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**COMMUNICATION FROM THE COMMISSION
TO THE EUROPEAN PARLIAMENT AND THE COUNCIL**

**PROGRESSING GALILEO:
RE-PROFILING THE EUROPEAN GNSS PROGRAMMES**

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1. INTRODUCTION

The Council, in its Resolution of 8 June 2007, re-affirmed the value of Galileo, concluded to stop the PPP concession negotiations, agreed¹ in principle to a re-profiling of the European GNSS programmes and recognised the need for additional public funding. At its meeting of 21-22 June 2007, the European Council re-affirmed the value of Galileo as a key project of the European Union and asked the Council to take an integrated decision on the implementation of Galileo in autumn 2007².

In order to allow it to take such an integrated decision, including the financing of the new approach, the public governance structure including the risk management approach, the principles of procurement, and a number of related programmatic decisions, the Council requested the Commission to submit further analysis and proposals. The Commission hereby responds to this request³ and furthermore submits a Modified Proposal for a Regulation with regard to the follow-up of the European GNSS programmes⁴ as well as a Proposal for a Revision of the financial framework⁵.

Through this integrated decision it should be ensured that the governance and contractual structures facilitate the effective long-term operation, maintenance, and economic exploitation of Galileo, based on an integrated, technology life-cycle approach and an appropriate risk management. The urgency of this decision is, *inter alia*, related to the on-going costs of the development phase of the programme and the financial consequences of loss of market share, both of which increase significantly with further delays.

The Commission expects such decisions to be taken by the end of this year and wishes to recall the strategic implications of such decision, beyond the financial and public procurement aspects. European GNSS assets are vital for Europe and the European economy. Modern society does and will increasingly depend on the use of GNSS applications for vital security and economic functions. Moreover, Galileo is a pillar of the European Space Policy⁶ and signifies Europe's ambitions in space, technology, and innovation.

Failing to take the appropriate decisions on a European GNSS programme, Europe would decide to rely for the mid to long term on foreign GNSS signals with little to no control over quality, availability or price of the latter. In addition, the ensuing loss of resident European

¹ <http://register.consilium.europa.eu/pdf/en/07/st10/st10126.en07.pdf>

² European Summit, 21-22 June 2007, 11177/1/07 Rev.1, Paragraph 36.

³ This Communication is accompanied by a Commission Staff Working Document, SEC(2007)xxx, 19 September 2007

⁴ Modified Proposal for a Regulation of the European Parliament and the Council concerning the putting into place of the European GNSS programmes, COM(2007)535, 19 September 2007

⁵ Communication concerning the Revision of the Multi-annual Financial Framework and Proposal for a Decision of the European Parliament and of the Council amending the Inter-institutional Agreement of 17 May 2006 on budgetary discipline and sound management as regards the multi-annual financial framework, COM(2007)xxx, 19 September 2007

⁶ Communication on European Space Policy, COM(2007)xxx final (26-04-2007)

expertise on GNSS would be coupled with a major loss of macro-economic opportunities for European manufacturing and service companies. There would be no basis for European led space innovation for the foreseeable future.

2. THE SYSTEM INFRASTRUCTURE COSTS

The procurement and deployment of Galileo commenced on a basis of a two-phased approach. Under the In-Orbit-Validation (IOV) contract put in place by ESA in early 2006, the first 4 satellites and a substantial part of the ground infrastructure is procured. The remainder of the constellation namely 26 satellites and of the ground infrastructure are subject of the deployment phase that brings Galileo to its Full Operational Capability (FOC).

Further analysis and the evaluation have now provided the necessary confidence that these cost estimates are indeed realistic and resilient⁷.

The estimates for FOC include the management costs of the procurement agent, the costs for the exploitation and operation of EGNOS until 2013, and the costs of support to the programme manager, are estimated at 3 B€ nominal. Based on the assessment of design and deployment risks, a contingency reserve of around 14% of the nominal costs completes the estimation⁸.

Item	Estimated costs in millions of Euros
Galileo FOC	
Satellites + launchers	1600
Ground control infrastructure	400
Operations	275
Systems Engineering	150
Procurement Agent management costs	195
EGNOS	
Exploitation and operations (2008-2013)	330
Support to the Commission	
Project management support and advisory services	27
Contingencies⁹	428
Grand Total	3,405

These estimates are based on an immediate implementation of the procurement actions following an integrated EU political decision by the end of 2007.

Of course, all figures represent a best estimate of the expected procurement costs in a nominal case of competitive supply, effective contract negotiations, and adherence to the foreseen timetable. The prices offered by the private sector however, and therefore the costs to the Community, will only emerge during procurement negotiations. In order to ensure that the Community obtains the best value-for-money and that prices come down to costs, it will be necessary to put the Community (and its procurement agent) in a good negotiating position by means of a competitive bidding procedure based on appropriate principles agreed as part of the procurement policy.

⁷ Data from ESA, previous PPP concession bids, and the IOV contract; evaluation by ESA, GSA and independent consultants PriceWaterhouseCoopers and Satel Conseil International; and a verification meeting with experts from national space agencies.

⁸ Contingency reserves on space programmes are normally in the order of 10-20%.

⁹ Possible cost overruns of the IOV phase will be covered by the current financial arrangements and/or the Contingencies Reserve.

The choices made in the procurement policy are therefore expected to have considerable impact on the final costs to the Community. Moreover, in case of delays in political and programmatic decisions, extra costs are anticipated caused by a pro rata increase of costs of current contracts (the In-Orbit-Validation contracts¹⁰), and loss of market opportunity as a result of the arrival of competing systems.

The Commission recommends the Budgetary Authority to proceed with its decisions on the basis of estimated costs of procurement of the Full Operational Capability (FOC) of Galileo of 3.4 B€ for the period 2007-2013, including the costs for EGNOS, the procurement agent, programme management costs, and a contingency reserve.

3. GALILEO PROGRAMME RISKS AND THEIR MANAGEMENT

The EU, as owner of the system resulting from the Galileo programme, will need to identify and, in case they are accepted, eventually manage the risks associated with the European GNSS programmes. Details of these risks are provided Annex 1 and in the Commission Staff Working Document. The most important risks for the procurement phase are design risks and deployment risks.

The design risks relate to Galileo not achieving its targeted performance as a result of eventual design problems. These design risks and their likelihood are typical to a space programme. They need to be monitored and controlled closely but are not reason for particular concern at this stage.

Galileo programme delay risks are linked to technical, managerial, financial or political issues that cause schedule delays and cost overruns and, as a consequence, a late time-to-market. Most of these programme delays should be mitigated by specific actions, by the proposed public governance measures, by disciplined programme management and oversight decisions, and by timely political decisions. In addition to the specific one-off costs related to these risks, the largest impact of delays is the increase of deployment costs and a loss of exploitation revenues.

The foreseen contingency reserve for the procurement is set in relation to the cost impact and the likelihood of risk events linked to design and deployment.

The Commission proposes to the Council and the European Parliament to note that the identified risks seem commensurate with the ambitions and scope of the European GNSS programmes and that, over and above the contingency reserve foreseen, there is no need for specific budgetary measures at this stage. However, should risks materialise the Commission will provide a detailed analysis and will, if appropriate, provide comprehensive proposals to the Budgetary Authority.

The Commission commits to the implementation of an integrated programme risk management approach on all phases and levels of the programme and to structural measures to identify, control, mitigate and monitor risks, as well as to regular reporting to the Budgetary Authority.

¹⁰ Under the IOV contract are procured: 4 satellites and their launches, the first satellite control centre, and around the half of required uplink, tracking, and monitoring stations.

4. GALILEO ECONOMIC BENEFITS AND EXPLOITATION REVENUES IN THE WORLD-WIDE SATELLITE NAVIGATION MARKET

4.1. World-wide, downstream markets for satellite navigation services

Overall, the world-wide market for satellite navigation has grown spectacularly over the last ten years. The value of this market in terms of applications and equipment is considerable and it is one of the fastest growing high technology markets. This year there is an expected sale of 10 million GNSS receiver units in the EU alone and should reach around 230 million units in the year 2011¹¹.

The GNSS market will become a substantial driver in the global economy after 2010 and Europe can not afford to be absent as an important player in this field, hence the strategic importance of the European GNSS programmes. It is obvious that the GNSS system providers will have an important influence over all essential decisions affecting the GNSS users, such as defining or updating the standards, ensuring the continuity of access locally, defining industrial export control policy, serving the future needs of the users through system modernisation. The EU cannot rely solely on foreign policies for all these important decisions affecting an important share of the European economy. Completing Galileo is therefore an indispensable infrastructure investment for the EU.

Inevitably, the development of Galileo will also need to be accompanied by a specific effort to develop applications and services (see section on user needs), which helps European industry to achieve a strong position, develop know-how, and serve niche applications. This boosts the creation and the growth of SMEs and generates high-end employment. Galileo and EGNOS should therefore be seen as investments allowing Europe to penetrate, develop and maintain a substantial share of the GNSS market.

Galileo will increase the public benefits that can be generated from GNSS, such as employment, environment (reduced road congestion, shorter and more direct routes reducing fuel consumption), social benefits (enhanced safety), increased efficiency of public services (in search-and-rescue, fire and ambulance services, security) and economic sectors (agriculture, fisheries, transport), and the management of scarce public resources (in aviation).

Moreover, the additional, direct benefits of Galileo are numerous. Not only will satellite navigation availability in larger cities increase significantly by combined use of GPS and Galileo, but Galileo's system design also foresees indoor positioning capabilities. Satellite navigation accuracy will increase and the 'competition' between GPS and Galileo will bring about further innovations in satellite navigation for users worldwide, e.g. improved accuracy and indoor positioning capability of Galileo over GPS-II, and improved mass-market signals common to both GPS-III and Galileo. Galileo is furthermore optimised for civilian use by means of 5 functional services. This provides a basis for addressing new market needs in the road, maritime, and aviation markets that are not served by existing technology. Galileo furthermore ensures that any risks from single source dependencies are mitigated. This is of importance in, for example, the use of timing signals for the synchronisation of electronic communication networks and of electricity grids. Lastly, the legal framework within which Galileo is being built provides a clear and unambiguous liability scheme. Liability is of key importance for operators, whether public or private, when implementing new services to citizens and/or commercial customers. There are therefore substantive arguments for users to use Galileo.

¹¹ Source: ABI Research 2006

4.2. Exploitation revenues and direct benefits of the European GNSS programmes

Galileo direct exploitation revenues represent a tiny portion of the Member States returns and an even tinier portion of the worldwide and European GNSS markets. The Galileo exploitation revenue stream that is expected to be generated is large and well diversified but is however subject to uncertainties.

Based on previous studies, data provided in the various bids of the previous phase, independent verifications, analysis performed for the GJU and, over the last time, by the GSA, the following, direct Galileo exploitation revenue estimates (including uncertainties)¹² are now available for the provision of the EGNOS and Galileo signals-in-space.

The uncertainty of the exploitation revenues¹³ are estimated at plus one-third and minus half of the base case of 9.1 B€ thereby providing a range between 4.6 and 11.7 B€ over the 20 years period. Risk mitigation actions and creation of revenues opportunities however will have a positive impact.

The estimated split of these exploitation revenues¹⁴ is as follows:

Split of Galileo/EGNOS exploitation revenues					
per service		per charging mechanism		per sector	
Open Service – normal use	0%	terminal manufacturing	46%	road transport	30%
– special use	54%	governmental clients	29%	PRS	29%
PRS	29%	service providers	14%	mobile telephony	17%
Safety of Life	10%	receiver manufacturing	7%	professional services	9%
Commercial Service	7%	end-users	4%	aviation	5%
Search and Rescue	0%			others	10%

The actual exploitation revenues will be highly dependent on the time-to-market of Galileo, the success of public sector action in preparing markets and putting into place a regulatory framework that takes away any barriers to market development, the take-up rate of the PRS service by the EU public authorities, the success of competing GNSS systems, and the EU's ability to find private sector partners that have the capacity to address global satellite navigation markets in a successful fashion. Particularly the high dependency of exploitation revenues on special uses of the Open Service, such as authentication services and public emergency services, requires careful consideration such as adaptations to the regulatory framework so that it foresees the use of authenticated signals for road-tolling applications.

Galileo exploitation revenues should therefore be seen as an additional benefit and not as the single driver of the European GNSS programmes. Namely, it is the promise of these exploitation revenues that may be of interest to the private sector. Hence, their importance for the EU public sector to be able to transfer risks to the private sector and to obtain the benefits of private sector participation in the programme.

In conclusion, there is a strong case for Galileo driven by its potential exploitation revenues but, to an even larger extent, by the impact of Galileo on the European GNSS industry and the economy in general.

¹² Sources: GSA based on Ovum 2006, ABI Research 2006, Berg Insight 2006, ESYS 2006

¹³ It was this uncertainty that did not allow the private sector to accept the market risk in the PPP concession negotiations.

¹⁴ Sources: Ovum 2006, bids during the PPP negotiation phase.

The Commission proposes that the Council and the European Parliament in their decision to re-profile the European GNSS programmes take note of the macro-economic and public merits of the programmes; the direct benefits of Galileo in terms of new services and markets, increased performance, and complementarity to GPS; and the fact that there is a reasonable basis for the expected Galileo exploitation revenues.

5. THE FINANCING OF THE EUROPEAN GNSS PROGRAMMES

The proposed scenario requires financing totalling €3.4 billion for the period 2007-2013. However, only an amount of €1 billion has actually been foreseen by the Community financial framework for 2007-2013. It is therefore necessary to examine the other possibilities in order to identify additional financial resources up to €2.4 billion, during the period 2008-2013. To this end, it is important to initially distinguish 2 options: financing through the Community budget and inter-governmental financing, outside the community budget.

Community funding

Points 21 to 23 of the inter-institutional agreement on budgetary discipline and sound financial management (IIA) define the modalities according to which the Budgetary Authority can decide on a revision of the multi-annual financial framework in the event of unforeseen circumstances. The failure of the negotiations of the concession contract with the private consortium constitutes such an unforeseen situation.

Given the amounts at stake, the Commission considers that the multiannual financial framework needs to be revised. The other options offered in principle by the IIA do not provide viable alternatives to such a revision:

- The estimated margins maintained under the ceiling of heading 1A under the terms of Point 13 of IIA are not suitable for a long-term financing of this magnitude. The same applies to the mobilisation of the flexibility instrument that is not foreseen for recurrent uses. The Galileo programme needs a strong and sustainable political and legal commitment, in view of the importance at stake, to fill the accumulated delays and regain the confidence of the private sector – whose collaboration is indispensable.
- Point 37 of the IIA makes it possible to depart by up to 5% from the amount laid down in the legal acts concerning a multiannual programme adopted under codecision procedure. On this basis, a considerable amount could, in principle, be transmitted to the Galileo programme by means of a re-deployment of the resources within heading 1A. However, such a re-deployment at the beginning of the programming period would not be appropriate. At this stage, no advantage could be taken from an under-execution of these programmes, since their implementation is only just starting.

Inter-governmental financing

An inter-governmental financing could take the following forms:

- a) The European Space Agency (ESA) finances half of the development phase of the Galileo programme. This model of financing could in theory be extended to the deployment phase. The implementation of this solution presents nevertheless a number of disadvantages:

- Not all of the EU Member States, notably the new Member States, are member of ESA. Similarly, not all ESA Member States are member of the EU. This poses a problem of material and immaterial property rights within the programme;
- ESA financing conflicts with the Community character of the programme as the Budgetary Authority exercises no control over the part financed directly by ESA Member States¹⁵.
- Co-financing seriously affects the public governance of the programme, as the financing role of ESA is difficult to reconcile with its role as maitre d'oeuvre.

b) Direct contributions from the Member States to the Galileo programme could come from a similar instrument used by the European Development Funds. Regarding the possibility of direct loans to the programme, without the Member States standing as guarantors, it must be recalled here that, unlike the Member States, the European Community is not allowed to borrow. The possibility of setting-up such contributions needs to be studied in much detail as no easy transferable precedent exists.

However, for legal, institutional and programmatic reasons, the Commission considers that only the European Union, as owner of the system, should provide the additional financial resources. Yet, international participation could also be envisaged subject to acceptable conditions for activities such as facilitating access to services of the European GNSS worldwide.

In conclusion, the Commission submits in parallel to this Communication a proposal¹⁶ for a decision of the European Parliament and of the Council concerning the revision of the multiannual framework with the aim of providing the required public financing of €3.4 billion for the period 2007-2013, as well as to give the Union the necessary means to continue both with the EGNOS and the Galileo programmes for which the three institutions have just reaffirmed the utmost importance.

An amount of 1.005 B€ has already been foreseen in the current financial framework (2007-2013) under the heading of the Commission's legislative proposal¹⁷ for the implementation of the deployment and exploitation phase of the Galileo programme. It is proposed to add an additional amount of 2.100 B€ to the amount aforementioned. The release of this amount will be subject to a revision of the current financial framework (2007-2013). The funds will come from the non-exploitable margins of headings 2 and 5 under the years 2007 and 2008. Consequently, the text of the Modified Proposal will fix at 3.105 B€ the amount to be foreseen in the community budget for the period 2007-2013 under the European GNSS programmes. An amount of €300 million is available under the 7th framework programme for research and development for the European GNSS programmes to contribute to the financing, bringing the total to 3.4 B€

As concerns EGNOS, it was initially foreseen that its financing would be ensured through the overall integration into Galileo and availability of budget before the end of 2007. As the deployment phase of EGNOS is nearing completion, ESA intends to qualify the EGNOS software version compliant with aviation requirements. It is therefore foreseen that the current financial arrangements continue to cover this pre-qualification phase until March 2009.

¹⁵ At several occasions has the European Parliament therefore expressed its opposition to this solution

¹⁶ Communication concerning the Revision of the Multi-annual Financial Framework and Proposal for a Decision of the European Parliament and of the Council amending the Inter-institutional Agreement of 17 May 2006 on budgetary discipline and sound management as regards the multi-annual financial framework, COM(2007)xxx, 19 September 2007

¹⁷ COM(2004)477/final2

6. MEETING USER NEEDS, PREPARING MARKETS, AND INCREASING REVENUE OPPORTUNITIES

As the ultimate purpose of EGNOS and Galileo is to provide global satellite navigation services that meet the requirements of users world-wide, it is essential to have both a good understanding of these requirements and to try and meet them through the continuous development and innovation of the systems.

Following the consultation of the Green Paper, the Commission will publish an Action Plan in the near future of which the main objective is to put in place a framework that allows the development of applications and services based on EGNOS and Galileo by means of targeted action in each application and market domain.

The introduction of this Action Plan is of considerable importance as public sector action will also contribute towards a structural reduction of the market and revenues risk for the systems.

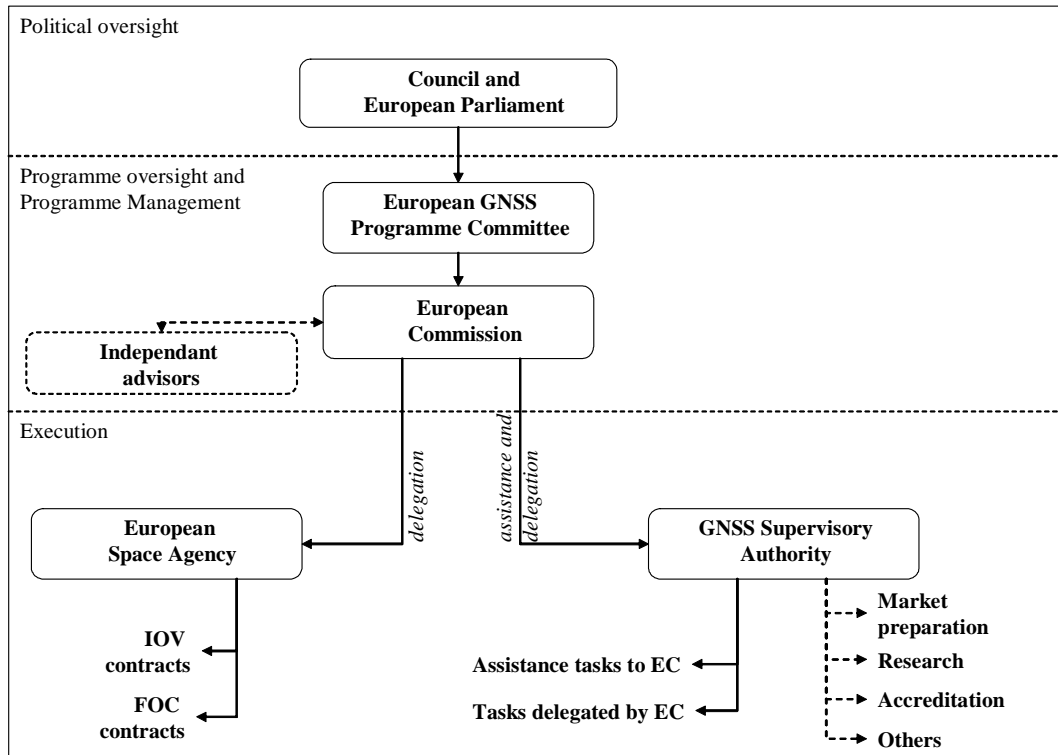
The GSA, in coordination with Commission services, should contribute to this important task, coordinating its activities also with public authorities at national, regional, and local levels, and working closely with all actors in all relevant sectors and markets.

On the basis of this work, and where appropriate, the Commission will make the necessary regulatory and other proposals that remove barriers to the development of community policies which may profit from the use of satellite navigation, notably in the areas of inter-operability of services and systems that foresee the use of satellite navigation, the inter-operability of road-tolling systems, emergency communications, safety operations, monitoring of critical infrastructure, transport of animals and dangerous goods, and others. The Commission proposes that the Council and the European Parliament take note of the need of the EU public sector to prepare the GNSS markets and take all relevant actions, including awareness raising, provision of technical information, assistance to all private and public sector players in all interested economic sectors, preparation of standardisation and certification, and the consolidation of market requirements.

The Commission therefore proposes to strengthen the role of the GSA and provide it a coordinating and key role in the preparation of European GNSS markets, and to review its mission, staffing, and functioning.

7. PUBLIC SECTOR GOVERNANCE

Programme oversight and management is an integral part of a programme like Galileo. Clear roles and responsibilities and efficient decision-making processes contribute to avoidance of cost-overruns and programme delays. The Commission therefore proposes a simplification of the public governance structure and a structural division of roles on the basis of a clear separation of programme oversight and programme management, based on EU financing and rules. It furthermore intends to take a number of concrete measures that reinforce the programme management.



(1) Role of the Council the European Parliament:

The oversight role belongs to Council and Parliament and takes form of:

- political oversight, exercised directly by the Council and the European Parliament, and
- programme oversight in the form of a “European GNSS Programme Committee”¹⁸ in which representatives from the Member States assist in the implementation of the programme and provide overall guidance on all important aspects of the programme.

(2) Role of the European Commission

As the institution that is directly accountable to Council and Parliament, the European Commission needs to have overall programme management responsibility.

The Commission considers that it is essential to have a single Programme Manager on the side of the public sector that is accountable for the entire Galileo programme, that has management and/or contractual control over all the subordinate implementation levels, that has access to both financial resources and to the political authorities, and that can provide the necessary arbitrage between all elements of the programme. A split responsibility with different reporting and accountability lines will cause fractures in the programme and have structural, negative impacts.

¹⁸ See Modified Proposal for a Regulation of the European Parliament and the Council concerning the putting into place of the European GNSS programmes, COM(2007)535, 19 September 2007

The European Commission acts, *inter alia*, as the maître d'ouvrage (or "sponsor") of the programme, overseeing all development, procurement, operations and maintenance, and exploitation contracts related to the system infrastructure.

(3) The role of the GNSS Supervisory Authority (GSA)

It is to be noted that ending the PPP concession negotiations has caused a legal vacuum on the role of the GSA that, in accordance with the current Regulation¹⁹ that sets it up, was based entirely on the putting into place of a concession holder.

It is therefore important that the GSA shall now be strengthened in relation to all relevant actions with respect to the preparations of the markets in order to allow the EU to step up its commitment to Galileo. It furthermore acts as the Accreditation Authority, and is responsible for organising certification. In addition, the GSA advises and assists the Programme Manager on all aspects of the programme.

In order to provide a coherent framework for public governance, the Commission will submit a proposal for a Revision of mentioned Regulation as soon as the EU's political decisions on the programme are taken.

(4) The role of the European Space Agency

As the co-initiator of the European GNSS programmes and the technical architect of these programmes, ESA is in an excellent position to take on the tasks of procurement agent and maître d'œuvre (or "prime contractor"). Moreover, the ESA technical expertise and experience accumulated over the last 10 years on the European GNSS programmes is unique and can not be reproduced without major delays, costs, and risks to the programme

ESA will act on the basis of a detailed ESA-EC GNSS Agreement that will set out the respective obligations, the procurement policy, the reporting and interaction arrangements, the limits of ESA autonomous decision-making, and the procedures by which decisions are obtained from the Commission and, in appropriate cases, the Council and European Parliament.

As far as the role of design authority is concerned, it needs to be ensured that the European public sector, as owner of the systems, retains crucial knowledge of, and involvement in, the detailed technical definition of the European GNSS programmes. This is essential in the letting of future contracts for the European GNSS programmes. The ESA-EC GNSS Agreement will address this matter in detail.

The Commission foresees regular and detailed reporting to the Council and the European Parliament, including on progress, risks, finances, the appropriateness of the governance arrangements, and all other relevant matters.

The Commission proposes that the Council and the European Parliament agree to the above package of proposals for public governance of the European GNSS programmes, in particular:

- 1) the creation of a European GNSS Programme Committee;

¹⁹ Council Regulation (EC) 1321/2004 of 12 July 2004

- 2) the role of the Commission as the European GNSS Programme Manager and maître d'ouvrage;
- 3) strengthen the role of the GSA in market preparation and as advisor to the Commission and assist in programme management;
- 4) the role of ESA as the maître d'œuvre, acting on the basis of an ESA-EC GNSS Agreement;
- 5) regular and transparent reporting to Council and European Parliament.

8. THE PRINCIPLES OF THE GALILEO PUBLIC PROCUREMENT

The Commission strongly believes in the need to introduce robust and fair competition in the programme on the basis of dual-sourcing and regular competitive tendering in all elements of the programme, wherever possible, in order to improve efficiency and decrease dependencies and foremost to control costs and mitigate risks. However the procurement of Galileo, now and in the future, also needs to benefit from a diversified and competitive European industry as well as from a broad distribution of competences. Therefore bottleneck supplies and single-sourcing at any level needs to be minimised as far as possible. However, certain past decisions and achievements resulting from, notably, the IOV contracts with the private sector need to be taken into account in the next phase. Moreover, achieving competitive supplies and double-sourcing may come at a cost and cause delays as a result of additional overheads and the need to qualify the design and production of additional suppliers.

Therefore, a proper balance needs to be found between all these elements whereby overall programme efficiency, past decisions, and the need for diversified supply under competitive conditions are weighted. The Commission therefore proposes the application of the following principles:

- (1) The application of the Community's public procurement rules;
- (2) Implementation of an open competitive procurement architecture in order to achieve:
 - open access and fair competition throughout the overall industrial supply chain, offering a chance to balanced participation of private sector players at all levels, including SME's, across the Member States;
 - a proper control of the overall programme cost and schedule;
- (3) Due account needs to be taken of existing achievements and investments, of agreements as far as relevant, and of lesson learned from, the definition and development phases of the European GNSS programmes;
- (4) Parallel, double-source procurement wherever possible, aiming at reducing technological and industrial risks as well as dependencies, and better overall control of programme cost and schedule;
- (5) Incremental implementation of the system infrastructure from In-Orbit-Validation (IOV) to Full Operational Capability (FOC) in order to control risks and with a view to early introduction of services;
- (6) Due account to be taken of the strategic nature of the European GNSS programmes and of the security and export control requirements.

9. CONCEPTS FOR THE OPERATIONS AND EXPLOITATION PHASES

The Commission remains committed to the early involvement of the private sector in the European GNSS programmes, including in the operations and exploitation phases. In practice, a limited number of different options or a combination thereof, is available, such as various variants of PPP's, service contracts, or publicly owned corporate entities.

However, much more analysis will be required that the Commission has commenced already with assistance of the GSA. The timing of the decisions relative to the various steps is of importance in order to ensure the overall coherence of the programme approach.

The Commission considers that decisions on the operational and exploitation phase of the European GNSS programmes can only be taken after a phase of detailed technical, commercial, financial, and programmatic studies. The Commission will come forward with proposals at the appropriate moment.

10. TIMETABLE FOR THE DEPLOYMENT OF THE EUROPEAN GNSS PROGRAMMES

As set out in the documents the Commission submitted in May, the contract for the full deployment phase commences at the earliest one year after the EU political decision on the re-profiling is taken and under the assumption that the relevant legal decisions regarding budget and financing are taken within months afterwards. Subject to an early procurement of the long leads items at least 6 months beforehand, Full Operational Capability (FOC) can be reached 4 and half years after the start of this contract.

In view of the time needed for the decisions on the European GNSS programmes, if a positive political decision is taken by the end of 2007, the FOC can be realised by the middle of 2013.

The above considerations lead to a timetable for the deployment of the European GNSS programmes as follows, of which a related list of key dates and milestones is in the Commission Staff Working Document.

Annex 1: overview of Galileo programme risks

risk category	causes	impact	likelihood	cost range per event
Procurement/Deployment phase				
Design risks	Atomic clocks, orbit behaviour, SOL service performance, implementation security requirements, scaling up from IOV to FOC	Re-design	Unlikely	~ 250 to 500 M€
Deployment risks	Technical, managerial, financing, political issues Launch risks	Delays	Unlikely	Up to 250 M€
Operations/Exploitation phase				
Market/revenues risks	Market underperformance or revenue impact of design/deployment risks	Revenue loss	Probable	Up to half of the annual baseline revenues
3rd party liability	Claims	Claims pay-out	Very remote	> 1 B€
Un-insurability	Insufficient market capacity	Direct financing	Remote	> 1 B€
Supervening events	Causes outside control of the programme	-	Remote	~ 250 to 500 M€

Further details can be found in the Commission Staff Working Document