA) • Macedonia (M-NAV) • Montenegro (CAA) • Hungary (Hungaro Control, CAA) 	7	11

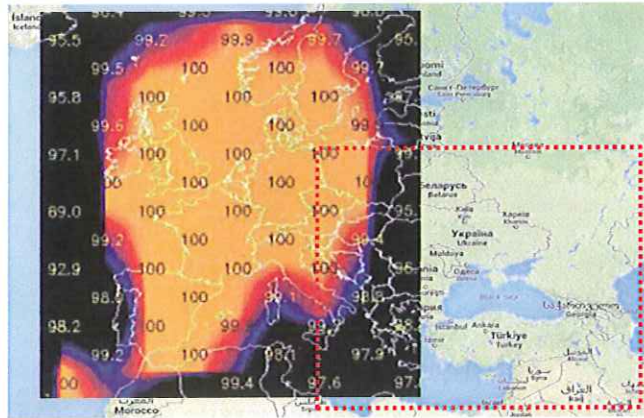
Table 2: Expected BEYOND impact: number of EGNOS-enabled aerodromes and LPV procedures

Finally, it is also worth mentioning that during the preparation of this proposal other secondary target countries were already contacted by the BEYOND consortium, countries that showed great interest in the initiative (e.g. UKATSE from Ukraine, DHMI from Turkey, CAA from Bosnia and Herzegovina, SMATSA from Serbia and Montenegro and Civil Aviation Directorate of Serbia), and that even expressed in quantitative terms their interests in a potential extension of the EGNOS service area to its territory (e.g. Sakaeronavigatsia, from Georgia, identified 4 runway ends as potential targets for the publication of LPV procedures).

In regard to the mid-term EGNSS scenarios, the picture on the right is also very illustrative, because it shows the expected LPV-200 availability performances in the SESAR Navigation baseline for 2020 (based just on GPS L1 and EGNOS), and particularly how the performances degrade to the Eastern Europe.

In fact, this picture also justifies the secondary goal of BEYOND in the Aviation domain, which is to raise the awareness on how the mid-term EGNSS scenarios (e.g. potential EGNOS extension, early adoption of Galileo as part of the European Navigation baseline for aviation) would benefit many European countries

In short, we see the buy-in by those European countries (in the region highlighted in the picture above) of the benefits of the mid-term EGNSS scenarios as the expected **secondary impact of the BEYOND project** in the aviation domain, which will surely contribute to the promotion and adoption of the EGNSS programs.



B) Expected impact in other modes of Transport

Expected Impact in Work Programme	Expected Project Impact
<p><i>The main aim of this topic is to support building of industrial relationships by gathering private and public institutions around services offered by EGNSS and related applications</i></p>	<p>As above mentioned, for the non-aviation domain, BEYOND implements a programme of actions consisting of brokerage” activities also including the organization of events. These activities are carried out:</p> <ul style="list-style-type: none"> • By EU partner with the support of the local partners; • At sub-regional level in order to: <ul style="list-style-type: none"> - Consider the specific countries’ maturity (also in terms of EGNOS service coverage availability and perspective) and the requests/needs of the local/sub-regional markets; - Take advantage of local components and exploit sub-regional drivers. • Focused on the sub-region’s priority themes. <p>This approach maximizes the impacts, facilitates and fosters the interaction between various players (e.g. universities/researchers, decision-makers and industries, including SMEs, start-ups), to nurture the interest towards EGNSS, to stimulate and support the commercialization, and to empower the countries’ capacity building in the field of EGNSS.</p> <p>When possible, the events are organized back-to-back with already planned events/exhibitions for increasing the impact of the action and ensuring a large participation and audience.</p> <p>Moreover, the organization of these events is done in coordination with the project dissemination tasks.</p> <p>Concerning the priority themes, for North Africa/Maghreb, one of the conclusions of METIS and MEDUSA is that countries’</p>

Expected Impact in Work Programme	Expected Project Impact
	<p>stakeholders have the interest/need of empowering their capacity in exploiting EGNSS in non-aviation applications. The requests were mainly from business players, local authorities and researchers/universities:</p> <ul style="list-style-type: none"> • The first already develop/sell solutions/products/services for geolocalization (primarily for road, freight transport and personal mobility). They are typically companies having business relations and operating/commercializing in Maghreb countries. • The latter mainly belong to the ICT sector and willing to enlarge their area of scientific studies/researches also in GNSS themes. They are typically interlinked with similar entities in Maghreb countries. <p>There is a strong need from these stakeholders to go in deep concerning the use of EGNOS for their sectors, in terms of:</p> <ul style="list-style-type: none"> • Technical capacity to select a suitable chipset and configure it to use EGNOS and Galileo (also in multiconstellation perspective); • Proving/validating the advantages and added value of EGNOS (and in the future Galileo) with respect to GPS alone, and its capability to overcome present GPS limitations with their products/solutions/services; • Having a clear understanding on how they can concretely benefit of EGNOS/Galileo (also in multiconstellation perspective), such as differentiating them in the market proposition and gathering commercial returns (in the case of business players), and enlarging their fields of competence/networks (in the case of researchers/universities). <p>For the Middle-East, one of the conclusions of METIS and MEDUSA is that countries' stakeholders have the interest/need of understating how to use and exploit EGNOS/Galileo in the maritime domains, mainly in the freights and logistic sectors, in terms of technology, applications, operational constraints, best practices, business cases.</p> <p>According to MEDUSA's experience, the countries in the Middle-East show a huge interest towards these sectors and significant benefits are expected by EGNSS implementation</p>
<p><i>This topic should support the competitiveness of EU industry by identifying strategic partners and by developing market opportunities</i></p>	<p>The "brokerage" activities, tailored on the specific needs of the target countries, are aimed at empowering the countries' capacity in GNSS related fields. They also:</p> <ul style="list-style-type: none"> - Create a network of individuals, institutions, and communities potentially involved and interested in GNSS innovative products and services (and also possibly interested in investments); <p>Generate favourable condition for systematic processes in innovation and business matching in the target countries, thus opening the way for market opportunities for cooperation between</p>

Expected Impact in Work Programme	Expected Project Impact
<p><i>The support to incentive schemes should foster the emergence of new downstream applications based on either Galileo and/or EGNOS and therefore to support the EU GNSS industry</i></p>	<p>EU industry involved in EGNSS and relevant players in target countries.</p> <p>In the frame of the “GNSS virtual incubator”, specifically for Turkey, BEYOND plans to develop a roadmap to support decision-making process towards EGNSS. Conclusions from the METIS project showed that Turkey represents a very promising scenario for the use of EGNSS, in all domains and in the whole range of EGNSS applications. Significant benefits are expected from the introduction and exploitation of EGNOS, and in the perspective of Galileo, in the country. Presently the country needs to develop a roadmap aimed at supporting a suitable decision-making process towards EGNOS. This action has the objective to support the country in developing a shared technological and institutional roadmap possibly enabling to smoothen the necessary institutional steps in the direction of EGNOS introduction in the country. The roadmap is a proposed policy for Turkey in relation to EGNSS, primarily EGNOS. It details infrastructure and service needs, identifies opportunities and priorities, defines actions/actors and timeline, taking into account the particular needs of the country in all domains (starting from aviation), and the social and economical benefits that the use of EGNOS will generate. Through this action, awareness is done towards the Turkey’s decision-makers involved as partner in the project, thus possibly stimulating a “go” decision towards EGNOS also in terms of national investment.</p>

Table 3: Expected BEYOND impacts as per work programme (Multi-modal)

2.2.2. Measures to maximise impact

2.2.2.1. Dissemination and exploitation of results

In the aviation domain

The strategy for the dissemination of results in the Aviation domain has been designed with the aim of supporting the achievement of the expected project impact and overcoming the identified barriers, and consequently is based on the following pillars:

- In Eastern Europe
 - The organization of workshops after the finalization of each guided exercise of WP2000, in which the ANSPs / CAAs from all the BEYOND project will share their experiences
 - The organization of a BEYOND Final User forum in which all the BEYOND partners, together with the key relevant stakeholders identified in the project will be invited, to share the conclusions of the project and define together the way forward. In particular, two key groups of stakeholders are identified already at this stage of the project
 - The group formed by the ANSPs / CAAs of those countries (e.g. Albania, Bosnia, Serbia, Montenegro, Bulgaria, Romania, Greece, Albania, Ukraine,

Turkey, Azerbaijan, Georgia and Armenia) that would benefit from the mid-term EGNSS scenarios (in particular an EGNOS extension)

- A second group of key stakeholders formed by those European institutions (EC, ESA, GSA, Eurocontrol, SESAR JU) defining the EGNSS strategy
 - The communication actions outlined in section 1.2.2, to be implemented both during the execution of the project and after its conclusion.
- In the Mediterranean countries
 - BEYOND outcomes in aviation for Mediterranean countries developed in the specific cases of Tunisia (OACA) and Morocco (ONDA) have a broader validity to all Euromed countries. To promote these outcomes and gather the interest/feedbacks of the other Euromed countries, a dedicated workshop will be organized also involving EU institutions, ESSP and other relevant actors (e.g. EASA). Moreover, a presentation is envisaged during the project “Final User Forum”, also involving main stakeholder (e.g. airline operator, CAA, GA, etc.), in liaison with the project dissemination activities. These two initiatives are expected to enable sharing of experiences and to stimulate discussions between the aviation communities of EU and non-EU (those from the Mediterranean region and also including those from the East-EU region).

In the non-aviation domain

BEYOND implements a programme of sub-regional initiatives: three events (part of the “Commercialization Tour”) and two deep dive days (as part of the “GNSS Virtual Incubator”).

These initiatives organized in liaison with the project dissemination activities and with the support of local partners are conceived to:

- Promote the use of EGNSS and growing the interest towards EGNSS outside EU (i.e. in EU-neighbouring countries), and thus possibly stimulating investments in relation to EGNSS;
- Prepare the target countries towards an optimal adoption of EGNSS, and thus contributing to the growing of know-how, capacity and knowledge in relation to EGNSS outside EU;
- Support networking and liaisons between EU and non-EU players (from different sectors industry, institutions/authorities and research/academia/university – and communities - aviation and non-aviation), thus creating the basis for cooperation, the establishment of relationships possibly evolving into business opportunities.

The material produced will form an eLibrary, that will be made publicly available in coordination with the project dissemination activities.

Knowledge and Intellectual Property Rights management and Exploitation of results

The property and management of background and foreground knowledge of the project (e.g. regarding co-ownership, protection, dissemination, use and exploitation) will be governed by the **Grant Agreement** to the project to be concluded during the Negotiation Phase

An initial identification of the Background Knowledge involved in the BEYOND project has been performed, and a summary is provided in the next table.

Company	Pre-Existing Rights	Intended Use in the Contract
GMV	<i>magicSBAS</i> <i>magicGemini</i>	Software tool that will be configured and put temporarily at the disposal of some BEYOND partners to support them in some of the guided exercises that form part of WP2000
GMV	<i>srx-10i</i> <i>magiLPV</i>	HW/SW equipment that will be put temporarily at the disposal of some BEYOND partners to support them in some of the guided exercises that form part of WP2000
GMV	<i>magicIFP</i>	Web-based service that will be put temporarily at the disposal of some BEYOND partners to support them in some of the guided exercises that form part of WP2000
TPZ	<i>SENSOR</i>	Analysis tool enabling the monitoring of GNSS performance parameters that will be put temporarily at the disposal of two non-EU/Mediterranean ANSPs (namely OACA and ONDA, being TPZ's subcontractors in BEYOND) to support them in the activities of WP3100

Table 4: Pre-existing rights applicable to BEYOND

2.2.2.2. Communication activities

The communication activities to be performed in the project will be described in detail in one of the chapters of the dissemination plan that will be produced in WP4100 of the BEYOND project, which will define the goals of each communication action, the target audience, the key messages to be conveyed, the means to be used, their content, as well as the schedule for the elaboration, publication and distribution of the related communication items.

A first draft of the type of communication actions envisaged in the BEYOND project are summarized in the next table, including examples of similar actions produced by the consortium in other similar projects:

- Set-up of a dedicated webpage;
- Creation of printable content to be disseminated at events and online;
- Production of press content for publication on both GNSS and more general magazines and media;
- Production of project newsletters and graphical material;
- Attendance to major GNSS and specific target segment events.

Comms. item	Approach Description
Project website	In order to be used as a successful communication means, the process of web creation will be based on definition of key content and messages to be included in the webpage; collection of all the supporting material (e.g. dissemination); The design of the web format, in terms of structure and content;
Printable contents	The printable contents will include a general brochure on the BEYOND project as a whole;
Press Content for Publication in GNSS and General media	The team will produce press content for publication on both GNSS (e.g. Inside GNSS, GPS World) and more general magazines and media

Comms. item	Approach Description
Newsletters and graphical material	Newsletters will be especially effective as communication means after the successful completion of each of the milestones of the project. At this time, concrete results and graphical material (e.g.; pictures, videos, interviews etc.) will be also published in the project website.
Attendance to Major GNSS and Specific Target Segment Events	The team will participate in at least two major GNSS events, in order to raise the awareness on the BEYOND project, submitting papers. Possible target events include the Munich Satellite Navigation Summit, the European Navigation Conference, the ION-GNSS and the World ATM Congress.

Table 5: Proposed dissemination and communication elements

2.3. Implementation

2.3.1. Work Plan

A) Work Breakdown Structure

The figure below shows the workflow among work packages (WP) which will structure the BEYOND project to address each objective.

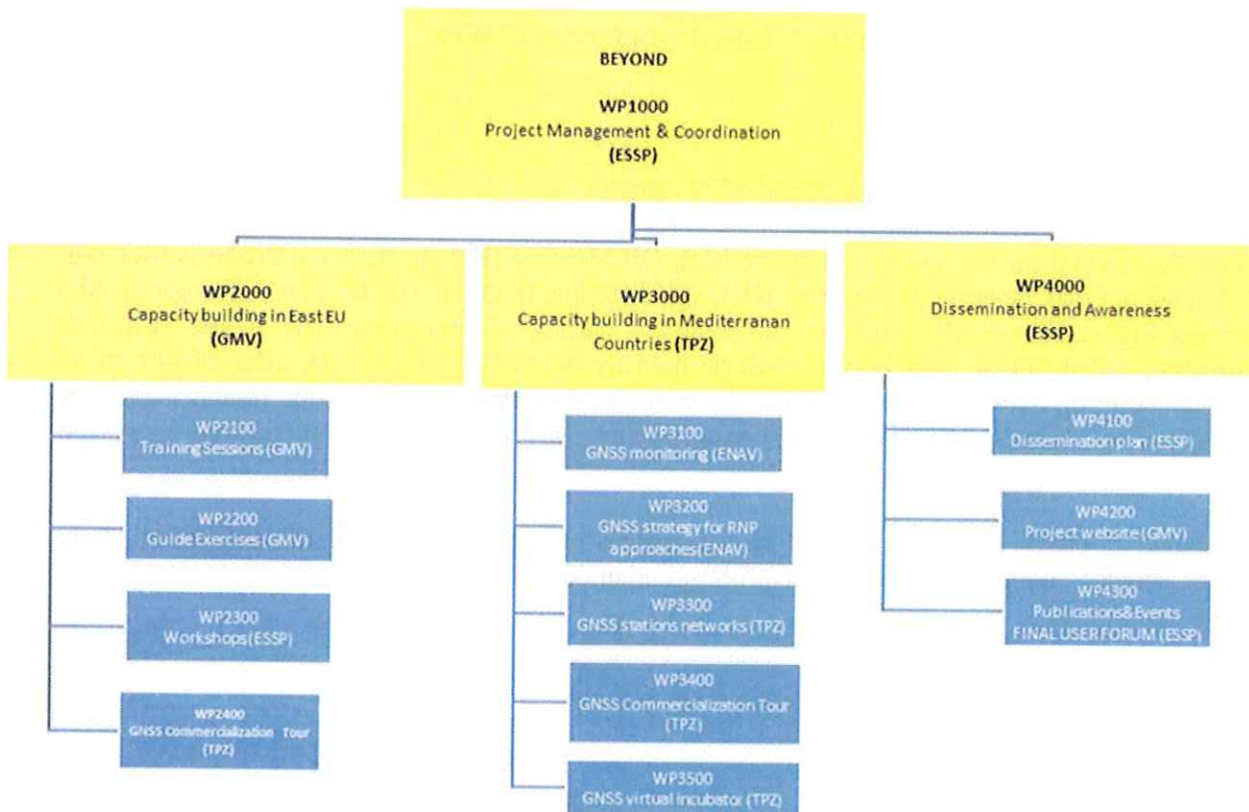


Figure 2: BEYOND Work Breakdown Structure

The Project Management WP1000 will carry out the management and coordination activities within the project and take on the interface with the European GNSS Agency (GSA) as well as with other interested international stakeholders. The technical work packages are explained in detailed the section 3.1.3 of the consortium proposal. The following figure shows the interdependencies and flow logic among the different BEYOND Work Packages.

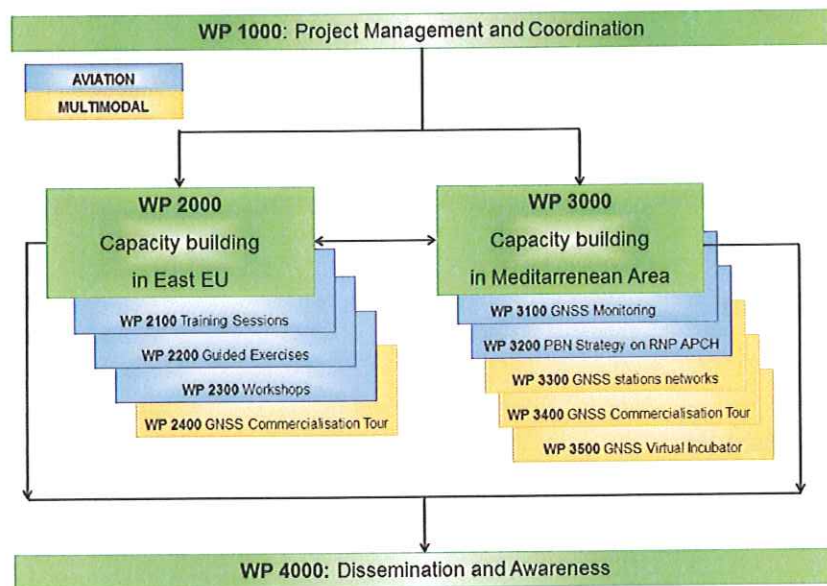


Figure 3: Interdependencies of WPs

B) Planning

The project has been designed for a period of 24 months.

It includes several formal meeting points: a Kick Off Meeting (KOM), three (3) Progress Meetings (PM) and a Final meeting (FM). The Kick off Meeting (KOM) will be held one month after Contract Signature and will constitute the technical starting of the project (T0). A last BEYOND Workshop called “Final User Forum” will be held by the end of the Project, after closure of all capacity building activities. Due date for the progress deliverables will be one month before the corresponding Progress Meeting in order to allow the GSA staff to have enough time for review prior to the meeting.

A detailed GANTT shall be included in the project management plan at the beginning of the project. The following figure depicts the proposed planning for BEYOND.

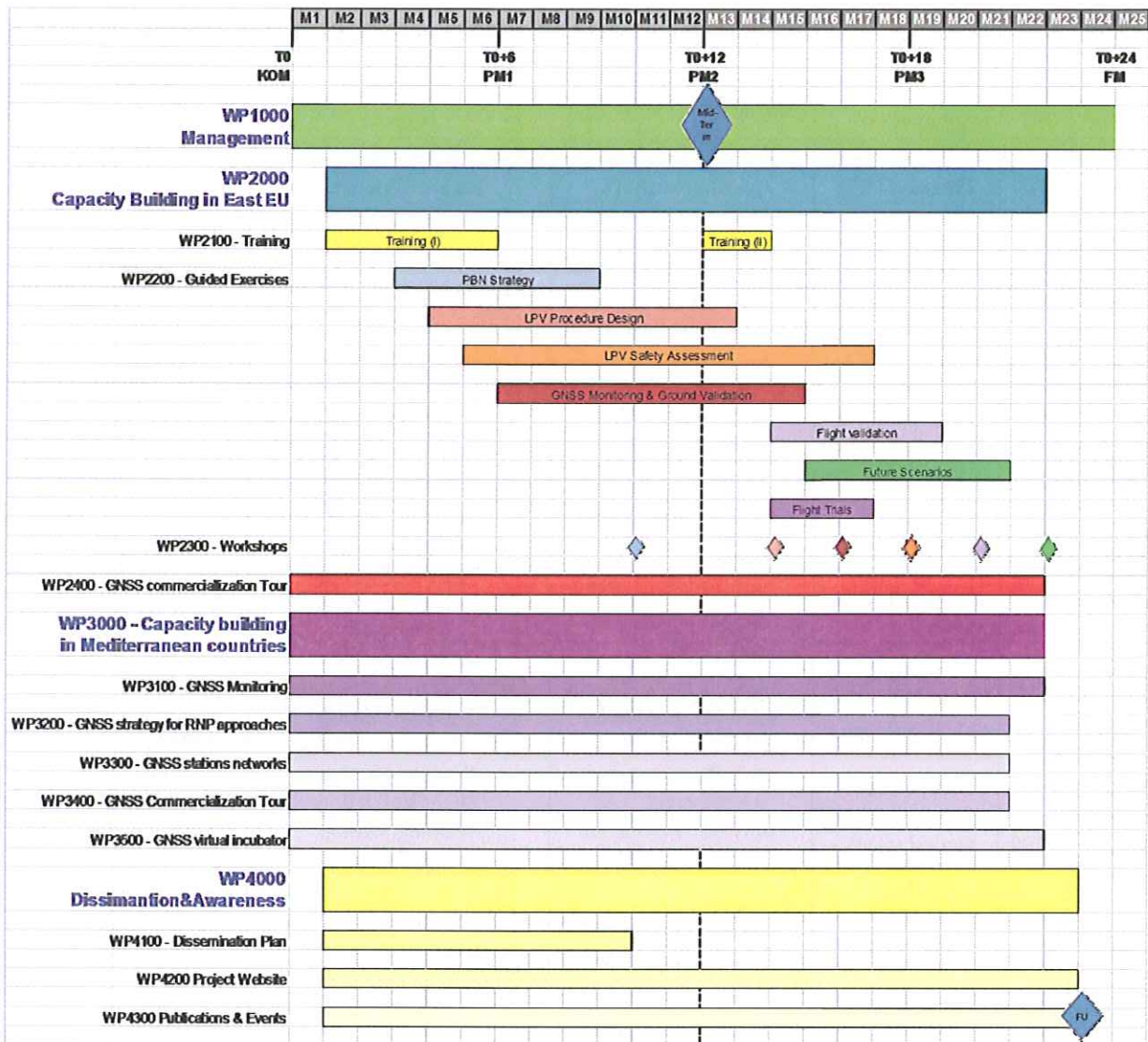


Figure 4: BEYOND Planning

C) List of meetings and Travel Plan

Next table presents the list of meetings planned for the BEYOND project, assuming T0 as month 1:

Meeting	WP	Location	Participants from the Consortium	Nature	Expected date
KOM	1000	Prague (GSA)	Coordinator, WPL	Kick-off Meeting	Month 1 (T0)
PM1	1000	Madrid (GMV)	Coordinator, WPL	Progress Meeting #1	Month 7 (T0+6)
PM2	1000	Madrid (ESSP)	Coordinator, WPL	Progress Meeting, Mid Term Review	Month 13 (T0+12)
PM3	1000	Rome (TPZ)	Coordinator, WPL	Progress Meeting #3	Month 19 (T0+18)
FM	1000	Prague (GSA)	Coordinator, WPL	Final Review Meeting	Month 25 (T0+24)
TS-1	2100	Madrid (ESSP)	subWPL, Europeran ANSPs and CAAs	Training Session EGNOS SP FW	Month 3 (T0+2)
TS-2	2100	Hungary (Hungarocontrol)	subWPL, Europeran ANSPs and CAAs	Training Session PBN Strategy	Month 4 (T0+3)
TS-3	2100	Madrid (ESSP)	subWPL, Europeran ANSPs and CAAs	Training Session GNSS Monitoring&Ground Validation	Month 5 (T0+4)
TS-4	2100	Madrid	subWPL, Europeran ANSPs and CAAs	Training Session LPV Safety Assessment	Month 6 (T0+5)
TS-5	2100	Madrid (Ineco)	subWPL, Europeran ANSPs and CAAs	Training Session LPV Procedures Design	Month 7 (T0+6)
TS-6	2100	Europe (TBC)	subWPL, Europeran ANSPs and CAAs	Training Session Flight Validation	Month 14 (T0+13)
TS-7	2100	Madrid (GMV)	subWPL, Europeran ANSPs and CAAs	Training Session Future Scenarios	Month 15 (T0+14)
GE	2200	ANSPs	subWPL, Europeran ANSPs and CAAs	6 Guided exercises (PBN, LPV design, LPV safety Assessment, GNSS Monitoring, Flight validation and Future Scenario)	From Month 5 (T0+4) to Month 22 (T0+21)
TWS-2	2300	Hungary (Hungarocontrol)	subWPL, Europeran ANSPs and CAAs	Technical Workshop PBN Strategy	Month 11 (T0+10)
TWS-3	2300	Madrid (ESSP)	subWPL, Europeran ANSPs and CAAs	Technical Workshop GNSS Monitoring&Ground Validation	Month 17 (T0+16)
TWS-4	2300	Madrid (Ineco)	subWPL, Europeran ANSPs and CAAs	Technical Workshop LPV Procedures Design	Month 18 (T0+17)
TWS-5	2300	Madrid	subWPL, Europeran ANSPs and CAAs	Technical Workshop LPV Safety Assessment	Month 19 (T0+18)
TWS-6	2300	Europe (TBC)	subWPL, Europeran ANSPs and CAAs	Technical Workshop Flight Validation	Month 21 (T0+20)
TWS-7	2300	Madrid (GMV)	subWPL, Europeran ANSPs and CAAs	Technical Workshop Future Scenarios	Month 23 (T0+22)
Event 1	3400	Amman (Jordan) or Cairo (Egypt)	AIN (if in Amman), AASTMT, GUC, ARIJ, TPZ	Middle-East Commercialization Tour	Month 3 (T0+2)
Event 2	3400	Tunis (Tunisia)	CRATTLE - LF, AIN, GUC, AASTMT, TPZ	Maghreb/North Africa Commercialization Tour	Month 13 (T0+12)
Event 3	2400-3400	Kiev (Ukraine)	BITES, Turkey MoT, Technion, Helios, TPZ	Turkey/Israel Event Commercialization Tour combined with East-EU Commercialization Tour	Month 22 (T0+21)

GNSS mon WS/demo Tn	3200	Tunis (Tunisia)	TPZ, ENAV	Demonstration/workshop on GNSS perfo Tunisia	Month 23 (T0+22)
GNSS mon WS/demo Mo	3100	Casablanca (Morocco)	TPZ, ENAV	Demonstration/workshop on GNSS perfo Morocco	Month 23 (T0+22)
GNSS strategy WS TN and Mo	3100	Brussels (Belgium)	TPZ, ENAV, Helios	D3100-3: "Demonstration/workshop on GNSS performance assessment and data recording for Tunisia"	Month 13 (T0+12)
Deep dive WS 1	3200	Rabat (Morocco)	AIN, GUC, AASTMT, TPZ	Workshop on GNSS strategy for RNP approaches	Month 7 (T0+6)
Deep dive WS 2	3200	Alessandria (Egypt)	GUC, ARIJ, TPZ		Month 16 (T0+15)
BEYOND Workshop	4300	Europe	Coordinator, WPL, some partners	Final User Forum	Month 24 (T0+23)

Table 6: List of meetings and travel plan

2.3.2. Management structures and procedures

The ESSP will be the **Coordinator** of the project, who will share the responsibility of technical and contractual tasks with the BEYOND partners, in order to achieve the contractually defined project objectives in accordance with the technical performance specification, the required quality standards and within the agreed schedule dates.

An internal website will be created and managed to allow constant communication across the many different countries involved. The website will allow users to "post" information to each other and to provide a central data repository.

This project aims to be efficiently run and to keep management activities to a minimum. Where possible, consortium management meetings will be combined with working meetings (e.g. GSA progress meetings).

The Project is structured by Work-Packages (WPs) allocated among the Partners. Each Work-Package is led by a Work-Package Leader, who has the responsibility for the work-package execution with respect to the Coordinator and the Steering Committee. Major changes in work-packages, particularly creation, reallocation, or termination of work-packages, as well as the general management of the project, shall be handled by the Project Steering Committee/ Project Assembly.

A) Management Organisation

The Management and Coordination Structure proposed for the project is outlined below. Structures that have proven to be successful in this type of projects in the past will be adopted.

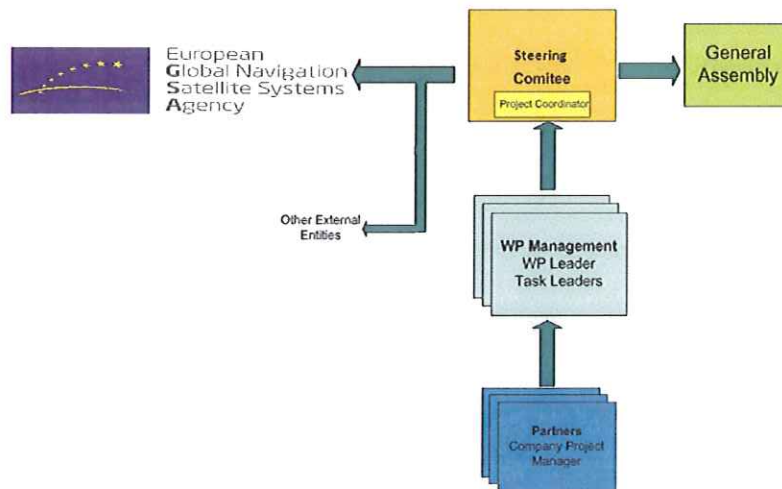


Figure 5: BEYOND Management Organisation

Steering Committee / General Assembly

A **General Assembly** will be created for overall strategic and managerial decisions, which will include technical direction, financial, planning, exploitation and dissemination matters. The General Assembly will consist of one senior representative from the contractors responsible for project coordination (the prime contractor) and will be chaired by the Project Coordinator. The General Assembly will meet every three or six months, depending on requirements.

The **Steering Committee** will be in charge of managing the Project and of major decisions relating thereto. It will be the highest authority in the project chaired by the Coordinator. It will consist of one representative of all the Work Package leaders, appointed in writing for the duration of the project before the project start. Each representative shall be empowered with the authority to discuss, negotiate and decide on actions or to accept recommendations proposed by the Coordinator. Any change of a partner representative shall be subject to approval by Steering Committee ordinary decision. The Steering Committee will be also responsible for the innovation management with the aim of successfully implementing appropriate creative ideas, identifying market and technical problems with internal assessment and understanding user needs.

Project Coordinator

The Project Coordinator will be responsible for the day-to-day co-ordination of the project and responsible of the internal administration of the project. **ESSP will be the Coordinator of the BEYOND project.** The Coordinator will be the single point of contact between the partners and the GSA. In particular, the Coordinator shall be responsible for:

- Consolidate the project planning, progress reporting, financial issues, etc.
- Prepare and enforce of all project management documentation
- Take the roles of Contracts manager, Quality manager and Dissemination and Awareness manager.

The role of the Project Manager will be embodied by **Carlos Joaquin Hernando**, from the ESSP, and the role of Project Controller will be entrusted to an external ESSP staff appointed during the KOM both with wide experience in international and multicultural projects.

WP Leader

Each Work Package (WP) is made-up of several activities and tasks. A Work Package Leader will monitor the working groups assembled in order to complete the WP. He/she will be responsible for administrative details, reporting on the group and exploitation and dissemination of results. Work Package Leaders (WPL) will provide support to the sub-work package leaders and must be prepared to present technical overviews according to the meeting schedules.

The WPLs for the different WPs are:

- WP1000 (ESSP): Carlos Joaquin Hernando
- WP2000 (GMV): Luis Javier Álvarez
- WP3000 (TPZ): Antonella di Fazio
- WP4000 (ESSP): Carlos Joaquin Hernando

Company Project Manager

The Partner Project Manager would be the management interface of each of the partners for the BEYOND project. He/she will be responsible to:

- Ensure the company provides adequate resources and logistic support.
- Report administrative information to the Project Coordinator.

B) Meeting and Reporting Strategy

One of the main objectives of the management strategy proposed is to maintain a close contact with the GSA representatives to allow a proper follow-up of the project. This contact shall be made by means of meetings and reports.

As shown in the previous section, a Progress Meeting shall be held approximately every six months with the presence of the GSA Project Officer and the involved Work Package Leaders, as a minimum.

The objective of these meetings would be to review the status of the project and the upcoming activities. During these meetings the following items shall be discussed (as a minimum):

- Quality and progress of technical work.
- Management procedures and problems found.
- Exploitation and Dissemination issues.
- Risk management.
- Any other issue related to the overall functioning of the project

A Progress Report shall be delivered in advance of the meetings. These reports shall include at least the following information:

- Publishable summary
- Major achievements
- Work package progress
- Deliverable status
- Coordination activities
- Dissemination activities
- Justification of cost items and resources

The Final Report of the Project will contain also a final publishable summary report covering results, conclusions and socioeconomic impact of the project, and a report covering the wider societal implications of the project, including gender equality actions, ethical issues, efforts to involve other actors and spread awareness as well as the plan for the use and dissemination of foreground.

All these Reports shall be delivered by the Project Coordinator to the GSA. To prepare these reports, all partners shall submit their contribution (procedure to be defined in the Project Management Plan) to the Project Coordinator, who shall collate them and include general project information.

In the figure below, Progress Reports (in blue color) will provide further details of the Project progress and will be attached to the Progress Meetings (due T0+6, 12 & 18). Quarterly Reports (in red color) due at T0+3, 6, 9, 12, 15, 18 & 21 (between Progress Meetings) could be requested by the GSA.

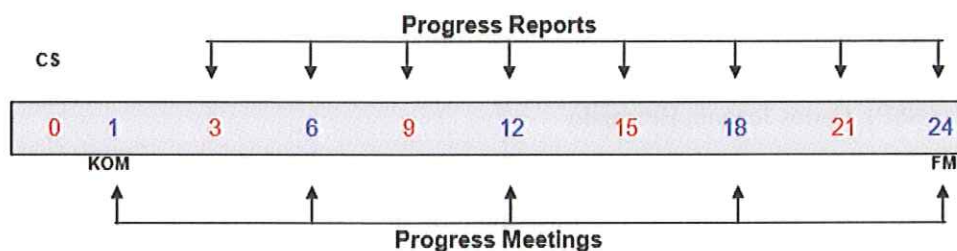


Figure 6: Meeting and Reporting Schedule

Apart from the established reporting during the lifetime of the project, the coordinator will submit a report on the distribution of the Community financial contribution between beneficiaries. This report will be submitted 30 days after receipt of the final payment.

C) Decision Making Rules

All scientific and technical activities to be performed in the project are grouped in Work Packages, each one with an appointed leading organisation. Each Work Package is refined into sub-Work packages. Then each sub-WP may be divided in a number of tasks. All this structure is clearly in each Work Package Definition.

Hence, the responsibility of an individual task is clearly linked to a specific partner, which is also responsible for decision making within this task provided the decision does not involve at all any other task. Whenever there are relations to other tasks inside the Work Package, the decision making responsibility is upgraded to the Work Package leader. It is Work Package leader responsibility to coordinate the whole decision making process inside the Work Package and to report regularly to the Steering committee on such process.

In the event that the decision making process may have any influence on any other project activity, decision making responsibility shall go to the Steering committee. If deemed necessary, the Steering committee may always ask for support to the General Assembly in the decision making process. In any case, the Project Coordinator coordinates the whole decision making process.

D) List of milestones

Milestone number	Milestone name	Related work package(s)	Estimated date	Means of verification
1	Contract Signature (CS)	All	---	Signature of the contract
2	Kick Off Meeting (KoM)	All	month 1 (T0)	Meeting held
3	Mid Term Review (PM2)	All	month 13 (T0+12)	Meeting held
4	Training Sessions I	WP2100	month 7 (T0+6)	Traning (part I) executed
5	Training Sessions	WP2100	month 15 (T0+14)	Traning (part II) executed

	II			
6	Guided Exercises	WP2200	month 22 (T0+21)	Guided exercises executed
7	Technical Workshops	WP2300	month 23 (T0+22)	Technical workshops executed
8	GNSS mon WS/demo in Tn and Mo	WP3100	month 23 (T0+22)	Workshops/demonstrations executed
9	GNSS strategy WS	WP3200	month 13 (T0+12)	Workshop executed
10	Commercialization Tours completed	WP3400 & WP2400	month 22 (T0+21)	Event 1/event 2/event 3 executed
11	GNSS Virtual Incubator	WP3500	month 16 (T0+15)	Deep dive workshop 1/workshop 2 executed
12	BEYOND Workshop	WP4300	month 24 (T0+23)	Final User Forum conclusions
13	End of project	All	month 25 (T0+24)	Acceptance of all deliverables and completion of all Call objectives

Table 7: List of Milestones

E) Risk management

In this project, it is proposed to set up a risk management process that identifies organizational and technical risks from project start up to its completion.

The identification of the risks will be done by every partner, who must inform the WP leader of the package (or packages) involved and the project co-ordinator

For each of the risks, the following points will be defined:

- Impact on the project (where, consequences for a given WP or for the project, gravity, probability)
- Actions to mitigate the risks

Each risk will be attributed:

- A number incorporating in particular the origin.
- WP impacted by the risk
- A level (High, Medium or Low): The definition of the level is the result of the combination of apparition probability and the criticality criteria.
- A risk Status:
 - I = risk Identified (no actions to mitigate the rules or only “identified” actions)
 - M = risk Monitored (at least one action to mitigate the risk is “opened”)
 - C = risk Controlled (all the actions to mitigate the risk are “closed”)
 - D = a risk Disappeared

The actions to mitigate the risks are defined by means of:

- A full definition (in what consists the action)
- A responsible of the execution
- A target date
- A status (identified / open / closed)

The following table identifies the risks defined to date by the BEYOND consortium that may hinder the successful implementation or progress of the project and the contingency plans foreseen for addressing these.

Description of risk	WP	Proposed risk-mitigation measures
Multiple partners (countries) with different level of knowledge and expertise in GNSS	WP2000- WP3000	To define roles and responsibilities of each partner. To ensure the appropriate follow-up of the activity. ESSP, GMV and TPZ as WP Leaders will provide knowledge and expertise when required to the rest of the partners.
Delay in Flight Trials due to not availability of the aircraft	WP2200	Close coordination with ANSP from Hungary, and Kosovo

Table 8: Critical risks for implementation

2.3.3. Consortium as a whole

The BEYOND consortium offers well-balanced and national independent sources of expertise to carry out the project. The partners bring a wide range of national knowledge, know-how and background, which will contribute to the quality of the work performed in the frame of the activity, providing an inherent coordination synergies flavor.

To meet the objectives of the activity, the BEYOND team has been built around the following partners:

- **EGNOS Service Provider and Operator: ESSP**
- **Air Navigation Service providers** representative of countries in the European Eastern regions, which will be in charge to define and coordinate a National Team including CAA representatives for implementing EGNSS applications: Macedonia, Moldova, Hungary, Kosovo, and other ones interested in the project (not on board due to time constraints), but they will be accordingly informed on the project progress (Lithuania, Latvia, Albania, Bosnia Herzegovina, Georgia, Serbia and Montenegro)..
Parallely ENAV with deep expertise in GNSS operations and RNP APCH publications will lead activities for Aviation in the Euromed Region
- **CAA representatives** involved through the ANSPs as part of the National Team.
- **Consultancies as tailored SME** in the GNSS domain, Air Space and Navigation Services design, previously involved in all related activities in support to EGNOS service introduction in the Civil Aviation domain: Helios
- **Technological business companies** with an international presence which offers its solutions, services and products in very diverse sectors: Telespazio will lead non-aviation activities in East Europe and the Euromed Region. GMV will lead with ESSP aviation activities in East Europe with a wide range of GNSS tools at disposal of the partners during the project.

Almost all of ANSPs/CAAs involved in BEYOND project belong to **Joint Service Provision Area (JSPA)** Initiative. JSPA is regional initiative aiming to further promote Single European Sky (SES) in the SEE region and it represents a step towards the more successful involvement of the Western Balkan states into SES concept and GNSS introduction in aviation. The JSPA Initiative stands for regional and inter-organisational partnership for cooperation and coordination among the Western Balkans states. JSPA activities are based on real needs and possibilities, equality and utilization of existing regional resources, developed towards benefiting from common ideas, experiences and interests. The support and participation to the JSPA Initiative is given by the members from Albania, Hungary, Kosovo, Macedonia and



Montenegro, while Bosnia and Herzegovina and Serbia took the observer position

The BEYOND Consortium involves all the different actors along the value chain (User, airport managers and air navigation service providers, civil aviation authorities, industry, research institutes, public institutions, etc..) along with a number of expert consultants and development organisations which will ensure that the project's objectives are met. Furthermore, the project coordinator and work package leaders have deep multimodal and space background and a recognized position in the aviation and other domains at International level, with previous responsibilities as coordinator of European projects, namely SHERPA,EEGS, EEGS-2, MEDUSA etc.

Figure 7: process for EGNSS Capacity Building

The following figure depicts the structured approach taken in the organisation of the BEYOND Consortium in relation to the process of the European GNSS systems (EGNOS/Galileo) capacity building in multimodal applications, mainly focused in aviation.

2.3.4. Capacity of participants and links to third parties

2.3.4.1. Participants

1) Coordinator ESSP



The European Satellite Services Provider (ESSP) was founded on 2001 and initially formed as a European Economic Interest Grouping (EEIG). This legal form was appropriate for the development phase of the company. In 2008 the ESSP was transformed into a new company of limited liability: the ESSP SAS, and its headquarters were moved from Brussels to Toulouse.

Its shareholders are 7 key European Air Navigation Service Providers (ANSPs): Aena, DFS, DSNA, ENAV, NATS, Nav Portugal and Skyguide.

ESSP mission is the provision of satellite navigation services including the EGNOS Open Service (OS), the Safety of Life (SoL) service - compliant with ICAO SBAS standards and recommended practices throughout the European Civil Aviation Conference (ECAC) Region - and the EGNOS Data Access Service (EDAS). The ESSP SAS is also in charge of the operation and technical management of EGNOS.

On July 12th 2010, the French National Supervisory Authority (NSA) gave to the ESSP the Certification of Air Navigation Service Provider, according to the Single European Sky Regulation 2096/2005. This Certification allows ESSP to provide Navigation Services to airspace users.

Relevant Background

The ESSP is responsible for the operations and provision of EGNOS services under contract with the EC. For the present project, it should be highlighted the broad know-how and experience gained by the ESSP in the last years for the provision of EGNOS Safety Of Life Service (for multimodal domain), Open Service and EDAS (used for commercial and added value applications). The ESSP, as the EGNOS operator and service provider, has a deep expertise and knowledge in GNSS covering different areas such as:

- Project management and other transversal areas including quality, product assurance, configuration management, safety and security.

- System management including assets and tools owned by the EC, as well as multiple hosting services contracts in place with different hosting entities.
 - Operations preparation and validation including the elaboration of relevant operational documentation including concept of operations, operation management plans, operations development plans and operation validation plans amongst others. The ESSP also undertakes the preparation and validation of operational products and databases, the validation of the EGNOS infrastructure as well as provides support to AIV activities.
 - Operations execution including operations coordination, system monitoring and control and, surveillance & troubleshooting. ESSP counts with an integrated engineering team and operates the EGNOS system through the MCCs on a 24/7 basis.
 - System engineering and anomaly management
 - System and service performance monitoring including issues, anomalies, deviations and analysis of trends studies among others.
 - Operations and maintenance Staff qualification and training.
 - Support to EGNOS system evolutions definition, reviews and deployment.
-
- **Mr. Carlos Joaquin Hernando** holds a M. Sc. Degree in Mathematics from the Complutense University of Madrid (UCM). Since 2001 and during 6 years in GMV AD (“Grupo de Mecánica de Vuelo” Aerospace and Defense) he was involved in GNSS activities related to EGNOS and Galileo operational systems design, validation, development and implementation. For 3 years, he was GNSS consultant in Aena within the ASQF team as part of the EGNOS support segment. He worked as Ground Operations responsible in the early stages of the third Galileo Control Centre in Aena Internacional. On 2011, he joined Ineco and afterwards Telespazio acting as consultant at ESSP SAS Service Development team to support the implementation and adoption of EGNOS in Europe in the different domains. On 2014, he joined ESSP SAS as Service Evolution Manager managing the EGNOS baseline documentation towards the users and actively supporting the ESSP business development activities.
 - **Mr. Francisco Javier de Blas** holds a M. Sc. degree in Aeronautical Engineering and a Master’s degree in Airport Systems from the Technical University of Madrid (UPM). After working in aircraft training & operations for EADS---CASA, worked for SENASA (Services and Studies for Air Navigation and Aeronautical Safety & Security) for four years. In 2008 he began working as a GNSS consultant for the Aena Satellite Navigation Division dealing with GNSS implementation projects and finally joined ESSP SAS, the EGNOS Service Provider, in 2009 where he performs as Service & GNSS Projects Development Manager.
 - **Paul Verschueren** has a degree in Nuclear Energy. After working as Maintenance & Quality Manager in various safety and time critical applications (space, nuclear energy, full flight simulators), he joins the EGNOS Project as Product Assurance and Safety Manager in 1996. Involved in the early design & development phases of EGNOS by managing the safety and dependability aspects of the design & operations, he joint ESSP in 2004 as Director of Quality & Safety.

Publications and/or products

One important aspect of the EGNOS service provision is the promotion of the service itself. The ESSP has long been supporting the EC and the GSA in the implementation of communication and awareness campaigns for promoting the use of GNSS, and specially EGNOS, in different fields. In particular, the ESSP has contributed to the promotion of EGNOS by:

- Attending major exhibition events, conferences and trade shows in the fields of GNSS, aerospace and radio navigation (e.g. ION GNSS, ATC Global Amsterdam, Aerodays Madrid, Le Bourget Paris Air Show, Munich Satellite Summit, ENC GNSS, Agritechnica, EBACE, World ATM Congress). In some cases, ESSP has also participated with own exhibition stands for the promotion of EGNOS.
- Creating press releases and articles in different media and specialised magazines (e.g. SatNav News, GPS World).
- Delivering papers and presentations in different workshops and events (e.g. ION GNSS, ENC, World ATM Congress...).
- Organization of events and workshops (e.g. Yearly EGNOS Service Provision Workshop, focus workshops in the framework of the SHERPA project).
- Preparation of brochures, leaflets and information packages.

Relevant previous projects

Through diverse European consortia composed by partners from different countries, the ESSP has been participating in multiple projects co-funded by public organizations (e.g. EC, GSA, EUROCONTROL...) related to the use and adoption of GNSS in different transportation and application domains. Some examples are SHERPA (aviation, GSA), ACCEPTA (aviation, GSA), M-TRADE (maritime, GSA), MEDACON (road, GSA), CRITIC (road, GSA), MENTORE (road, GSA) and M-TRADE (railway, GSA), as well as other projects related to transversal areas such as EGUS (GNSS user support, EC) and SAFIR (GNSS in Africa, EC).




The ESSP has also been involved as observer, and even in some cases also providing volunteer collaboration, in different projects such as HEDGE (aviation, GSA), Aurigny (aviation, EUROCONTROL), IELEC (aviation, EUROCONTROL), GIANT-2 (aviation, GSA), HEDGE NEXT (aviation, GSA), EEGS2 (aviation, GSA) and GRAIL-2 (railway, EC).


References

Project Name Duration (period) Customer – Budget	Main tasks
<i>ESP (EGNOS SERVICE PROVISION)</i> 2009-2013 <i>as prime contractor</i>	<i>General Project Objective(s) and scope of the project</i> <i>The ESSP has been contracted by the EC to ensure the operation, maintenance and more generally the EGNOS Service Provision for the period 2009-2013.</i> <i>Type of service provided</i>



Project Name Duration (period) Customer – Budget	Main tasks
 <p>European Commission (EC)</p> <p>Public</p> <p>>10M€</p> <p>CLOSED</p>	<p><i>The ESSP is responsible for the following tasks:</i></p> <ul style="list-style-type: none"> • <i>Project management (including quality, safety, security, product assurance, and interface with the customer).</i> • <i>EGNOS system management including assets and tools owned by the EC, as well as multiple hosting and maintenance services contracts in place with different hosting entities.</i> • <i>Operations preparation and validation including the elaboration of concept of operations, operation management plan and operation validation plan; the preparation and validation of operational products and databases.</i> • <i>Operations coordination, system monitoring and control and, surveillance and troubleshooting.</i> • <i>System engineering and anomaly management</i> • <i>EGNOS system maintenance and logistics.</i> • <i>System and service performance monitoring including issues, anomalies, deviations and analysis of trends studies among others.</i> • <i>Operations and maintenance staff qualification and training.</i> • <i>Support to definition of EGNOS evolutions, reviews and deployment.</i> • <i>Interface with external entities: GEO payload provider, Communications Service Provider, Federal Agency for Cartography and Geodesy (IERS) and Industry.</i> • <i>EGNOS Services Performance Monitoring and Anomaly Investigation.</i> • <i>Interoperability analysis and support to standardization. The ESSP regularly participates in different standardization fora such as IWG, EUROCAE, RTCA.</i> • <i>EGNOS User Support Website design, administration and operations. This website contains different resources for EGNOS users such as general information, applicable documentation,</i>

Project Name Duration (period) Customer – Budget	Main tasks
	<p><i>planned outages, SIS status and near real-time performances information.</i></p> <ul style="list-style-type: none"> • <i>EGNOS Helpdesk 24/7 operations (via mail and telephone) providing multimodal support and acting as single point of contact for users.</i> • <i>Launch of user consultations / satisfaction surveys related to the provision of EGNOS services.</i> • <i>Elaboration of EGNOS Service Definition Documents.</i> • <i>Notifications to users (e.g. Service Notice, NOTAM for aviation users).</i> • <i>Management of EDAS users including registration, support to first connection, etc.</i> • <i>Promotion of EGNOS. In this regard, the ESSP has long been supporting the EC and the GSA in the implementation of communication and awareness activities for promoting the use of EGNOS in different fields (especially in aviation). In particular, the ESSP has contributed to the promotion of EGNOS by:</i> <ul style="list-style-type: none"> - <i>Attending major exhibition events, workshops, conferences and trade shows in the fields of GNSS, aerospace and radio navigation (e.g. ION GNSS, ATC Global in Amsterdam, Aerodays Madrid, Le Bourget Paris Air Show, Munich Satellite Summit, ENC GNSS, Agritechnica, EBACE, World ATM Congress). In some cases, ESSP has also participated with own exhibition stands for the promotion of EGNOS.</i> - <i>Creating and distributing press releases and articles in different media and specialized magazines.</i> - <i>Delivering papers and presentations in different workshops and events (e.g. ION GNSS, ENC, World ATM Congress).</i> - <i>Organization of events and workshops</i> - <i>Preparation of brochures and information packages.</i>
	<p>General Project Objective(s) and scope of the project</p>

Project Name Duration (period) Customer – Budget	Main tasks
<p>ACCEPTA <i>(Accelerating EGNOS adoption in Aviation)</i> 2010 – 2013</p>  <p>European GNSS Agency</p> <p>European GNSS Agency (GSA)</p> <p>Public</p> <p>5,98 M€</p> <p>CONSORTIUM MEMBER</p> <p>ON-GOING</p>	 <p>The main objective of the project is the acceleration of the EGNOS adoption in the aviation sector, with a wide-scale real-life adoption of the EGNOS-enabled LPV approaches throughout European airports where the SBAS signal is available and certified. The project also supports the adoption of necessary GPS/EGNOS-ready avionics for commercial airlines, business & general aviation, rotorcraft and other end users.</p> <p>The ACCEPTA project focuses on the adoption of EGNOS in the areas of regional, business (corporate) aviation, general aviation (training, leisure, etc.) and rotorcraft which are considered the main aviation niche markets interested in the use of the EGNOS signal.</p> <p>Type of service provided</p> <p>The ESSP prepared a joint proposal with 5 ANSPs in the ACCEPTA project 2nd Call for the publication of 14 LPV procedures in 8 different airports of Austria, Finland, Portugal, Czech Republic and Slovak Republic.</p> <p>The ESSP technical participation is focused on the development of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Feasibility assessments: This activity is oriented to prove the feasibility of each of the selected LPV procedure in each of the proposed runway ends in those aspects linked to the EGNOS SoL service. <input type="checkbox"/> EGNOS-based services framework definition: This activity describes the EGNOS based service provision scheme, addressing both its European and national specific characteristics for the implementation of EGNOS based operations in each of these five States.
<p>SHERPA (SUPPORT AD-HOC TO EASTERN REGION WITH PREOPERATIONAL ACTIONS ON GNSS) 2012 – 2013</p>	<p>General Project Objective(s) and scope of the project</p> <p>SHERPA proposes a regional collaborative approach in support to European Eastern region countries, towards the implementation of GNSS enabled operations in the civil aviation sector, and in particular enhanced by EGNOS.</p>  <p>The activity shall provide elements to the participant States in mapping the implementation of EGNOS into their national PBN strategy in a coordinated manner with their national Regulatory Authorities</p> <p>Type of service provided</p>

Project Name	
Duration (period)	Main tasks
Customer – Budget	
 <p>European GNSS Agency (GSA)</p> <p>Public</p> <p>790 k€</p> <p>LEADER</p> <p>ON-GOING</p>	<p><i>ESSP, as the SHERPA project coordinator, is supporting Eastern and Central European countries to understand the pre-operational actions to be undertaken by their relevant stakeholders (ANSPs, regulators and airlines) in support to EGNOS adoption in the aviation sector.</i></p> <p><i>The project follows a collaborative approach, for facilitating the implementation of APV procedures through the set up of regional working groups and workshops. Awareness activities are being led by the ESSP, what has allowed the company to gain a valuable know-how and experience in this field. An awareness and dissemination campaign is being implemented (expected to be finished by mid 2013) including the following actions:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> <i>Several workshops focused on specific topics (e.g. safety, service provision, business case, and implementation) have been held in different European Counties. These workshops have been chaired by the ESSP and attended by many relevant stakeholders (e.g. EUROCONTROL, EASA, ANSPs, Airlines).</i> <input type="checkbox"/> <input type="checkbox"/> <i>A SHERPA project webpage have been set-up for including relevant information on the project such as objectives, news, events, etc. In addition, a collaborative tool is accessible for members of the team, relevant stakeholders and the customer (GSA).</i> <input type="checkbox"/> <input type="checkbox"/> <i>Relevant pieces of news have been included in several publications such as the EGNOS bulletin, as well as different websites and newsletters.</i> <input type="checkbox"/> <input type="checkbox"/> <i>Several press releases have been elaborated and distributed by the ESSP and other members of the team among relevant media in European and Eastern countries.</i> <input type="checkbox"/> <input type="checkbox"/> <i>A technical article related to EGNOS LPV implementation was published in SatNavNews Volume46 Winter2013 (FAA's magazines).</i> <input type="checkbox"/> <input type="checkbox"/> <i>Papers on LPV implementation have been submitted and accepted in relevant congresses and events such GNSS ION 2012 and ENC 2012.</i> <input type="checkbox"/> <input type="checkbox"/> <i>Different presentations have been undertaken in relevant aviation for a (e.g. RAISG, Space Solutions)</i> <input type="checkbox"/> <input type="checkbox"/> <i>A final User Forum will be held in July 2013 (collocated with the EGNOS Service Provision Workshop). This User Forum will allow the team to collect feedback and ideas from relevant stakeholders for future initiatives and projects.</i>
	<p>General Project Objective(s) and scope of the project</p>

Project Name	
Duration (period)	Main tasks
Customer – Budget	
<p>SAFIR <i>(Satellite navigation services for African Region)</i></p> <p>2013 – 2015</p>  <p>European Commission (EC)</p> <p>Public</p> <p>2,8 M€</p> <p>CONSORTIUM MEMBER</p> <p>ON-GOING</p>	 <p><i>The overall objective of SAFIR project is to lay the first cornerstone for future GNSS system implementation and exploitation in Africa. To do so, a preliminary step of support for capacity building for African ACP countries is proposed within this project.</i></p> <p><i>For a sustainable capacity building in the satellite navigation domain, two main enablers need to be put in place:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> <i>The first one is the management of GNSS African related programmes at African level;</i> <input type="checkbox"/> <input type="checkbox"/> <i>The second enabler is to raise African stakeholders' awareness of all the components to be addressed for GNSS/EGNOS development in sub-Saharan Africa.</i> <p><i>The objectives of this project are thus to make those enablers a reality by achieving the following results:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> <i>Creating, staffing and operating a new entity called the EGNOS-Africa Joint Programme Office;</i> <input type="checkbox"/> <input type="checkbox"/> <i>Putting in place working groups covering all activities related to GNSS implementation.</i> <p><i>If this new Joint Programme Office is launched at instigation of the European Commission, it is expected that this entity will be sustainable at African level. The set-up of such an entity must be considered in a long term perspective. On top of that, representativeness of the entire sub-Saharan region must be ensured in this entity.</i></p> <p>Type of service provided</p> <p><i>The ESSP will participate in the WP3 focused on the organization and development of different Working Sessions containing fifteen (15) topics. In particular ESSP will participate in the following topics: System performance, Certification policy, Liability policy, System operations and service provision, and Services implementation roadmap.</i></p>
<p>EGUS <i>(E-GNSS User Support)</i></p>	<p>General Project Objective(s) and scope of the project</p> <p><i>The aim of these framework contracts is the provision of specialized support to GSA's market development activities in the user segment development. In particular this</i></p>

Project Name Duration (period) Customer – Budget	Main tasks
<p>2013 – 2017</p>  <p>European GNSS Agency</p> <p>European GNSS Agency (GSA)</p> <p>Public</p> <p>8 M€</p> <p>CONSORTIUM MEMBER</p> <p>AWARDED</p>	<p><i>support framework contract focuses on the following areas:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> <i>Support to OS ICD license agreement process set-up.</i> <input type="checkbox"/> <input type="checkbox"/> <i>OS customer marketing and support for building and running of set-up phase of the GNSS Service Centre (GSC).</i> <input type="checkbox"/> <input type="checkbox"/> <i>Support for EGNOS and Galileo market communication.</i> <p>Type of service provided</p> <p><i>Concrete activities have not defined yet. Main areas where ESSP is expected to contribute are the following ones:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> <i>Business plan, model, case, CBA (Exploitation and business guidelines)</i> <input type="checkbox"/> <input type="checkbox"/> <i>Market development and direct marketing</i> <input type="checkbox"/> <input type="checkbox"/> <i>User interface definition</i> <input type="checkbox"/> <input type="checkbox"/> <i>Expert interface with some user communities</i> <input type="checkbox"/> <input type="checkbox"/> <i>Workshops responsible</i>
<p>ESP (EGNOS SERVICE PROVISION)</p> <p>2014 – 2020</p>  <p>European GNSS Agency</p> <p>European GNSS Agency (GSA)</p> <p>Public</p> <p>>10M€</p>	<p>General Project Objective(s) and scope of the project</p> <p><i>The ESSP has recently been awarded the EGNOS Service Provision contract for the period 2014-2020.</i></p> <p>Type of service provided</p> <p><i>The scope of the present contract is similar to the one described for the ESP contract (2009-2013). Some additional activities have been requested in the present contract including:</i></p> <ul style="list-style-type: none"> - <i>Direct management of external service providers (i.e. subcontractor management) required for the provision of EGNOS services including the GEO Payload Provider and the Communication Service Provider.</i> - <i>Support the EC and the GSA in the implementation of communication and awareness activities for promoting the use of EGNOS in a wide range of fields and areas of application (note</i>

Project Name	
Duration (period)	
Customer – Budget	
<i>LEADER</i> <i>AWARDED</i>	<i>that in the former ESP contract (2009-2013) most of the effort was paid to the aviation domain).</i>

Subcontracting and/or Third Parties ESSP

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

2) GMV

GMV is a privately owned technological business group with an international presence which offers its solutions, services and products in very diverse sectors: Aeronautics, Banking and Finances, Space, Defence, Health, Security, Transportation, Telecommunications, and Information Technology for Public Administration and large corporations.

GMV has defined the state-of-the art in Global Navigation Satellite Systems in Europe for the last 25 years. GMV has been involved in GNSS since the earliest ESA related contracts were awarded in the late 1980s. These early contracts investigating various areas related to GPS grew and multiplied over the years and today GMV plays a critical role in the on-going development of Europe’s GNSS strategy as demonstrated by our unparalleled participation in EGNOS and Galileo.

GMV is now a global company with presence in 7 countries. GMV has subsidiaries in Spain (Madrid, Valladolid, Sevilla, Tenerife, Valencia and Barcelona), Portugal, France, Germany, Romania, Poland, the USA and Malaysia. Our headquarters are in Tres Cantos, Madrid, Spain.

GMV’s expertise in GNSS has consistently grown and multiplied during its tenure and today GMV is a key company in the development of GNSS strategy as demonstrated by the strategic participation of GMV in EGNOS and Galileo and by the leadership of the SBAS studies in South America (ICAO SACCSA project). GMV has played a fundamental role in the design and development of the GNSS-1 strategy in Europe. GMV has developed (among other things) the Central Processing Facility Processing Set, the heart of the EGNOS mission and the OSPF and IPF, facilities in charge of the computation of the orbit and clocks of the Galileo satellites and the Galileo integrity. During the last years, GMV has applied the long acquired GNSS know-how in

the development of SBAS feasibility studies and Testbeds in different regions of the world (Russian Federation, South America, etc).

GMV has built unrivalled expertise in System Engineering and the development of Navigation Algorithms. GMV's navigation algorithms can be found in real-time operational systems, end-to-end test-beds, system validation and performance analysis, software simulators and in the field supporting diverse applications. We have developed advanced techniques for **Precise Orbit Determination, Time Synchronization, Integrity, User Receiver algorithms, Data pre-processing, Ionosphere, HW Bias and Troposphere estimation, Navigation Message Generation, Real Time SW, HW infrastructure, and Ground Based Augmentation Systems (GBAS)**, to name but a few.

This experience has led to an exceptional set of dedicated procedures and tools, and the establishment of a large group of engineers with exceptional knowledge of EGNOS and Galileo. Over 100 people from across the GNSS business unit have been directly or indirectly involved in EGNOS and Galileo related projects, resulting in over 100 Man Years dedicated just to these programmes.

Persons involved in project:

GMV will set up a highly experienced project team for this contract, aimed to provide the most efficient project structure for the management of WP2000 (Capacity building in East Europe).

Mr. **Luis Javier Alvarez** – Head of the Aeronautical Systems Division at GMV - is an Aeronautical Engineer who has participated in numerous workshops, seminars and meetings following the recent evolution of the CNS/ATM regulatory context, operational concepts and supporting technology, such as PBN workshops organized by ICAO, stakeholder meetings organized by the SESAR JU, ATM seminars organized jointly by the FAA and Eurocontrol, Air Operators forums organized by Eurocontrol, international events on the future of GNSS organized by AENA, avionics days organized by technical universities, etc.

Ms. **Amaya Atencia Yépez** – head of Safety and Dependability section at GMV - has a strong background in Safety and long experience in complex safety and mission critical long-term programs at a variety of domains (Hazard, Risk Management, Human errors, SW engineering in Aviation and Space Systems). She is the Safety and Dependability Manager of GALILEO program, where GMV is responsible for the development of critical Ground Mission Segment Elements.

She has been also the Safety Manager of EEGS2 project in charge of performing the Safety Assessments of LPV procedures based on EGNOS jointly with the ANSPs of Ukraine, Poland, Moldova and Rumania. Additionally, as part of EEGS2, she was responsible for organizing safety workshops with CAA and ANSPs. Finally, she carried out a LPV Safety Assessment training sessions for the South African ANSP (ATNS-SA) and CAA in the context of the SATSA project (FP7 project lead by GSA for SBAS training and capability in South Africa).

Mr. **Javier Escartín** – Technical Coordinator at the Aeronautical Systems Division at GMV – is an Aeronautical Engineer with several years of work experience in GNSS Air Navigation applications at GMV, and has worked directly with AENA for the Satellite Navigation Department in projects related with GNSS implementation and PBN strategy development. He played a key role in the development of **magicLPV** system and the flight trials campaign carried out in East Europe as part of the EEGS2 project, and participated in numerous workshops with ANSPs and CAAs.

Relevant PRODUCTS

GMV will put the following software tools and equipment at the disposal of the ANSPs for the undertaking of the guided exercises included in WP2000 (Capacity building in East Europe).

magicSBAS is a state-of-the-art, multi-constellation, operational Satellite Based Augmentation System (SBAS) test-bed developed by GMV to offer SBAS regional differential corrections and non-safety critical integrity augmentation to any interested region. Its regional differential corrections can improve the GPS, Galileo and GLONASS positioning accuracy down to the meter level. The SBAS augmentation message produced is fully compliant with SBAS international standards such as RTCA/DO-229D and ICAO SARPs, and can be broadcast through the Internet and by supported GEO satellite providers (see <http://www.gmv.com/en/space/magicSBAS/>)

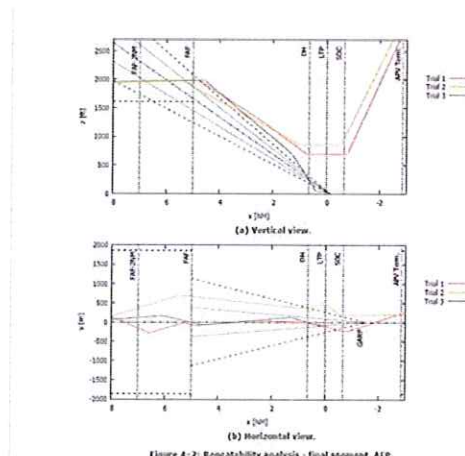
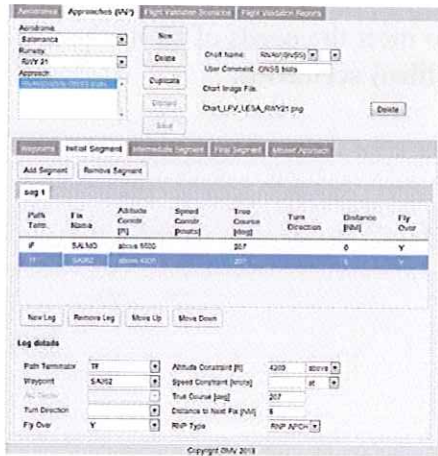
magicGEMINI, is a state-of-the-art, operational GNSS performance analysis and monitoring tool specifically designed to meet the needs of air navigation service providers and airspace users. Its design is multi-system, hence it supports performance analyses for operational navigation based on GPS, GLONASS and GALILEO, as well as RAIM and SBAS augmentations. Its processing is fully compliant with international aviation standards such as ICAO GNSS SARPs, RTCA/DO-208 (GPS MOPS) and RTCA/DO-229 C&D (SBAS MOPS) in order to accurately reproduce the expected air navigation user performance (see <http://www.gmv.com/en/aeronautics/products/magicGEMINI/>)

magicLPV has been developed to allow test pilots to fly SBAS augmented APV approach procedures, down to LPV minima. In combination with *magicSBAS*, it allows to fly experimental APV SBAS procedures virtually in any region of the world, and demonstrate the operational benefits of GPS and Satellite Based Augmentation (SBAS) to airspace users, service providers, airport authorities and regulators. *magicLPV and magicSBAS have been successfully used in the frame of the EEGS2 project to support flight trials in Moldova, Romania, Poland and Ukraine* (see <http://www.gmv.com/en/space/products/magicLPV/>)

srx-10i is a complete GPS/Galileo spectrum monitoring, interference detection and analysis system in the L1/E1 bands fully developed by GMV following the ICAO 8071 recommendations. It records raw digital samples whenever an interference event is detected, and includes a built-in analysis tool for later post-processing and detailed analysis. A real-time interference detection system based on srx-10i is currently installed at 8 major airports in Spain where GPS/SBAS approach procedures are being deployed (see <http://www.gmv.com/en/space/products/srx-10i/>)

magicIFP is a complete ground and flight validation web-based tool (see an example of its interface below) aimed to carry out flyability checks and navigation performance analysis of

APV SBAS approach procedures, specifically designed to meet the needs of air navigation service providers to assess **current and future EGNSS (e.g. Galileo) scenarios.**



Relevant PROJECTS

GMV has participated in the following projects directly related with the work proposed:

EEGS2 (as coordinator), supervised by the European GNSS Agency, where were successfully demonstrated the benefits of EGNOS in areas of Eastern Europe where EGNOS is not available and prepared Civil Aviation and Service Providers of those areas for future usage of EGNOS. Activities regarding LPV Procedures Design, Safety Assessments of these LPV procedures and flight validation trials were carried out in several airports of Moldova, Poland, Romania and Ukraine. Numerous workshops and stakeholders meetings were organized to promote EDAS, EGNOS and Galileo and its usage for aviation and road transport domains (see <http://www.eegs2-project.eu/>)

EEGS (as coordinator), supervised by the European GNSS Agency, where was successfully proved that EGNOS coverage could be extended to cover all Eastern Europe and *magicSBAS* was used to demonstrate on-ground at user level that the steps to upgrade EGNOS to provide such service were ready to be implemented. This constituted a remarkable step for EGNOS strategy of providing service for all Europe (see <http://www.eegs-project.eu/>).

GMV also played a key role as a partner in the development of the project GIANT2, where EGNOS enabled operations were introduced and promoted to the End Users of identified niche markets, Regional Aviation, Corporate and General Aviation and Helicopters, successfully performing pre- operational flight demonstrations (see <http://giant2.ineco.es/>).

3) Participant Telespazio S.p.A.

Legal Entity:

Telespazio, a joint venture between Finmeccanica (67%) and Thales (33%), is one of the world's leading players in satellite services. The company, headquartered in Rome, Italy, employs approximately 2500 people. It relies on an international network of space centres and teleports and operates worldwide through many subsidiaries.

In particular, it is present: in France with Telespazio France; in Germany with Telespazio VEGA Deutschland, GAF and Spaceopal (a joint venture in which the German space agency DLR holds a 50% interest); in the United Kingdom with Telespazio VEGA United Kingdom; in Spain with Telespazio Iberica; in Hungary with Telespazio Hungary and in Romania with Rartel. Telespazio has consolidated its presence in South America with Telespazio Brasil and Telespazio Argentina. It operates in the US via Telespazio North America. In Italy, the company is also present through e-GEOS (in which the Italian Space Agency holds a 20% interest).

Telespazio is a leading company in sectors that are becoming increasingly important for public institutions, business operators and consumers, with activities ranging from the design and development of space systems to the management of launch services and in orbit satellite control from Earth observation services, integrated communication, satellite navigation and localisation, to scientific programmes.

Telespazio relies on a wealth of experience of the highest level, stemming from technological expertise acquired over 50 years of business practice. The Company's experience is also drawn from the management of space infrastructure - including the Fucino Space Centre, the world's largest civilian teleport - as well as from its involvement in major space programmes, including: Galileo, EGNOS, Copernicus, COSMO- SkyMed, SICRAL and Göktürk.

The company now covers the whole space market value chain through its four business units: Satellite Systems & Applications, Satellite Operations, Geoinformation and Networks & Connectivity.

Telespazio has a consolidated experience in EU projects dealing with E-GNSS, and in particular, since years 2006 has a leading role in the introduction and exploitation of EGNOS/Galileo in non-EU countries, especially those in the Mediterranean basin. In particular, Telespazio is the coordinator of the Euromed GNSS I/METIS and Euromed GNSS II/MEDUSA projects, through which the company has been carrying out activities aimed at awareness, promotion and capacity building.

In the frame of the MEDUSA project, Telespazio has set-up GEMCO (the Galileo EuroMed Cooperation Office), and implemented a shadow management and technology transfer. Today, GEMCO is evolved into a Tunisian legal entity called GEMCA (Galileo EuroMed Cooperation Association), fully operational and capable to run autonomously further the end of MEDUSA.

Moreover, Telespazio has also been involved in the SIRAJ project, and has developed the GNSS Implementation Plans.

Projects of relevance are detailed below:

Main tasks in the project:

- Leader of WP2400, WP3300, WP3400, WP3500
- Involved in WP3100, WP3200

Key Personnel:

Name	Gender	Role	Short CV
Antonella Di Fazio	Female	Team leader for Telespazio Involved in: <ul style="list-style-type: none"> • WP2400 (WP leader) • WP3100 • WP3200 • WP3300 • WP3400 (WP leader) • WP3500 (WP leader) 	Antonella Di Fazio has a Degree in Physics. She works in Telespazio (a Finmeccanica-Thales company), in the Navigation and Telecommunication Programs, in charge of satellite navigation applications & services. In the last 10 years she has been working in projects and initiatives related to the European GNSS. Since 2006, she has been involved in the Euromed GNSS programme, in particular she has been the Euromed GNSS I/METIS project coordinator and she is presently an expert also acting as team leader and project coordinator of the Euromed GNSS II/MEDUSA project.
Daniele Bettinelli	Male	Involved in: <ul style="list-style-type: none"> • WP3100 • WP3300 (WP leader) 	Daniele Bettinelli has a Degree in Physics. He works in the Navigation and Telecommunication Programs in Telespazio (a Finmeccanica/ Thales company). Since 2008 he has been working in the specification, design and development of services based on GNSS/EGNOS. He has been involved in the GNSS performance analysis for land and civil aviation applications in the framework of several European R&D projects. In the framework of Euromed GNSS II/MEDUSA project, he has been involved in RNP approaches validation at Monastir airport (Tunisia), in the relevant GNSS data analysis and in the elaboration of a methodology for GPS + RAIM performance monitoring and recording.

Antonio Nardi	Male	Involved in: <ul style="list-style-type: none"> • WP3100 • WP3300 	Antonio Nardi has a Degree in Electronic Engineering. He works in the Navigation and Telecommunication Programs in Telespazio (a Finmeccanica/Thales company). Since 1991 he has been involved in the GNSS Orbit Determination and GNSS Data Analysis for ground network or orbiting GNSS receivers, in particular for ASI (Italian Space Agency) projects, EUREF and IGS studies. He has also cooperated in projects related to VIASAT, EGNOS, IRIDIUM, COSMO-SkyMed. In the framework of Euromed GNSS II/MEDUSA project, he has been involved in RNP approaches validation at Monastir airport (Tunisia), in the relevant GNSS data analysis and in the elaboration of a methodology for GPS + RAIM performance monitoring and recording.
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Publications/Products/Services:

- “Methodology for GPS + RAIM performance monitoring and recording”, Vanni P (ENAV), Nicolò L. (ENAV), Di Fazio A. (Telespazio), Bettinelli D (Telespazio), 14th ICAO Navigation System Panel, Montreal, November 2013
- “GEMCO the new incubator for the satellite navigation in the Euromed region”, Di Fazio A. Arab ICT Incubators Workshop and Arab Technoparks Meeting, Hammamet - 12 November 2013
- “The Southern frontier of EGNOS” – Di Fazio A. - MELAHA 2010 – Cairo, 3 May 2010
- “Satellite Navigation Services for freight transport: METIS demonstrations in the Mediterranean Area”, Di Fazio A. - MELAHA 2008 International Conference, Hurgada, 14 April 2008
- “MEDaCoN Mediterranean EGNOS Data Collection Network”, Guida U., Di Fazio A., Soley S. - MELAHA 2008 International Conference, Hurgada, 14 April 2008

Previous Projects or Activities:

MEDUSA - 2012 - on going

MEDUSA (MEDiterranean follow-Up for EGNOS Adoption) belongs to the Euromed GNSS framework, part of the Euromed Transport Programme, whose objective is to extend/exploit the use of E-GNSS (the European Global Navigation Satellite Systems, primarily EGNOS - the European Geostationary Navigation Overlay Service, and in view of Galileo) in the Euromed countries.

MEDUSA is the second stage of the Euromed GNSS programme (Euromed GNSS II), the first being the Euromed GNSS I/METIS project.

Led by Telespazio (Italy) and involving a team composed by EU and Euromed partners, MEDUSA runs from mid-2012 up to the end of 2014.

Euromed countries are Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Tunisia, and Syria. Before 2010 in the frame of Euromed GNSS I/METIS, Turkey was included and Libya excluded.

The project addresses different user domains and markets, namely aviation, road, maritime, rail, freight transport and logistics, geodesy, survey and mapping, research applications.

In parallel with the development of the infrastructures necessary for the E-GNSS availability in the Euromed area, MEDUSA aims at preparing the Euromed countries towards the optimal use and adoption of the relevant provided services in aviation and other transport and non-transport domains, by implementing a series of actions focused on EGNOS also in the perspective of Galileo.

MEDUSA implements a programme of assistance actions designed to:

- Address local needs, at national/sub-regional/regional level;
- Fit the countries' maturity in terms of market readiness and EGNOS service availability perspective;
- Share best practices;
- Support technological transfer and capacity building;
- Help the countries to set up the basis for the proper feasibility assessment/decision making process.

MEDUSA actions are:

- Support and cooperation actions;
- Technical assistance actions such as dedicated meetings/workshops, concrete demonstrations aimed at EGNOS' benefits validation.

Through these assistance actions, MEDUSA is aimed at bringing some of the Euromed countries (i.e. the North African countries where the EGNOS service coverage will be available in the next years) near to the operational use/adoption of EGNOS today and in view of Galileo, in the priority applications/markets identified in METIS, namely aviation and freight transport. In these applications, MEDUSA implements two service demonstrations, one focused on EGNOS for aviation in Tunisia and one focused on EGNOS for freight transport in Jordan. In parallel, MEDUSA also organizes national and regional workshops, training sessions targeted on the two priority applications/markets.

Moreover, MEDUSA also sets up a long term cooperation and operation structure named GEMCO, with an associated Work Plan ensuring the proper regional participation of the beneficiary countries.

Located in Tunis (Tunisia) and operated by MEDUSA, GEMCO acts as a point of reference for all Euromed countries and towards Europe. Through GEMCO, MEDUSA catalyses and fosters initiatives related to E- GNSS in the Euromed region, and contributes to the implementation of the assistance actions put in place by the project.

Under the coordination of Telespazio (leader of MEDUSA), GEMCO implements the following tasks:

- Acting as the main point of contact concerning E-GNSS (EGNOS/Galileo) aspects for the Euromed countries;
- Facilitating and establishing links between stakeholders of the Euromed countries and of the European Union at different levels and sectors (e.g. institutions, private companies, research entities);
- Providing assistance and support to Euromed stakeholders (private and public organizations) concerning E-GNSS (EGNOS/Galileo) aspects;
- Undertaking a promotion and awareness programme oriented to all markets/user domains in the Euromed countries.

SIRAJ – 2009 - 2012

SIRAJ (SBAS Implementation in the Regions of ACAC and ASECNA) is a project co-funded by the European Commission under the Framework Programme 7 (FP7), aimed at evaluating the opportunities for EGNOS service extension to the areas covered by the ACAC and ASECNA.

One of the objectives of SIRAJ was the elaboration of a GNSS (Global Navigation Satellite System) Implementation Plan for the considered countries, aimed at proposing a policy and a roadmap for EGNOS introduction and exploitation in the Civil Aviation sector in a specific country in the period 2011-2021.

Telespazio was in charge of developing the GNSS Implementation Plans.

The GNSS Implementation Plans were developed for 8 countries: Algeria, Côte d'Ivoire, Gabon, Jordan, Mauritania, Morocco, Saudi Arabia and Senegal. The GNSS Implementation Plans include infrastructure and service needs, identify opportunities and priorities, evaluate costs and benefits, define actions and timeline, taking into account the particular needs of the countries in the Civil Aviation domain, and the social and economical benefits that the use of EGNOS generates. The plan is jointly elaborated with the country stakeholders and shared with the relevant decision-makers. Its preparation required various iterations in close interaction with the country stakeholders, for reviewing, discussing and commenting it, before its final issue.

METIS - mid 2006 up to the end of 2009

METIS (MEdiTerranean Introduction of GNSS Services) is the Euromed GNSS I project, i.e. the first stage of the Euromed GNSS programme, part of the overall Euromed Transport Programme framework which consists of different regional cooperation projects for all the transport domains.

Running from mid-2006 up to the end of 2009, in parallel with the infrastructure implementation for the provision of the EGNOS services over the Euromed countries,

METIS was aimed at performing actions in support to the introduction and exploitation of EGNOS services and applications in the Euromed countries.

METIS target countries are Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Occupied Palestinian Territory, Syria, Tunisia, Turkey.

METIS performed three main activities, for preparing the Euromed countries to the introduction of EGNOS services (EGNOS Open Service, EGNOS Safety Of Life, and EGNOS Commercial Service based on EDAS):

- Elaboration of a GNSS National Plan defining the roadmap for EGNOS introduction and exploitation in each country. The GNSS National Plans include, for each country, infrastructure and service needs, identify opportunities and priorities, evaluate costs and benefits, define actions and timeline to introduce and exploit EGNOS, and prepare the market for Galileo. Conceived as a Euromed shared policy for the implementation of EGNOS services in the Mediterranean region, the plans were jointly elaborated with Euromed stakeholders and shared with the countries;
- Implementation of a programme of training and awareness;
- Running demonstrations for experimenting EGNOS technology and services in various Euromed countries and applications in civil aviation, freight and logistics, rail, maritime, personal mobility and research.

METIS gathered the interests of all Euromed countries and built a national/regional liaisoning with key interlocutors and stakeholders, interested in sharing experience and moving ahead with the EGNOS adoption. The project supported the Euromed countries to implement the preparatory actions for the use of EGNOS services, to benefit from EGNOS from both the strategic/social and economical perspectives, and elaborated with them the basic strategy aimed at facilitating EGNOS exploitation in each country in all main applications.

METIS is the first step to introduce and facilitate the exploitation of the EGNOS services in the Euromed countries. Through METIS, the Euromed countries gathered valuable information on the technical aspects of the services, the social and economical benefits that the use of EGNOS and Galileo generate. They also had the chance to contribute in sketching out the industrial and regulatory issues needed to define the roadmap to introduce EGNOS, in view of Galileo.

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	Y
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<p><i>WP2000 (20,000€): Subcontracting to a Ukrainian local partner to contribute to the organization of the event. This local partner has to assist TPZ in reaching the relevant stakeholders through its network as well as hosting the event in its facilities (taking care of the relevant logistics expenses, affording the travel expenses for keynote speakers and selected key stakeholders). In the proposal preparation phase, NAU (www.nau.edu.ua) has been preliminarily identified as a suitable local partner. NAU has a well proven experience, since it has already organized events related to E-GNSS. NAU has already provided its interest and commitment to support Telespazio for BEYOND in this respect.</i></p>	
<p><i>WP3000 (60,000€): Subcontracting to local partners in Middle East and Nord Africa to contribute to the organization of the events. These local partners have to assist TPZ in reaching the relevant stakeholders through their network as well as hosting the event in its facilities (taking care of the relevant logistics expenses, affording the travel expenses for keynote speakers and selected key stakeholders). In the proposal preparation phase, the following local entities have been preliminarily identified as suitable local partners. They all rely on a huge network of contacts and they have the proper competences. Besides they are all extremely interested to cooperate with Telespazio in BEYOND: ESCWA (www.escwa.un.org), GUC (www.guc.edu.eg) and GEMCA (http://www.euromedtransport.eu/En/the-galileo-euromed-cooperation-office_20_275_9_59).</i></p>	
<p><i>WP3100 and WP3200 (41,500€) Subcontracting to OACA who will be involved in Work Packages: 3100 GNSS Monitoring and 3200 PBN Strategy on GNSS focused on aviation. In WP3100 OACA is in charge of supporting the testing/validation for Tunisia giving indications and providing feedbacks also considering their operational needs. In WP3200 OACA will support in assessing the implementation of the ICAO regulatory framework within the State with a view to complying with the ICAO PBN manual and recommendations.</i></p> <p><i>The breakdown of the amount dedicated to OACA activities is the following:</i></p> <p><i>19.000 € for WP3100</i></p> <p><i>22.500 € for WP3200</i></p>	
<p><i>WP3100 and WP3200 (41,500€) Subcontracting to ONDA who will be involved in Work Packages: 3100 GNSS Monitoring and 3200 PBN Strategy on GNSS focused on aviation. In WP3100 ONDA is in charge of supporting the testing/validation for Morocco giving indications and providing feedbacks also considering their operational needs. In WP3200 ONDA will support in assessing the implementation of the ICAO regulatory framework within the State with a view to complying with the ICAO PBN manual and recommendations. The breakdown of the amount dedicated to ONDA activities is the following:</i></p> <p><i>19.000 € for WP3100</i></p> <p><i>22.500 € for WP3200</i></p>	
<p>Does the participant envisage that part of its work is performed by linked third parties</p>	<p>N</p>
<p><i>Not applicable</i></p>	
<p>Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)</p>	<p>N</p>

4) Moldavian Air Traffic Services Authority (MOLDATSA)

MoldATSA” (Moldavian Air Traffic Services Authority) is the Air Navigation Services Provider in Republic of Moldova. Created in 1994 in accordance with the Government Resolution No.3 of 12 January 1994. “MoldATSA” is an autonomous 100% State owned enterprise, operating on a self-financing basis. At the end of 1998 it was decided to create inside the enterprise the Aviation Meteorological Service with the aim of providing meteorological aeronautical services.

The same year “MoldATSA” takes over from the International Airport of Chisinau the aeronautical information unit, which has been later reorganized into the Aeronautical Information Service (AIS).

Following the requirements set up by EUROCONTROL, “MoldATSA” creates at the beginning of 2003 the Safety and Quality Management Service.

“MoldATSA” is subordinated directly to the Ministry of Transport and Roads Infrastructure. In a number of issues this subordination is done through the Civil Aviation Administration, the National Supervisory Authority. Nowadays the number of employees is 313 people.

The mission is to provide to customers a flexible and efficient use of the airspace in full compliance with safety requirements set up by ICAO, EUROCONTROL and national safety regulations

Persons involved in project:

Dorin Gadimba, Head of Aeronautical Information Services “MoldATSA”. Has a work experience of 17 years (Air Traffic Controller, Management Bodies):

Qualification: Air Traffic Controller

Speciality: Air Traffic Controller; Body Management

Ivan Popruga, Specialist Coordinator Cartography&Procedure Design AIS “MoldATSA”.

Has a work experience of 25 years (air force). He has been working in the AIS “MoldATSA” for the last 5 years, as a specialist coordinator cartography&procedure design. He has been involved in project EEGS2 SBAS for aviation in Moldova (2013). He has been produced charts and conventional procedure for International Airports in Moldova (ENR, SID, STAR, IAP). He is an expert in cartography and procedure design.

5) MONTENEGRO

Based on the Law on Air Transport (“Official Gazette of Montenegro” No 30/2012), competences of the Civil Aviation Agency are defined in the Article 6 thereof:

The Agency is competent for, inter alia, certification of air operator and operating license; certification of aircraft type, of airworthiness of aircraft, of airworthiness inspection and

of registration; certification on meeting the conditions by legal persons to maintain aircraft; certification of organisations for professional training of aeronautical personnel; preparing the expert grounds for the development of programs, plans, secondary legislation, adopted by the Government and state administration body competent for the affairs of transport (hereinafter referred to as: the Ministry); adoption of general acts in accordance with this Law and acts for the implementation of ECAA Agreement, other concluded international agreements, international standards and recommended practices from civil aviation, and especially standards, procedures and recommended practices of ICAO, ECAC, EASA and EUROCONTROL with the consent of the Ministry; performing professional supervision over the implementation of this Law and concluded international agreements; performs continuous oversight on meeting the conditions in accordance with this Law. The Agency is the National Supervising Authority performing the affairs related to the definition of meeting the requirements to provide air navigation services, issuing the certificates to air navigation service providers, continuous inspection over air navigation service provision and supervision over air traffic management.

The Agency, as being duly requested, prepares the expert grounds for the development of programs, plans, secondary legislation, to be adopted by the Government and state administration body competent for the affairs of transport (hereinafter referred to as: the Ministry). In that sense, taking an opportunity to participate in the project as such we will be in the position to build capacities in the Agency in order to meet future's endeavours in regard to full implementation of GNSS i.e. GALILEO, EGNOS and other available global systems.

Personnel to be involved

TMA Operations Supervisor

Job Description

Performs supervisory activities relating to following: airspace classification, design and operation of TLA, CTR, ATZ, aircraft holding, approach, landing and departure procedures, airspace for radar vectoring, FUA concept, propose method of organisation and infrastructure (COL, NAV, RDR), authorisation procedure, functional oversight, monitoring and implementation of regulations applicable to approach and aerodrome control services, international coordination and cooperation concerning design and regulations related to TLA, CTR, ATZ, process and prepare legally defined acts to be issued and other duties and tasks as instructed by the Agency Director, Deputy Director and Division Director.

ATS Route Network Supervisor

Job Description

Performs supervisory activities relating to following: design and use of ACC airspace; route network designed to traffic flows; RVSM and FUA concepts and TSA design; ACAS operating procedures; involvement in establishment of requirements, organisation method and infrastructure (COM, NAV, RDR), authorisation procedure, functional oversight, monitoring and implementation of regulations related to ACC services and ATFM services; international coordination and cooperation concerning design and

regulations related to routes and air traffic flow management and other duties and tasks as instructed by the Agency Director, Deputy Director and Division Director

CAA of Montenegro does not publish academic or research work, yet in line with our responsibilities we publish only bylaws, instructions and safety orders for the aviation industry in Montenegro.

6) HUNGARO CONTROL

HungaroControl is a certified and designated ANS providers managing about 700 employees from which approximately 175 are air traffic controllers. HungaroControl’s main task is to provide air navigation services within Budapest FIR and for the KFOR sector for the designated airspace over Kosovo. HungaroControl operates a state of the art Air Traffic Control Center in Budapest and an ATM research and simulation center (CRDS). In addition HungaroControl is responsible for the design, validation and implementation of airspace development within Hungary, ATC procedures and other supporting services (e.g. CNS, calibrations and training) HungaroControl was established in 2003 and it has implemented several technical and operational updates for the entire Hungarian airspace. HungaroControl is active in ATM research and it intends to play an active role within SESAR 2 and for the implementation of centralized services. As a consequence of the task and activities described above, Hungarocontrol published much more than 5 publications and products within the past 10 years. The most recent and internationally recognized activities are the operational downlink of Mode S information, the MergeStrip software for innovative landing sequances with trajectory management and the remote ATS to be provided for the KFOR sector over Kosovo.

The introduction of satellite based ATM solutions is included in the LSSIP document and the planned contribution by the BEYOND project would be at the right time for know-how transfer and capacity building. Based on our excellent cooperation with the Hungarian National Transport Authority, HungaroControl could promote the use of EGNOS/GALILEO for e.g. satellite based landing procedures at our regional airports.

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties.	Y
HungaroControl envisages using Budapest University of Technology & Economics (BME) as Third Party. BME personnel will be In-kind contributions provided free of charge but BME travels will be borne by HungaroControl trough the "Other Direct Costs" budget. Third Party contribution as well as travels will be declared at Hungaro Control's level as per the Grant Agreement. In the case of HungaroControl may use additional Third Parties, the GA will be amended.	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

7) Participant ENAV

ENAV S.p.A. is the Italian Air Navigation Service Provider. It is a joint-stock company with a subscribed capital of 1.211,74 ML€, totally controlled by the Ministry of Economics and Finance and under the vigilance of the Ministry of Transport.

ENAV S.p.A. is one of the major European ANSPs, in terms of volume of controlled airspace, movements and hours of flight, investments in technology innovation and R&D.

ENAV S.p.A. has an outstanding expertise in Air Traffic Management operations and services, in the development and validation of new concepts and procedures for the continuous improvement of its performances, in assisting the Supply Industry to design and engineer new systems to safely support the Air Traffic Controllers in their highly demanding tasks.

The services supplied by the Company are the following:

Planning, management and provision of Air Navigation Services (ANS) including:

- Air Traffic Services (ATS), including Air Traffic Control Service (ATC),
- Flight Information Service (FIS) and Alerting Service (ALRS)
- Aeronautical Information Service and related publications (AIS)
- Meteorological Services for Air Navigation (MET)
- Communication, Navigation, Surveillance Services (CNS)
- Also associated supporting services:
 - Air Space Management Air space design and air traffic capacity planning
 - Flight procedures design and obstacles analysis
 - ATM system definition, acquisition, operation and maintenance of operational infrastructures;
 - Flight inspection services of radio navaids, broadcasting and surveillance systems for Air Traffic Services;
 - Training of ATM personnel

Staffed by 3,251 people (June 2011), ENAV has its H.Q. in Rome and has 4 Area Control Centres (Rome/Ciampino, Milan/Linate, Padua and Brindisi), 19 APPs, 25 Towers and 20 AFIS.

Publications

Airspace design

Among the core tasks that place the ENAV in National and International key positions is Airspace Design. Airspace Design is understood as the realization of instrument flight procedures, the definition and optimization of airspace and the development of the route system that serve departing, arrival and en-route traffic. The above mentioned activities,

together with supporting activities such as radar maps making, fall within ENAV's Airspace Design Department.

A careful organization of the airways allows, from the point of view of ATS services delivery, an effective and timely operational management of air traffic safety, offering aircraft operators the opportunity to plan more direct and efficient routes.

The continuous evolution required by the Air Traffic Management (ATM) flight procedures is one of the greatest opportunities for development thanks to a careful review of the network, both in the En-route and approach phase, according to criteria based on optimization and efficiency.

Moreover, ENAV responds in innovative and cutting edge ways to needs in airspace and flight procedure design also at an international level (FEP - Flight Efficiency Plan; R-NAV; PBN - Performance based Navigation; Free-route).

For the purpose of planning and safety of air navigation, the Airspace Design Department, also ensures for the acquisition and monitoring of mapping data, topographic and aero-photogrammetric data of obstacles, navaids and airport elements. These activities allow the development of obstacles' map and assess the compatibility of the objects in relation to the surface bounding obstacles defined by the ICAO Annexes 4 and 14.

Flight Procedures (TMA CTR SECTOR and AIRPORTS)

The key elements involved in flight procedures and /or Airspace Design are many and include: the operating environment in which they must be dropped (airspace conformation, proximity of other airports, presence of restrictions on airspace use), the hilly terrain and placement of obstacles, the location of the navaids, the type of operations and aircraft for which the procedures must be designed and the flight efficiency.

Regarding the improvement of efficiency, for some years now, Sector TMA CTR and in Airports (TCA) has been committed to ensuring that the new procedures would reduce flight times and ensure an optimum descent path whose goal is to support the Continuous Descent Operations (CDO).

The TCA Sector, also, is responsible for the analysis and evaluation of everything that may have a potential impact on existing flight procedures, for example, changes to existing airspace, blasting ordnance, air display, construction of major obstacles such as the increasingly widespread wind farms, thereby ensuring that the flight operations of civil aviation can always take place in full compliance with security policies set by national and international provisions. The TMA CTR and Airport Sector is actively involved on a national and international level by participating in key working groups and technical meetings that deal with flight procedures. In this context, the PBN procedures (Performance Based Navigation) are particularly relevant. These procedures, defined by ICAO, are based on new technologies for navigation through the use of GNSS (satellite navigation) and the high automation of the aircrafts on board equipment (FMS-GPS-IRU).

This approach, in the near future, will design a more flexible architectural airspace that will be even more harmonious to the needs of users, while maintaining safety standards. The key elements of this new architecture will be the P-RNAV procedures and approach procedures based on GNSS satellite systems, including special importance holding the

EGNOS system in which ENAV is actively involved with other key service providers in Europe.

Flight Inspection

Through the Flight Inspection procedures ENAV's control activities are managed in order to verify the national radio-assistance (Radar, VOR, DME, ILS, etc.) activities, in order to verify the radio signals broadcasted, which supply planes with the correct directions during the landing, take off and navigation phases.

This activity is carried out with a fleet of ENAV owned planes, including Piaggio Aero P180 Avanti II, which carry out an average 1800 hours in flight every year. These vehicles, purpose equipped, permit the technicians to carry out in flight controls without the need for support apparatuses being erected on the ground, thereby receiving real time results.

The efficiency of this service verifies that the radio signals broadcasted by the R/A are within the tolerance levels set out by international laws, thereby ensuring the most up dated security for air transport operators.

Currently ENAV is facing new challenges relating to the R-NAV validation procedures and supporting the calibration of the infrastructure, acquiring and installing the best possible equipment through a process of technological updating so as to meet this new challenge.

In regards to the research the Flight Inspection service has prepared a state-of-the-art laboratory inside one of the fleet's planes which is capable of carrying out experimental and validation tests of the new ATM projects.

ENAV Flight Inspection and Validation Department has the capability to validate ATS procedures based on conventional navaid (e.g. VOR/DME, NDB, TACAN) as well as RNAV and GNSS procedures according to the latest ICAO documents (DOC 9906).

PBN

Performance Based Navigation (PBN) represents a fundamental shift from sensor-based to performance-based navigation. ENAV navigation work is contributing to this evolution worldwide, by:

- In Malaysia: Redesigning and restructuring the Kuala Lumpur Terminal Airspace and the entire KL FIR in accordance with the ICAO PBN concept;
- In Dubai: Supporting Dubai Air Navigation Service, DANS, for the integration of Dubai CTA Airspace improvement. The airspace changes (SID & STARs), within Dubai CTA and adjacent airports, will directly support the introduction of PBN concepts;
- In Libya: Addressing the participation of the Libyan Civil Aviation Authority to GNSS programmes for the implementation of PBN within Libyan airspaces;
- Exploiting the benefits of GNSS applications within Libyan airspace airports.

Projects

MEDUSA

MEDUSA is an Euromed GNSS programme funded by EC, started on 2012 and assisting the Euromed countries (namely Algeria, Morocco, Tunisia, Egypt, Lebanon, Israel, Libya, Syria, Jordan, Palestine) in their path towards the exploitation and operational adoption of EGNOS services in civil aviation and freight transport (identified as priority applications in METIS project, MEDUSA's precursor). Main objectives were:

- Sharing best practices, for enabling the countries to start the preparation and the implementation of necessary steps and enablers, in view of the EGNOS service coverage.
- Contributing to technological transfer and capacity building for service exploitation.
- Establishment of a long-term permanent structure named GEMCO (Galileo Euromed Cooperation Office), acting as catalyst and incubator of E-GNSS initiatives in all domains and involving the Euromed countries.
- ENAV has contributed to the project with PBN experts and aircraft fleet for procedure validation. In particular the following tasks have been led by ENAV:
 - Flight validation for GNSS approaches in Monastir Airport
 - GNSS procedure design for Lebanon Airport
 - Creation of a draft GNSS monitoring methodology
 - Contribution to the development of a GNSS International Agreement process

BLUEMED

ENAV is part of the BLUEMED (together with Greece, Malta and Cyprus) that is the Mediterranean Functional Air Block, the initiative is opened to the participation of other neighboring countries on the Mediterranean area, today Israele is participating as non EU country.

The Implementation phase (started on 2014) covers also PBN aspects, in particular:

- Set up of a BLUE MED PBN TF
- Elaboration of a BLUE MED PBN implementation policy
- Elaboration of a BLUE MED FAB roadmap composed on 2 phases:

First phase:

- Approach Procedures with vertical guidance (accordingly to ICAO resolution)
- Updated airport list maintained at Interim Deployment Programme level

Second phase:

- Harmonization plan (including analysis of next PBN IR)
- Overall FAB reporting provided to EC under the Interim Deployment Steering Group framework
- Elaboration of ICAO conformity guidelines

SENECA

SENECA is the National R&D programme on Satellite Navigation Services for Civil Aviation. Is a program committed by ENAV and funded by Italian Space Agency (ASI) with the participation of a consortium of major Italian Industries in Airspace (Telespazio, Selex-ES, TAS-I, IDS), Universities and SMEs. Whose main objectives were:

- Support to the introduction of GNSS applications for the Italian Civil Aviation
- Preparation for the introduction to Galileo
- Promotion of satellite navigation innovation and research.

ACCEPTA

ENAV is a member of the The ACCEPTA (ACCElating EGNOS adoPTion in Aviation) project Consortium, participated by some of the main ATM stakeholders in the satellite sector. The project introduces the EGNOS aviation applications in the key niche markets interested in the EGNOS use. The overall project concept is the acceleration of the EGNOS adoption in the aviation sector, with a wide-scale real-life adoption of the EGNOS-enabled LPV approaches throughout European airports where the SBAS signal is available and certified.

Furthermore, ENAV participates in PROMETEO (“Pre-operational implementation assessments of EGNOS based procedures for aircraft and helicopters operations in Northern Italy”), which contributes to accelerate EGNOS adoption in the aviation sector in Italy, addressing the use of EGNOS for both aircraft and helicopters operations.

GNSS Monitoring

ENAV coordinates a GNSS Monitoring Drafting Group created under the Navigation System Panel branch, whose main objective is preparing guidance material on GNSS monitoring and update relevant ICAO documentation.

Infrastructure/ Technical Equipment

ENAV - Academy

ENAV is the only company in Italy authorized to select, train and provide continuous professional development to the various experts involved in civil Air Traffic Control services, such as, Air Traffic Controllers, Air Traffic Assistance Specialists, Meteorologists and Flight Inspection Pilots.

Due to the strong importance given to professional training and continuous development, ENAV has been able to reach the highest of levels amongst international service providers for both quality and quantity of services provided. It is by virtue of such a position that ENAV has been asked to export and share their knowhow with other foreign service providers. Professional training and continuous professional development are carried out through ENAV's Academy. This aeronautical educational centre of international merit provides a specialized training service of a very high level in accordance with both nationally and internationally recognised educational methodology and technology standards. The training offered by the Academy is available to professionals strictly connected to the Air Traffic Control industry and professionals working in the various roles of the aeronautic industry (eg. airline companies, airport management companies, air traffic services managers, aeronautic industries and governmental entities of the air transport industry).

ENAV Academy is located close to the Aeronautical Technology District, equipped with the most advanced technologies, including: 2 radar simulation rooms, 1 procedural simulation room, 8 3D 270° control tower simulators, 1 CRJ certified flight simulator, and 14 Part Task Trainer work stations.

The centre also has a canteen and 32 guest rooms to accommodate 64 course participants.

The main training courses provided are:

- ANS Training (Basic, advanced and continuous training for personnel employed in ATC/ATS operations)
- Technological Training (Training courses on CNS/ATM systems for ATSEP technical personnel)
- Managerial and Administrative Training (Training and updating on ATM topics for non-ANS personnel, seminars/courses and executive education on Aviation Business Management)

All training courses provided by ENAV are of course potentially tailored to meet the customer needs.

8) Participant Kosovo ANSP

Prishtina International Airport-Air Control “Adem Jashari” is a Joint Stock Company that provides air navigation services for the entire territory of Republic of Kosovo up to flight level FL 205.

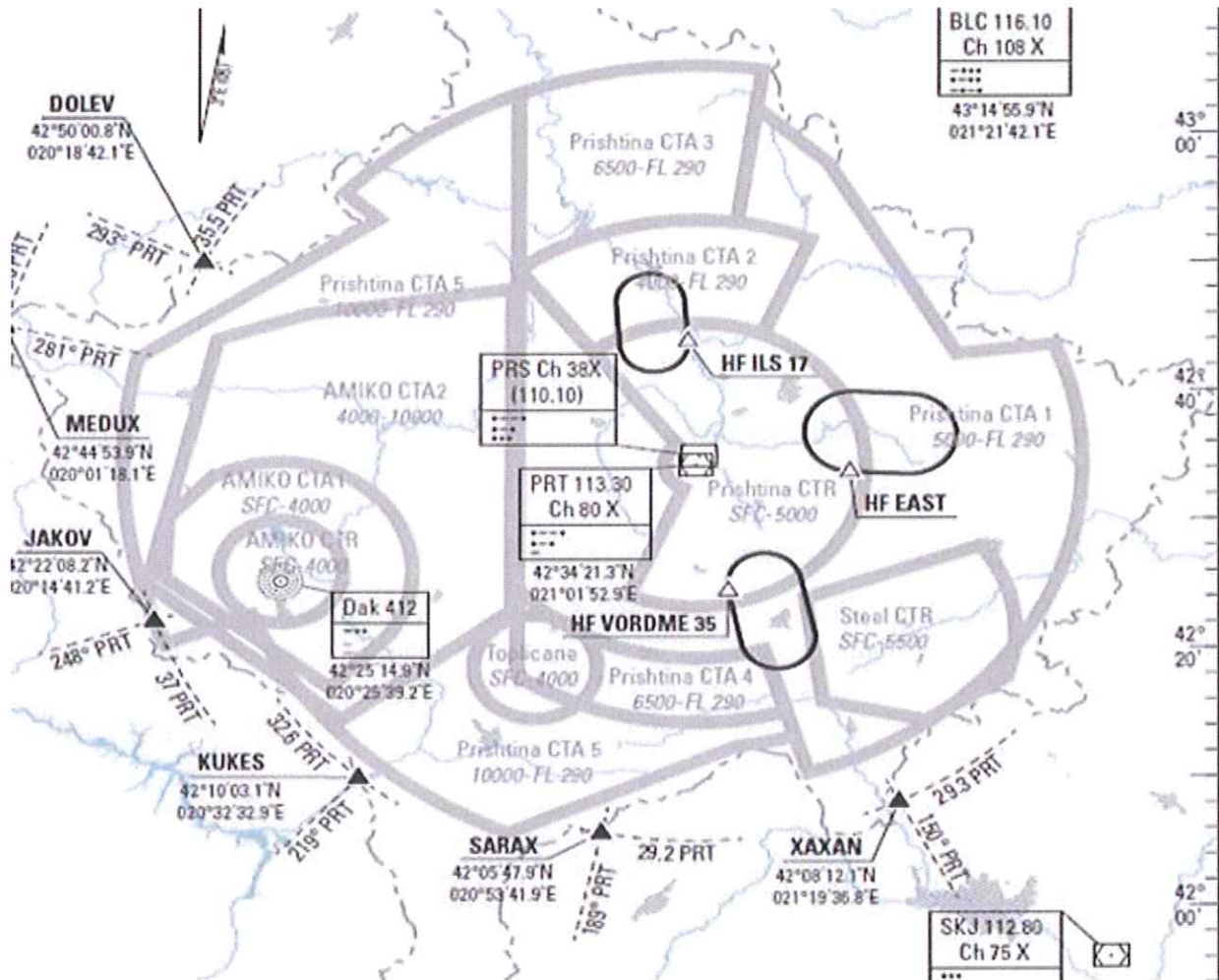
Moreover our organization is responsible for IPD Instrument Procedure Design for the airspace of Republic of Kosovo.

Note: UPPER Airspace from FL 205 to FL 660 will be opened for commercial from 03 April 2014. The service provision will be covered by Hungarocontrol (as per NATO and Hungary Agreement)

EXISTING SERVICES

AIR Navigation Services are provided 24/7:

- Tower (ADI)
- Approach (APP&APS)
- CNS
- AIS Aeronautical Information Services
- MET and
- Search and Rescue Coordination



EXISTING AIRSPACE ORGANIZATION:

- Prishtina Control Zone (CTR)
- Prishtina Control Area (CTA 1–4), class D airspace
- Prishtina CTA 5, class F (expected to become D)
- Limited to XAXAN Entry Corridor
- SARAX Exit Corridor and

- EXISTING INFRASTRUCTURE
- PSR/MSSR Mode M
- MSSR Mode S
- DVOR/DME
- ILS

- VHF/UHF Radio System
- VCSS Voice Communication Switching System
- Voice Recording System
- ATIS
- AWOS
- ATM

Personnel involved in BEYOND

Etrit Mehmeti is a Supervisor Air Traffic Controller. He works at Pristina International Airport - Air Control “Ademi Jashari”, in the Air Navigation Service Provider.

Education:

01.10.2010 – In

Progress Master of
Economy Sciences

01.09.2005 – 29.09.2010

Bachelor of Management and Informatics

9) INECO (Ingeniería y Economía del Transporte, S.A.)

INECO (Ingeniería y Economía del Transporte, S.A.) is a Spanish consultancy and engineering firm highly specialised in the transport industry, since its creation in 1968. The firm’s activities embrace all forms of transport and cover all RTD stages, from feasibility studies to work supervision and control, including facility and infrastructure maintenance.

INECO’s share capital is constituted by Public Entities, all of them related to transportation. The main shareholder is Aena (the Spanish Airport and Air Navigation Services Provider) with a 61% of participation. INECO’s link to Aena provide it access to that company’s know-how with respect to air navigation and airports operation and exploitation.

Main tasks and relevant background

In the BEYOND project, INECO will bring its expertise and experience in approach procedure design, in Satellite Navigation, and in particular in SBAS-enabled approach procedures.

Ineco will participate in WP Capacity Building for design of SBAS-approach procedures where our experts will participate in a number of training sessions, exercises and workshops.

At a European level, INECO has participated in Air Transport projects for DG-TREN and DG-Research of the European Commission as well for the GSA, often as project co-ordinator (e.g., GIANT, GIANT-2, ACCEPTA). INECO has also a large participation, as a team member, in other related RTD projects like OPTIMAL, EPISODE3, RESET, FRIENDCOPTER and others. In all of these projects INECO has a key role in the definition of the airspace and operational procedures, system

and models development and the concept Validation Exercises. In addition, INECO has provided services to EUROCONTROL within the EATMP Program. Recently Ineco has led the “GSC definition study” managed by EC and has been awarded by GSA with a framework contract for “European GNSS User Support” also known as Lot 3 “EGUS Proposal”

Key personnel involved

- Luis Chocano received his MSc in Aeronautical Engineering from the Polytechnic University of Madrid. He was responsible of the Satellite Navigation Department in Ineco and currently manages all the GNSS-related projects at Ineco. He has been involved in several EC R&D projects, including Project Coordination. He also collaborates with the EC as independent expert for the proposal evaluation in the FP in the Area of Aeronautics and Space. He will act as project manager of this project for Ineco.
- José María Colás, Aeronautical Engineer from the Polytechnic University of Madrid. Airspace senior expert and part of the Procedure Design Group of INECO where he has been the designer of SID, STAR and Approach procedures of several Spanish and international airports like Milan-Malpensa as well as other airspace design related activities. He is also Associate Professor of Air Navigation at the Aeronautical Engineering School of the Polytechnic University of Madrid, as well as lecturer and PANS-OPS Expert in the design of instrument flight procedures based on area navigation (RNAV) course for the European Commission.
- Jorge Blanco, Aeronautical Engineer from the Polytechnic University of Madrid. Airspace design

expert and Flight Procedure Designer with high expertise in technical, operational, validation, planning, team-building, coordination and management fields in relation to International ATM projects. Wide operational expertise in the ATM fields. Professor at the university on several courses associated to the Air Traffic Management. Particularly, Flight Procedures Design, ATS in airports, ATFCM, Capacity Studies, Introduction to the Air Navigation Services, Geodesy and Cartography.

10) Participant Directorate General of Aeronautics and Space Technologies, Ministry of Transportation, Communications and Maritime Affairs (Turkey MoT)

Mission and Responsibilities of Republic of Turkey Ministry of Transport, Maritime Affairs and Communications, General Directorate of Aeronautics and Space Technologies is described in the law as follows:

- The development and establishment of Aerospace industry and Space technologies,
- Establishment, operation and processing of the aerospace industry and the development of space science

- Prepare an offer in coordination with relevant agencies and organizations for the acquisition of skills in national aeronautics, space technologies and space policies, strategies and objectives.
- Prepare the rights, principles and procedures for the management and period usage related with space business / industry and work towards the fulfillment of these rights and services related to the requirements of national obligations.
- To prepare an application program in parallel with the national aeronautics and space technologies, space policy, strategy and objectives, carry out all activities necessary for the implementation of this program.
- To provide the necessary co-operation and co-ordination for this purpose, relevant agencies and organizations
- To make arrangements for space technologies and systems and the aerospace industry, setting standards and executing inspection, approval, certification, and authorization services
- To make, build, construct and operate Satellite, spacecraft design and testing centers, satellites, launch vehicles and systems, space vehicles, simulators and all kinds of products, technology, system, plant, tools and equipment of aerospace and aeronautics, including space platforms.

Turkey MoT main tasks in the proposal

Turkey MoT will support TPZ in all the necessary efforts within the scope of this proposal in Turkey. They will coordinate all the government organizations and institutions in Turkey that will be necessary for the scope of the project.

Personnel involved in BEYOND

Ali BAYGELDİ

Electronics Engineer. He worked between 1996 and 2005 at TurkSAT as Ground Control Station Orbit Control Engineer. Then he continued his career at Turkish Telekom and worked in Information Technologies and Networking for 5 years between years 2005 and 2010. After Turkish Telekom, he started working for the in Ministry of Transport Maritime Affairs and Communications and took important roles in various programs in the General Directorate of Communications. Since 2012 he acts as Head of Satellite Design and Integration Department in Ministry of Transport Maritime Affairs and Communications, Directorate General of Aeronautics and Space Technologies.

Mehmet ÖZGEDİK

Electrics and Electronics Engineer. He worked between 1996 and 2002 at TurkSAT as Ground Control Station Orbit Control Engineer. Then he continued his career at Turkish Telekom and worked in Information Technologies Department between years 2002-2010. After Turkish Telekom, he started working for the in Ministry of Transport Maritime Affairs and Communications and worked in various programs in the General Directorate of Communications between years 2010-2012. Since 2012 he acts as Manager in Ministry of Transport Maritime Affairs and Communications, Directorate General of Aeronautics and Space Technologies.

Yaşar IŞIK

Electrics and Electronics Engineer. Between years 1996 and 2005, he worked at TurkSAT in Satellite Frequency Coordination and Satellite Ground Station Equipments. Then he continued his career at Turkish Telekom working in similar field between 2005-2010. After Turkish Telekom, he started working for the in Ministry of Transport Maritime Affairs and Communications in the Information Technologies Department between years 2010-2012. Since 2012 he works as Engineer in Ministry of Transport Maritime Affairs and Communications, Directorate General of Aeronautics and Space Technologies.

11) Le Centre Régional Africain des sciences et technologies de l'espace en langue français (CRASTE- LF)

The African Regional Centre of Space Sciences and Technology in French Language (CRASTE-LF), affiliated to the United Nations, was established in Morocco at the end of October 1998. Thirteen African States have participated in the establishment of the centre, and at the same time approved the statutes of the centre. The centre is an high-level research and educational institution, it is established in Mohammedia School of Engineers of the Mohamed V University in Rabat (EMI). In order to meet its programs, the centre has the active support of major national institutions such as the Royal Centre for Remote Sensing (CRTS), the Institute of Agronomy Veterinary Hassan II (IAV), the National Institute of Posts and Telecommunications Space (INPT) and the Directorate of National Meteorology (DMN). The objectives are:

- Increase knowledge in the field of Science and Technology Space by organizing training courses, seminars, workshops, conferences and experts' technical meetings to improve the technical skills of specialists, teachers, administrators and policy makers and to keep them informed on the progress made in the implementation of space technology
- Assist countries in the region in the development of endogenous capacity in space science and technology
- Strengthen national and regional capacities
- Promote cooperation between developed countries and Member States and between those States
- Develop expertise to Member States and regional institutions upon request.
- Collect and disseminate information related to space and space technologies.

In this Context, the CRASTE-LF had organized:

- 17 sessions of Postgraduate courses (Master Degree) in Space Sciences and Technologies in Remote Sensing and GIS, Satellite Communication and Satellite Meteorology and Global Climate.
- 12 short courses on Space Techniques and its applications.
- Twenty two International and Regional Workshops, Conferences on Space Tools for development.
- Participation in some workshops and events organized by the Office for Outer Space Affairs of the United Nations (UN-COPUOS) by presentation some papers on capacity building in different fields of space sciences and technology.

CRASTE-LF main tasks in the proposal

CRASTE-LF will take part in two work packages WP 3300, WP 3400 and WP 3500, and consist on following tasks:

- WP 3300: Participate in the identification and collection of information on GPS permanent stations in Morocco.
- WP 3400: Participate/contribute to activities that will be located in Tunis (Tunisia), organized by Telespazio with the support of GEMCA. The CRASTE-LF makes a presentation and promotes the event through CRASTE-LF network and can also propose other speakers from North Africa and encourages them to participate in this workshop.
- WP 3500: The CRASTE-LF will organize with partners including Telespazio a technical workshop focused on the use of EGNOS for road and Intelligent Transport Systems (ITS) applications, to be held in CRASTE-LF.

Personnel involved in BEYOND

Professor BOUZIANI Mourad, Ph.D.

ACADEMIC BACKGROUND

- 2007: Ph.D. Degree in Geomatics, from the University of Sherbrooke, Sherbrooke, QC, Canada.
- 2004: Master Degree in Geomatic Sciences, from Laval University, Québec City, QC, Canada.
- 1996: Engineering Degree in Surveying Engineering, from IAV Institute, Hassan II, Rabat, Morocco.

PROFESSIONAL EXPERIENCE

- Since 2013: Coordinator of the Master on GNSS (Global Navigation Satellite Systems) established by the CRASTE-LF (African Regional Center for Space Sciences and Techniques) affiliated to the United Nations.
- 2010-2014 : Professor and Researcher, Head of Department of Geodesy and surveying, Department of Geodesy, School of Geomatic Sciences and Surveying Engineering, IAV Hassan II, Rabat (Morocco).
Research Areas: Spatial Geodesy, GPS/GNSS applications, GNSS Permanente Stations, Positioning and navigation techniques, Integration of GNSS and Geographic Information Systems.
- 1999-2010 : Professor and Researcher, Department of Geodesy, School of Geomatic Sciences and Surveying Engineering, IAV Hassan II, Rabat (Morocco).
- 1996 –1999: Land Surveying Engineer in projects of highways Construction: Localization and setting out with spatial techniques using GPS, Land registration of parcels within highway projects, Mapping and surveying.

Dr. Lansari Abdeldjelil

Married with 3 children, living in Rabat - Morocco

Current Position: Deputy Director at African Regional Centre of Space Sciences and Technologies in French Language, affiliated to the United Nations (CRASTE-LF) since October 2010

Bibliography:

Actually Deputy Director at CRASTE-LF since October 2010 and in charge of carrying out the following main missions: A / managing and attending training of Master of Space Sciences and Technologies with four (04) options 1/ Remote sensing and GIS, 2 / Telecommunications by Satellites 3/Meteorology by Satellites, 4 / Atmospheric and Space Sciences, B / Organizing of scientific events (conferences, workshops, short courses, expert missions to countries seeking, ...) involving space tool in thematic interests having a direct impact on the development socio-economic development of African countries and non-member of CRASTE-LF (Climate change - impacts and adaptation, water resources, agriculture, integrated territorial management of natural disasters - before, during and after - desertification, drought. ...)

During my scientific occupation from 2000 to 2007 at the National Center of Space Techniques (Algeria), I have supervised more than fourteen (14) memories work of post-graduation and graduations studies in physical remote sensing and applications domains. My contribution in publications approaches twenty (20) papers in international and national rank. Also I have been in charge of teaching in post-graduate and graduate curricula.

I have been Director of Studies in charge of space applications at the Algerian Space Agency, a government agency, from July 2007 to September 2010, and joined after that the CRASTE-LF executive team. Up to now I have managed seven (07) Master-Sessions in Space Sciences and Technologies at CRASTE-LF, four (04) in Remote sensing and GIS, two (02) in meteorology by satellite and global climate and one (01) in Global Navigation Satellite System (GNSS).

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- Bouziani M., Bounajma N., Jouan T., Nasri M. (2012). Integration of Mobile GIS and GNSS for the delimitation operations of land registration in Morocco. 9th Symposium on Location Based Services, Munich, Germany, 16-18 October 2012.
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El-Ayachi M., Bouziani M., Semlali E., Ait Haddou M. (2009). Stratégie d'usage du GPS aux plans cotés. Congrès de l'union arabe des géomètres, Beyrouth (Liban), 29-30 juin 2009.

12) ARAB INSTITUTE OF NAVIGATION (AIN)

The Arab Institute of Navigation (AIN) is an Egyptian non-governmental organisation whose objectives are:

1. Developing a scientific community for all those who are interested or having any activity related to Maritime, Air or Land Navigation and further development, in this context.
2. Being engaged with the different Navigational Associations as being a member of the International Association of Institutes of Navigation.
3. Following up the latest technologies and the newest achievements in: General Navigation, Electronic Navigation, Satellite Navigation , Satellite Communications, VTS ... etc.
4. Being updated to all the scientific and technological developments in the group of sciences that are related directly to Navigation: such as Astronomy, Charts, Oceanography, Electronics and communications.
5. Giving special interest to the Safety of Navigation developments and the safety of off shore units such as: mobile and fixed off shore drilling units and related service marine units.
6. Following the newest trends in the Fire Fighting Equipments and pollution prevention onboard maritime units, keeping the sea safer and cleaner.
7. Establishing a Maritime Library that contains both old and latest reference books and nautical publications related to Navigation and other related sciences.
8. Establishing a Maritime Museum that contains Navigational tools and Instruments.

AIN activities

Activities of AIN include, organizing international and local conferences, seminars and scientific meetings. The outcomes of the researches are published in its annual journal and shipping publications.

AIN is an active member of the International Association of Institute of Navigation and a remarkable institute among operational bodies in the field of maritime industry in Egypt.

AIN main tasks in BEYOND

AIN will be involved in Work Packages: 3400 GNSS Commercialization tour and 3500 GNSS virtual incubator.

The role for AIN is to:

- Take part/contribute to the event 1 (Middle East) and event 2 (Maghreb/North) of WP3400
- Organize and take part to the technical workshop in Middle-East for 30-40 participants related to the Action 2/Middle-East of WP3500.

In this respect AIN has a consolidated experience in organizing local and international Conferences and exhibitions. These are some examples:

LOCAL CONFERENCES

- 2003, "Pivotal Role of Ports Located North and South of Suez Canal"
- 2006, "Port Said and International Container system"
- 2007, "Red Sea Ports Authority Conference"
- 2009, "Transport Operation in Rivers and Sea Ports"
- 2009, "Future Development and Investment in East Port Said"
- 2011, "Multimodal Transport and Supply Chain"

INTERNATIONAL CONFERENCE and EXHIBITION MELAHA

- 2002, Satellite Navigation Developments and hydrographic, aerial photography and remote sensing
- 2004, Satellite Navigation Developments and Applications
- 2006, Inland Water Transport
- 2008, GNSS the Next Frontier
- 2010, Location Technologies and Solutions: The Next Frontier
- 2012, the 14th IAIN Congress 2012 "Seamless Navigation (Challenges and Opportunities)"

Personnel involved in BEYOND

Dr. Refaat Rashad is the President of the Arab Institute of Navigation (AIN) since 2001. He is also Chairman of the International Transport Research Center (INTREC).

Dr. Rashad is currently a **Member of PNT Advisor, board - NASA** for the second consecutive round.

Dr. Rashad has served as a professor of navigation and hydrographic surveying and head of the postgraduate studies department of the Arab Academy for Science and Technology and Maritime Transport in Alexandria, Egypt.

He supervised a number of M.Sc. thesis in the field of navigation, surveying and marine environment protection.

He is still supervising many researches leading to M.Sc. and PhD. thesis.

He was an associate professor in the Faculty of Marine Science at the King Abdulaziz University in Jeddah, Saudi Arabia.

He served as a United Nations Development Program / International Maritime Organization expert and team leader for a project to establish the marine academy in Chittagong, Bangladesh.

He has also been a master mariner for merchant marine ships based in Egypt and Lebanon.

Dr. Rashad holds bachelors, masters, and doctoral degrees in maritime studies from the University of Wales, UK. He is a fellow of the Royal Institute of Navigation (London) and has served as chief editor or editorial staff for various maritime journals.

Researches and Scientific Studies

- **2004**, GNSS and its impact on Satellite Navigation in Egypt, Journal of Arab Academy for Science & Technology & Maritime Transport, July 2004.
- **2007**, Modeling Differential Global Positioning System Pseudo range Correction. Journal of AAST&MT, No.63, Jan. 2007.
- **2012**, The European Geostationary Navigation Overlay Services (EGNOS) An Augmentation System for GPS, Journal of the Arab Institute of Navigation, No. 28. January 2012.
- **2012**, Emerging Application of Global Navigation Satellite Systems, Journal of the Arab Institute of Navigation, No. 28. January 2012.
- **2014**, Resilience and Challenging of GNSS in Maritime Application, Journal of the Arab Institute of Navigation, No. 31. July 2014

Books and Teaching Notes

- **1988**, Electronic Aids to Navigation, 300 pages. Publisher, Almaarif Est. Alexandria.
- **1993**, Navigation Systems and Instruments. 500 pages. Almaarif Est. Alexandria.
- **2003**, Satellite and Electronic Navigation.
- **2006**, Satellite and Electronic Navigation, book. Page 360 publisher, Almaarif.

Notes: - in Navigation, Hydrographic Surveying and Traffic Management Systems.

AIN previous relevant projects:

- **Observer Member** of ICG Meetings (2013).
- **European MEDA1** project regards GNSS in MEDA countries (2006-2009),
- **Technical Report of Marine Jetty** in Port of Damietta to Export Ammonia. ENDORAM Group (2006).
- **MLC** project (2006).
- **Protection of Gulf Suez from Marine Pollution** (2004).

AIN facilities

AIN has a Conference Room for 40- 50 pax (theater style) with full equipments suitable for any event like (Conferences – Seminars – Workshops)

13) The Applied Research Institute Of Jerusalem (ARIJ)

Founded in 1990, the Applied Research Institute - Jerusalem (ARIJ) / Society is a non-profit organization dedicated to promoting sustainable development in the occupied Palestinian territory and the self-reliance of the Palestinian people through greater control over their natural resources. ARIJ works specifically to augment the local stock of scientific and technical knowledge and to introduce and devise more efficient methods of resource utilization and conservation, improved practices, and appropriate technology.

ARIJ represents 23 years of combined organizational experience in the Palestinian territory in the fields of economic, social, natural resources management, water management, sustainable agriculture, and political dynamics of development in the area. ARIJ plays an active role in the local community as an advocate for greater co-operation among local institutions, as well as international and non-governmental organizations. In its capacity as a national research institute, it frequently provides current data and research necessary to the formulation of position papers and policy strategies on such issues as land and water resources.

ARIJ is a non-governmental organization registered as a Palestinian NGO at the Ministry of Interior under No. BL-478-B. ARIJ is also registered at the Ministry of Finance as a VAT exempted organization under No. 732100037. In addition to legal registration ARIJ is recognized by the Ministry of Higher Education as a research institute specialized in environmental, agricultural, and water researches under No. 2/M.B.E/99.

Vision

ARIJ's vision is "Towards a Sustainable Palestine". This vision reflects the national aspiration of every Palestinian to live in an independent and self-sustaining Palestinian state that has complete sovereignty over its natural resources and a comprehensive development strategy within a framework of democracy, transparency and good governance.

Mission

As an NGO with experience of more than 23 years in the field, ARIJ continues to articulate its clear mission goals, which are understood by all the stakeholders. The objectives and implementation plans of ARIJ, developed jointly by senior management staff and other stakeholders, spring from these mission goals:

- Promoting sustainable development in Palestine.
- Promoting self-reliance of the Palestinian people through greater control over their natural resources.
- Augmenting the local stock of scientific and technical knowledge.
- Introducing and devising more efficient methods of utilization and conservation of resources, improved practices, and appropriate technology.
- Promoting values of integrity, principles of transparency and systems of accountability in the various Palestinian sectors.
- Promoting green technology through the use of alternative and renewable energy.

Objectives

In order to meet its mission, ARIJ has developed the following objectives:

- To effectively disseminate information and knowledge for Palestinian society.
- To actively participate in the identification and understanding of community problems.
- To identify and adapt appropriate technologies to the needs of communities and the society as a whole.

- To achieve socio-economic development, by providing better access to food, and encouraging better management and utilization of land, water, and other natural resources.
- To play an active role in the development of the human resources needed to adapt and use technology.
- To create income-producing opportunities for the community through technology transfer and through teamwork between scientists in various institutions.
- To catalyze coordination and cooperation between the various groups and institutions working in economic development, and to facilitate the creation of a multi-sector planning unit.
- To address current governance challenges facing the Palestinian community by focusing on applying participatory, transparent and accountable, effective and equitable approaches to development.
- To contribute in introducing and developing of alternative and environment friendly technology.

ARIJ main tasks in BEYOND

ARIJ will be involved in Work Packages: 3300 GNSS stations network, 3400 GNSS Commercialization tour and 3500 GNSS virtual incubator.

The role ARIJ is to:

- Support in identifying, gathering info and possibly accessing to the GPS stations network in Palestine (including the receiver from METIS, now integrated in the EDCN network)
- Take part/contribute to the event 2 of WP3400
- Take part/contribute to the workshop related to the action 2 of WP3500.

Personnel involved in BEYOND

Fadi Isaac.

More than 14 years of IT Management, including experience in positions as Software Engineer, MIS manager, strategic direction, planning and operation of data centers and system administrator.

Skilled in evaluating current and future technologies, information systems management, analysis, troubleshooting, testing, documentation, system and program security, systems analysis, hardware and software installation, applications and program management, technical support, and network administration.

A clear and direct project manager, skilled in developing and maintaining a broad vision, cultivating excellent relationships, and communicating effectively across the organization to build focused and productive teams.

George I. Khair.

Web and application & Developer – GIS Application Developer

- Key Responsibilities:
- Designing & Developing windows applications using vb6 ,vb.net and C# on top of Access database or SQL server 2000
- Mobile GIS applications development for iPhone and android
- Designing & Developing web applications and web sites using different development and designing tools like Visual Studio .NET, Adobe Photoshop, Macromedia Dreamweaver MX, PHP and ASP.NET.

- Developing websites for GIS purposes based on Geo-Server.
- Designing and developing databases using different kinds of database engines.
- Maintaining all the Operating websites.
- Managing the operation and maintenance of the LAN/WAN systems.
- Solving technical issues and providing the maintenance and support to users.
- Identifying and testing new software and hardware for improving and upgrading system performance.
- Servers Monitoring & Troubleshooting.

Issa M Ibrahim

A well-rounded individual with a diverse background and a proven track of success. Has co-authored several publications and participated in the various training programs and workshops.

Professional Experience:

Applied Research Institute of Jerusalem (ARIJ) (1994 – 1998)

Research Assistance... Responsible for data entry, collecting and analyzing data such as environmental, industrial, agricultural and population. Created database for the collections through the Geographical Information System (GIS) using ARC-View and ARC-Info. Monitored and analyzed the satellite images and aerial photos (converting from Raster data into Vector data). Performed map design, road system, land use, soil, geological, demographical maps. Co-author of several publications.

Mohawk College, Hamilton, Canada (1998 – 2000)

Research Assistant... Assisted the GIS department in converting data between different coordinating systems. Designed road systems and Gas Station maps. Interoperability between the GIS and AutoCAD systems in term of linking different databases. Designed engineering maps for land development, municipal development, and transportation development.

Applied Research Institute of Jerusalem (ARIJ)

GIS Specialist (2000 –2005)

Head of Geographic Information System (GIS) (2005 –Present)

ARIJ previous relevant projects

1. Assignment name: Road and Transportation Masterplan for Gaza and the West Bank

Country: Palestine

Name of Client: Systematica

Start date (month/year): July 2013

Completion date (month/year): Ongoing

2. Assignment name: Status of the Environment Report (SOER): Update of the Palestinian Environmental Information System (PEIS)

Country: oPt

Name of Client: Swiss Agency for Development and Cooperation (SDC)

Start date (month/year): October 2005

Completion date (month/year): May 2007

3. Assignment name: Village Profile and Azahar Needs Assessment in Bethlehem Governorate

Country: Palestine

Duration of assignment (months): 18 months

Name of Donor: Spanish Agency for International Cooperation (AECI)

Start date (month/year): October 2008

Completion date (month/year): March 2010

4. Assignment name: Food Security Information System for Tubas, Bethlehem, and Hebron Governorates (FSIS)

Country: Palestine

Name of Client: Spanish Agency for International Cooperation (AECI)

Start date (month/year): January 2009

Completion date (month/year): December 2010

5. Assignment name: Building Road Maintenance Management Capacity using Geo-Informatics Systems in the Ministry of Public Works and Housing MOPWH

Country: Palestine

Name of Client: United States Agency for International Development (USAID)

Start date (month/year): December 2009

Completion date (month/year): February 2011

14) Participant Helios

Helios is an award-winning, internationally recognised management and technical consultancy, working in transport and technology domains, including air traffic management, airports, space, telecoms, rail, maritime and defence. The company was established in 1996 and joined Egis, an international engineering and infrastructure group, in January 2013. As an acknowledged market leader, we help our customers deliver technology, operational and business improvements. Our team of consultants and specialists have worked with government bodies and agencies, regulators, service providers, manufacturing industry and investors, and been at the forefront of some of the industry's most exciting developments.

Helios' headquarters is in Farnborough in the UK, with offices in Dubai (UAE) and in Žilina (Slovakia). Our broad staff profile means that we can draw on internationally-recognised expertise of senior business managers, economists, operational experts, safety and security professionals, systems engineers and technology specialists to create bespoke multi-disciplinary teams tailored to meet customers' needs.

Helios has a particular reputation within ATM as the market leading consultancy supporting numerous Air Navigation Service Providers (ANSPs) and Regulators globally as well as Industry parties and international organisations. We have worked extensively for Eurocontrol and the European Commission which has given us a broad and multinational perspective.

Helios has been supporting the European and UK government in the area of GNSS since the beginning of the Galileo programme in 1999. We support a wide range of public and private sector clients in the downstream application of GPS, EGNOS and (in the future) Galileo as well as other satellite navigation services. These include applications in all transport modes as well as consumer Location Based Services (LBS) and public safety.

Helios has been closely involved in the business case and safety case work for RNAV approaches for several years. Through our work in GIANT, HEDGE, HEDGE NEXT,

ACCEPT, MEDUSA and FilGAPP we have developed advanced methodology that allows the benefits of new applications, such as LPV, to be accurately assessed. We have supported the assessment of benefits across a wide range of market segments including aviation, road and rail.

Helios main tasks in the proposal

Within this proposal, Helios are responsible for development of safety assessments and cost benefit analysis. These are two areas in which Helios has developed renowned expertise and has supported organisations such as Eurocontrol and the European Bank for Regional Development with implementation of projects both within Europe and further afield. The team that Helios has proposed has skills in both the needs of Cost Benefit analysis and is actively participating in the implementation of new aviation applications that take advantage of space based navigation.

Personnel involved in BEYOND

Philip Church is a Principal Consultant with Helios and an experienced navigation consultant with over 13 years' experience of assessing aviation navigation applications. Philip has led the development of safety assessments for the implementation of GNSS applications for use by aircraft – in particular helicopters – and is familiar with the issues of certification and costs that impact their uptake. He is providing support to the European GNSS Agency on the strategic monitoring of GNSS deployment within aviation as an enabler for PBN and has been involved with several discussions with the European Aviation Safety Agency over the certification requirements for enabling GNSS capabilities on aircraft. He has assessed the implications of RNAV on airspace and undertaken several associated cost benefit analyses. Philip has worked extensively in the development of cost benefit analysis, safety assessments and standards developments applicable to the expansion and uptake of GNSS applications within aviation. He is a regular attendee at the RNAV Approach Implementation Support Group (RAISG) assisting States to address the certification and regulatory aspects for the implementation and utilisation of new RNAV based procedures. He is also responsible for Helios' projects implementing LPV procedures in the following States: Ireland, Norway, Sweden, Denmark, Belgium, Croatia and Romania.

Michelle Mason is a consultant at Helios, particularly skilled in analysing complex scientific and technical problems and supporting business cases. She has worked on a variety of projects for EUROCONTROL. She has also drafted articles for the EUROCONTROL Safety Nets team newsletter, "NETALERT", undertaken analysis and presentation of the results of Helios' ATM Industry Survey and was the co-ordinator for Helios' ATM Adviser publication, a quarterly briefing on developments in air traffic management. Michelle has worked on numerous different projects at other airports, developing models and simulations to assess and compare the performance and efficiency of a range of airport activities, both landside and airside. She has also worked on the assessment the performance of runway operations at Heathrow Airport, including the analysis of flight data and the development of a statistical model describing the stack and ground holding delays and the effect of demand and capacity on these. The model was used for assessing the operational resilience of the airport and the impact of increasing or reducing demand. Michelle also worked on the development of the Influence model set in Analytica for the Medium Term Validation study for EUROCONTROL Experimental Centre and is currently supporting the EEC in their work on SESAR B5 in the development of influence models for analysing the performance benefits of the target ATM concept.

Charlie Baker is an analyst at Helios who has been directly involved in projects supporting the uptake of EGNOS in aviation, the roll-out of LPV procedures at airports across Europe, and conducting cost benefit analysis of business cases. An Economist with a keen interest in commercial air transport, Charlie is a resourceful collector of data and an expert in modelling within Analytica to facilitate cost benefit analysis. Charlie has previously analysed the business case for a large multinational SatCom provider of installing SatCom receivers on commercial and business aircraft and providing a SatCom service. Charlie is also working to record the current LPV equipage of European Aircraft through building an online database. Charlie has built up a knowledge of the wider GNSS market through conducting consultations with industry experts to validate the assumptions used by the GSA in its marketing forecast models.

Relevant Projects:

Roll out of LPV procedures: Helios is supporting the European GNSS Agency (GSA) in the roll out of LPV procedures and directly supporting and managing the implementation of LNAV, LNAV/VNAV and LPV approach procedures to the following aerodromes across Europe: Aarhus, Antwerp, Cluj, Dublin, Dubrovnik, Gothenburg City, Karup, Røst and Storumansm. For a subset of these we also are responsible for the associated safety assessments. In addition, principally for the GSA, we have developed safety assessments for RNAV approaches to Beruit, Bouchs, Mielec and Monistar aerodromes, and business cases for LPV (Perugia and Zweibrücken) and advanced instrument approaches (Pamplona aerodrome).

Mielec – APV (SBAS) safety assessment: Helios supported EUROCONTROL and PANSAs, the Polish ANSP, to develop a local safety case for the implementation of an Approach Procedure with Vertical guidance (APV) at Mielec aerodrome in Poland. Although the safety case was developed with the full support of the local operator and aerodrome and the Polish CAA it was made a little more challenging due to local constraints such as non-instrument runway, no ATC, no radar coverage and proximity to controlled airspace of the local TMA. Helios produced a full safety case consistent with the requirements of ESARR 4, EUROCAE ED-78A and ED-125 and the EUROCONTROL SAM methodology and provided the basis from which the national regulator could perform their assessment. A number of safety and integrity requirements were derived which the local aerodrome and operator have been gathering evidence to support to present the completed safety case for operational approval by the CAA.

Airborne Radar Approach safety assessment: Helios has undertaken, on behalf of the UK Civil Aviation Authority (CAA) Safety Regulation Group (SRG), a hazard analysis of the use of GPS for offshore operations. As a result of the work, the CAA approved the use of GPS as a sole-means navigation system for en-route flight in the North Sea. Helios's work has also assisted the introduction of GPS into the offshore approach procedure.

Helios supported the UK CAA in the deployment of GNSS in the North Sea for offshore helicopter operations. In some cases, offshore operations cannot make use of traditional ground-based navigation aids and have therefore developed some unique operations. These operations include a pattern of radial tracks from Aberdeen used for inbound and outbound flights, and a low-visibility oil rig approach procedure using the aircraft's weather radar. Helios' work was in the following areas:

- To undertake a safety assessment of the use of GPS on the radial helicopter routes from Aberdeen. The assessment contained a number of recommendations on how GPS should be used and led directly to the approval of GPS in this role.

- To undertake a safety assessment of the low visibility approach procedure. As a result of this a number of recommendations were made as to how GPS could be used to enhance this procedure. Another safety assessment was conducted of the GPS-enhanced procedure. The GPS-enhanced procedure is now widely used for offshore operations.
- To assess how EGNOS augmentation could be used in conjunction with GPS to provide a new type of offshore approach procedure. In this work, a new procedure was developed and assessed from a performance and safety perspective, and in simulations. Flight trials were also conducted to determine the reception of EGNOS on a typical helicopter. This work determined that SBAS Offshore Approach Procedure (SOAP) is a feasible and beneficial option for future offshore operations.

CBA support to Eurocontrol: Helios provided support to the Sector Productivity business division of Eurocontrol covering the FASTI, CASCADE, Link2000+ and Mode S programmes at that time. Helios developed a high level CBA model to support the informed decision of SPR business division and developed a briefing material for ANSPs. The project was subsequently extended to develop a high-level cost-benefit analysis of all activities included within the ATC domain for Eurocontrol's Business Support Unit. A number of Eurocontrol CBAs had been carried out on individual programmes and activities. These, however, were sometimes produced in separation from the other activities and did not take into account relationships to the other activities. This fact has sometimes led to the misleading conclusion that the total benefit of a group of activities is a sum of net benefits. In addition to this, many activities aim to achieve the same operational improvements and sometimes it is not very clear which combination of solutions/applications would most benefit the stakeholders. To address this, it was decided to develop a high-level CBA model capable of taking into account a number of applications (initiatives) which are implemented within a similar timescale. The model has been applied to a proposed roadmap that was developed for the consolidated ATC applications (incl. FASTI). Further work would be required before any definitive conclusions can be drawn.

RNAV Business Case: On behalf of Eurocontrol, Helios undertook a detailed business case looking at the options for the mandate of various levels of RNAV compliance within Europe. This took into account the evolving nature of aircraft equipage compliant with RNAV standards and the needs of ANSPs to modify their systems. Several options and scenarios were used in a complex Excel model that looked at not only the costs of the avionics and ANSP upgrades, but changes to terrestrial navigation and dependencies on space technology needed as a result. The options of rationalisation of ground based systems were included as a possible offset against the costs incurred from aircraft upgrades.

15) Israel Institute of Technology (Technion)

The Technion – Israel Institute of Technology was founded in 1924 in Haifa. The university offers degrees in science and engineering, and related fields such as architecture, medicine, industrial management and education.

Technion is noted as a global pioneer in multidisciplinary research into fields including energy, nanotechnology and life science. It has 18 academic departments, 52 research centers and over 13,000 students. Since its founding, it has awarded over 95,000 degrees and its graduates are cited to have brought the unique skills and penchant for innovation, which helped conceive and consolidate the modern State of Israel. Technion's over 610 faculty members include three Nobel Laureates.

In 2011, a successful bid by a consortium of Cornell University and Technion led to the present establishment of the Jacobs Technion-Cornell Innovation Institute (JTCII) in New York City. This is the first time any Israeli university has moved into establishing a of global advanced research in the United States, and the new institute breaks new ground in the promise of global collaboration in advanced research. In 2013, this was followed by another 1st, with the decision to set up a collaborative institute of technology in China in the form of the Technion Guangdong Institute of Technology' (TGIT).

Technion City generally refers to the 1.2 square kilometers site located on the forested slopes of Mount Carmel. The campus comprises over 300 buildings, occupied by thousands of people every day. Recreational activities on the main campus include an olympic swimming pool and sports center. Films and live performances by leading Israeli artists take place on a regular basis. Technion City includes a substantive network of dormitory villages offering individual and family accommodation to students and faculty.

The Technion has two additional campuses. Its historic building in midtown Haifa now houses the Israel National Museum of Science, Technology and Space. The Rappaport Faculty of Medicine is located next to the sea in the neighborhood of Bat Galim, adjacent to Rambam Hospital, the largest medical center in Northern Israel.

Technion main tasks in the proposal

The technion will make a survey and an assessment of the available GNSS data sources in Israel. Analysis of the provided data and analysis of the relevant accessibility. Drafting recommendations and guidelines for possible improvements, in order to increase the relevant capability and usage in terms of geodetic use.

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	Y
Technion – Israel Institute of Technology (“Technion”) will involve Technion Research & Development Foundation Ltd. (a legal entity created, owned and controlled by Technion, in order to handle administrative/financial tasks of Technion). Technion Research & Development Foundation Ltd. will handle financial and administrative aspects of the Technion’s involvement in the action — including issues related to employment and payment of personnel, purchase of equipment, consumables, etc. — with the aim to improve and rationalise the administrative and financial management of Technion	

Gilad Even-Tzur

Gilad Even-Tzur received his B.Sc. in Geodetic Engineering from the Technion - Israel Institute of Technology, in 1989. In 1991 he received his M.Sc. and in 1997 his D.Sc. both in Geodetic Engineering from the Technion. His D.Sc. was in the field of optimization of GPS monitoring deformation networks. He was a research fellow at the Danish GPS center between 1997 and 1999. Since then he is faculty member at the department of Civil and

Environmental Engineering, division of Mapping and Geo-Information Engineering at the Technion. His main fields of interest include high precision GNSS networks, CORS (Continuously Operating Reference Station) networks and Geodetic monitoring networks. He serves as a consultant in the fields of geodetic control networks and their use to the Survey of Israel more than a decade.

Five relevant publications

1. Steinberg G. and Even-Tzur G. "A State-of-the-Art National Grid Based on the Permanent GPS Stations of Israel" FIG Working week 2004, Athens, Greece, May 2004.
2. Even-Tzur G. "Permanent GPS Network as Basis for Updated Geodetic Control Network" Proceedings, Geodesy, Mapping and Geographic Information, Technion City, Israel, January 2005, pp. 64-72.
3. Steinberg G. and Even-Tzur G. "Permanent GNSS Networks and Official Geoid Undulations Model as a Substitute for Orthometric Control". XXIII International FIG Congress, Munich, Germany, 8-13 October, 2006.
4. Steinberg G. and Even-Tzur G., Official GNSS Derived Vertical Orthometric Height Control Network. Surveying and Land Information Science, 68(1):29-34, 2008.
5. Even-Tzur G. and Steinberg G., Using an Official Undulation Model for Orthometric Height Acquisition by GNSS, Survey Review, 41(313):292-300, 2009.

16) Participant BITES

BITES is a technology-based Turkish company located in the Technopolis of the Middle East Technical University in Ankara-Turkey, having a wide range of products and capabilities including Computer Based Training Systems, Simulation and Synthetic Environment Development, Virtual Maintenance Trainers, Augmented Reality Application, next-generation Information Technologies, embedded Software development, software application development for mobile devices, Low-Cost Synthetic Training Devices, Management Information Systems, Mission-Planning & After Action Review-Debriefing Software Solutions, remote sensing, Satellite Imagery Processing and value added Geographical Information Software Development.

BITES employs more than 75 professionals and owns Turkish MOD Facility Security Clearance with «National Confidential» degree, NATO Facility Security Clearance and CMMI Level 3 (Development) Certificate.

BITES main tasks in the proposal

BITES role in the project will be to support building of industrial relationships by gathering private and public institutions around services offered by EGNSS and related applications in Turkey. With more than 12 years experience in Aerospace & Defence Industries, BITES is highly recognized by the Ministry of Transportation, Turkish Civil Aviation Authority, DHMI, Directorate of Aeronautics and Space Technologies and Undersecretariat of Defence Industries.

Personnel involved in BEYOND

İhsan Yusuf Akbuğa

İhsan Yusuf Akbuğa was born in Ankara, Turkey in August 2nd 1971. He has earned his Bachelor's degree in the Department of Aerospace Engineering at the Middle East Technical University in year 1995. After graduation, He worked as an Intern at Fokker Aircraft Division in the Netherlands and completed his military service in the Turkish Air Force between years 1997-1999 serving as an aeronautical engineer with lieutenant rank, working for the Air Logistics Command Modernization Division in the F-4 and F-5 aircraft upgrade programs. After his service he started working for Havelsan, one of the biggest Defence Companies in Turkey as Systems Engineer. He got trained as a software engineer in the F-5 aircraft upgrade program at Israel Aircraft Industries (IAI) facilities in Tel Aviv and at Elbit Systems facilities in Haifa. He worked as a software engineer in the Artillery Forward Observer Simulator Program, completed the development of the whole Graphical User Interface of the Instructor Operator Station and Debriefing Stations, Fire Control Centre. He got the role of Software Group Manager in the Turkish Airforce CN-235 Full Flight Simulator Program and developed Real-time flight dynamics and mechanics programming, atmosphere modeling, visual system-host interface program development, 6 degree of freedom friend and foe tactical environment modelling, auto-pilot modelling.

He leded the Republic of Korean Air Force CN-235 Full Flight Simulator Program, and got the customer certification of the whole Full Flight Simulator by preparing the Qualification Test Guide according to Federal Aviation Administration FAR-120-40 C Guidelines in accordance with the Flight Test Data. At 2007, he got promoted and become the Business Development Manager of Simulation and Training Systems Group in Havelsan, defined strategies for and develop, execute, manage comprehensive marketing and business development plan encompassing integrated marketing initiatives designed to penetrate and grow targeted markets. For the past two years, he works for BITES taking care of the whole Strategy, Technology Management and Business Development activities in the Company. He speaks excellent English and German.

Çağatay Yamak

Çağatay Yamak was born in Ankara, Turkey in 1979. He earned Bachelor's degree in City & Regional Planning and Master's degree from Middle East Technical University, 2002 and 2006 respectively. So far, he has involved in many Remote sensing and GIS related projects and has 10 years of experience in the Space sector. He started his career at World Wide Fund – Turkey as GIS & RS Expert in 2004. In the following year, he participated in “CORINE Landcover” project in order to construct a spatial database for the Ministry of Agriculture. Between 2005-2006, he worked as research assistant at Land Management Unit of Joint research Center of European Commission in Italy. The study submitted to the Commission was about implementing “a nationwide approach for Forest Fire Risk mapping in Turkey”. Later on, he worked as Production and Application Specialist for 4 years at the first satellite receiving station of Turkey and the biggest satellite image provider company, Inta Spaceturk. He continued his professional career by working on various GIS related projects such as “Monitoring of natural catchment areas supplying water and illegal construction” and “Forest Type Mapping for Mediterranean Region in Turkey”. He works currently as project manager of large scale projects in Turkish Defense Industry at BITES Defense and Aerospace for 4 years. To name few but not all, his technical skills include ortorectification, color balancing, image classification, geospatial analysis and project management. He has a good command of English, has fair speaking and understanding skills in German and beginner level in Italian.