

TEN/077  
Galileo

Brussels, 12 September 2001

**OPINION**  
of the  
Economic and Social Committee  
on the  
**European programme of radio satellite navigation (Galileo)**

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On 1 March 2001 the Economic and Social Committee, acting under the third paragraph of Rule 23 of its Rules of Procedure, decided to draw up an opinion on the

*European programme of radio satellite navigation (Galileo).*

The Section for Transport, Energy, Infrastructure and the Information Society, which was responsible for preparing the Committee's work on the subject, adopted its opinion on 17 July 2001. The rapporteur was **Mr Bernabei**.

At its 384th plenary session of 12 and 13 September 2001 (meeting of 12 September), the Economic and Social Committee adopted the following opinion unanimously.

**1. The Committee**

- having regard to the positive contribution which the development of a European satellite navigation and positioning system for civil purposes can, once integrated into the broader Galileo programme of services, make to the economy and society as well as at global level to the well-being and safety of all, by an enhanced quality of life and human fulfilment, while safeguarding privacy and individual freedom;
- having regard to the competitive impact of Europe's Galileo system at global level, which can ensure full autonomy and uninterrupted integrity, free of military interference, and the economic impact in terms of new jobs, businesses, services and occupational approaches, greater economic and social cohesion, and fresh opportunities for cooperation and support for development;
- having regard to the potential for state-of-the-art services provided by Galileo in vital sectors such as fixed and mobile communications, the e-economy, integrated transport logistics and safety, remote medical services and the health sector, distance education and training, civil protection and public security, agricultural development and the protection of the environment and of natural resources;

**recommends the following to the Council, the European Parliament and the Commission:**

- early adoption of a single, joint strategy, with a defined mandate and a clearly-delineated development platform for a global approach embracing all the system's elements and services, reaching beyond satellite navigation positioning to herald a fully-fledged innovative revolution in services to the entire economy, society and citizens;
- embedding this strategy in an agreed "dual use" approach embracing all the Community policy responsibilities of the European Commission, the WEU and the Council's Common Foreign and Security Policy secretariat;

- appropriate macro-economic studies to forecast how the direct, indirect and secondary effects of implementing the Galileo global system will influence public and private sector organisational systems and individual organisation systems in Europe;
- the launch, by the end of 2001, of a joint undertaking under Article 171 of the EC Treaty, and subsequent creation of a European Galileo Agency to set up a permanent open network for all players in the system, including final users;
- founding this joint undertaking, which should exist only until 2005, and the subsequent agency, on four pillars: an official steering committee open to public and private players; a high-level ethics committee to ensure that the requirements of transparency, exclusively civil use, and safeguards for privacy are satisfied; a regulatory body to provide adequate interoperability guarantees; and an operating body along the lines of the American JPO (Joint Program Office);
- rapid definition of standards under the Community's "new approach", and of potential services, and identification of future activities generated by the Galileo system, partly in order to provide civil society with a clear picture of the economic and social benefits and to foster the necessary high level of consensus;
- applying the appropriate measures to afford full protection of private life and of the rights to privacy and confidentiality for both individuals and companies, with regard to freedom of movement and confidentiality of commercial transactions, economically-based decisions on location and prospecting for natural resources, preventing any spin-off from Galileo in terms of technological surveillance of citizens or businesses;
- establishing a commercial structure by means of a "Galileo promotion company" also involving the private sector, which would subsequently assume the financial responsibility, the technical and political responsibility remaining with the public system;
- speeding up the entry onto the market of an initial operational phase in 2004, by integrating Egnos, and accelerating the deployment in orbit phase of the Galileo satellite network in 2006, establishing implementation arrangements in successive modules, which would enable income to be generated, an immediate impression of product reliability to be created, and the general public to be familiarised with it;
- cooperation and compatibility through co-existence with GLONASS and GPS and their future developments, by means of international treaties including guarantees regarding specification, satellite constellation and terrestrial infrastructure, together with a clear and balanced definition of the relevant intellectual and industrial property rights;
- consolidating the Galileo frequencies at the 2003 WRC (World Radiocommunication Conference), and coordinating frequencies with the existing global satellite navigation system;

- launching a well-structured communication campaign with a coordinated message, geared to ensuring credibility on a competitive, high-risk market at world level, not only for those directly involved in such work, but also for the various economic and social categories, including the general public, in order to stimulate the greatest possible degree of acceptance and support.

1.1 **The Committee calls upon** the Council, the European Parliament and the Commission to draw up a precise and clearly-defined timetable for action in successive modules, and to report regularly to the Committee so that it can be actively involved in future practical developments.

## 2. **Introduction**

2.1 The Galileo programme is a European Union initiative with a dual purpose:

- to provide a European contribution to the future Global Navigation Satellite System (GNSS) for navigation and positioning;
- to offer technologically-advanced services to industry, individual businesses, citizens and European society in general in order to make the Community system more competitive at world level.

2.2 This state-of-the-art technology allows:

- static or mobile users, equipped with a receiver able to receive and process the signals emitted from a range of satellites, to establish with precision their position in terms of longitude, latitude and altitude, as well as the exact time;
- the system to determine the position of any object or person within a given territory, together with events or connections with communications systems and databases.

2.3 This technology has so far been dominated by the United States' Global Positioning System (GPS). Being funded and controlled by the US military, the system is dependent upon it for the continuity and quality of civilian use. The military authorities can, for example, block or impede the signal at will. Russia also possesses satellite navigation technology with its GLONASS system, but it is at a very low level of operability due to economic problems.

2.4 In its initial communication of 10 February 1999<sup>1</sup>, and also on the basis of the projects launched under the fourth and fifth RTD framework programmes, the Commission presented its own radio satellite navigation programme (Galileo), compatible and interoperable with, but independent of, GPS. It is to be organised in four phases: the definition phase was completed at the

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<sup>1</sup> Communication of 10 February 1999, COM(1999) 54 final.

end of 2000; the test and validation phase is planned for the period up to 2005; the deployment phase up to 2007; and start of operations from 2008.

2.5 The Transport Council of 19 July 1999 called upon the Commission to prepare the definition phase of the Galileo project in conjunction with the European Space Agency (ESA) and the Member States.

2.6 The Research Council of 11 November 2000 adopted a resolution and a European Commission/ESA protocol agreement.

2.7 The European Councils at Cologne in 1999 and Feira and Nice in 2000 stressed the strategic importance of Galileo, declaring their political will to press ahead with the definition of the programme.

2.8 The Stockholm European Council of 22 and 23 March 2001 also drew attention to *"the importance of launching the Galileo satellite navigation programme without delay"*, calling on the private sector *"to take up the challenge with regard to participation in and financing of the project through a binding commitment for the deployment phase"*. It noted that the private sector was ready to supplement the public budgets for the development phase, and invited the Council to define the next phase of the project before the end of 2001 and, in particular, to establish *"a single and efficient structure"*<sup>2</sup>. An early decision on the form this should take was proposed by the project b d3ar, d tBT/ Tf38.8064 e struct29.23663ar, d08118 -0.00\*0 T-29.23663 ag2849 1 Tf0 TET1 i 7s rc050.6c046g28j/F57gref\*BTnure

The Council will also examine the cost-benefit analysis presented by the Commission in June 2001.

2.11 In the proposals for the VIth RTD framework programme, the Commission has dedicated a line to developing the Galileo programme under the aeronautics and space heading, in keeping with the launch of an integrated strategy for space.

### 3. Purpose of the opinion

3.1 The Committee feels it is important to issue an own-initiative opinion on the Galileo programme, as it believes that launching this system may have major repercussions in terms of company competitiveness, services to private individuals and making advanced tools available to Community and national policies to ensure sustainable, competitive and dynamic development.

3.2 From this starting-point, the Committee intends to examine the state of progress of the programme, and to assess its potential in terms of user services, applications for civil society and for European economic competitiveness, its macro-economic benefits and political and strategic dimension, financing and management arrangements, the prospects for cooperation, and its compatibility with other existing systems.

3.3 The Committee has previously welcomed development of the European aerospace industry, lending "its full support to a new strategic planning approach, agreed through dialogue with the industry and invested with new European level management functions for RTD"<sup>5</sup>, and has expressed favourable views regarding satellite personal communication services<sup>6</sup>, and radio spectrum use<sup>7</sup>.

It also emphasised the importance of RTD in the aerospace sector in its opinions on the fourth and fifth framework programmes and on the related specific programmes<sup>8</sup>.

### 4. State of progress of the programme

4.1 The Commission had adopted two communications, one in July 1999 and the other in November 2000<sup>9</sup>, with the aim of preparing the definition phase of the programme and checking its

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<sup>5</sup> ESC opinion on the Communication "The European aerospace industry: meeting the global challenge", OJ C 95 of 30.3.1998, p. 11.

<sup>6</sup> ESC opinion, OJ C 140 of 18.5.2000, p. 42.

<sup>7</sup> ESC opinion, OJ C 123 OF 24.4.2001; COM(2000) 407 final.

<sup>8</sup> The Committee has also prepared an opinion on the proposal for a VIth RTD framework programme, OJ ....

<sup>9</sup> Communication of 22 November 2000, COM(2000) 750 final.

results, in cooperation with the European Space Agency, mobilising European space industries and potential service suppliers.

Galileo's objective is the deployment of a constellation of EU satellites: it will comprise 30 satellites in non-stationary orbit at an altitude of approximately 23 000 kilometres, at an estimated total cost of some EUR 3.25 billion.

4.2 The European resources required for the test and validation phase (2001-2005) have been calculated, on the basis of a cost/benefit study, at EUR 1.1 billion, to be shared equally by the European Commission and the ESA. A Community contribution of a further EUR 600 million is planned for the public-private partnership responsible for the deployment phase (2005-2007). The Commission suggests that from 2007, Galileo will be sufficiently cost-effective as not to require further subsidy.

4.3 The Committee points out that plans for a public-private partnership urgently require a secure legal and financial framework, as well as the establishment of a coordinated management structure for Galileo drawing together the Commission, the ESA and those private investors who wish to contribute within this partnership.

4.4 A major success was achieved at international level during the definition phase: the World Radiocommunication Conference held in Istanbul in June 2000 provided broader frequency bands for satellite navigation services. This result must, of course, be confirmed and ratified by the next WRC in 2003 in the light of the compatibility studies which need to commence as soon as possible.

## 5. The international framework

5.1 Three projects exist at international level: GPS, which has been operating for a number of years; the Russian GLONASS which, although not operational, offers technically-advanced solutions; and the Galileo programme which is emerging from the definition phase and is ready to move into the development and validation phase.

5.2 The American GPS is undoubtedly the most advanced system, since it is based on opening up an existing military system to civilian use. Civilian use is free, but is subject to its military source: access may be reduced in line with internal military security considerations.

5.3 The Russian Federation has considerable experience in developing and operating satellite navigation systems, and a number of contacts are currently being maintained with the EU to sound out the possibility of interoperability between GLONASS and Galileo. One particular area for cooperation might be the coordinated use of allocated frequency bands.

5.4 The European Union sees cooperation and complementarity with international partners for Galileo as crucial, especially those partners who already have standards in operation, as is the case with the United States. Europe is currently examining a number of technical compatibility

issues with the United States with a view to GPS III, which is at an advanced stage of planning, in order to avoid marketing problems while safeguarding the principle that the European system should not be jeopardised. This means ensuring that service continuity is not broken for reasons lying outside the service itself.

The EU is also willing to open up research and development on the Galileo programme and its practical industrial application to all countries interested in joining together to create an efficient, reliable and secure system.

## 6. Galileo for users: potential for state-of-the-art services

6.1 The Committee believes that uses and markets for a satellite navigation system must allow for a wide range of public and private services essential to an integrated European areas, including:

- market-oriented services targeted on broad catchment areas, through an additional dedicated communication channel;
- transport safety services (safe navigation for different modes - air, maritime, road and rail);
- remote medical services (diagnosis for the treatment of patients, location of goods and products);
- civil protection, emergency and law enforcement services (countering low-level offending, drugs smuggling and other common forms of crime);
- customs and excise services (automatic monitoring of movements);
- monitoring of integrated and intermodal logistics, the environment, agriculture and natural resources;
- support for radio navigation and automatic guidance at the cruising, approach and arrival stages.

6.2 The Committee believes that Galileo must firstly, provide competitive, high-quality services in the near future and secondly, achieve a high-definition phase capable of bringing the necessary precision to these applications, accompanied by the guarantees of signal integrity, continued performance and neutrality which are needed where liabilities are engaged, within a predefined framework but with a financial commitment which is balanced in terms of such services:

- 1) open services with no charge, for mass market applications, dual or single frequency applications, precision time-keeping applications;
- 2) commercial services based on open signals for transmission of added-value encrypted data, and commercial and professional applications requiring a guaranteed, higher level of service;
- 3) rescue services based on international standards with integrity confirmation signals, on the basis of GRID systems (a single-view distributed computer/multimedia interconnection system) capable of carrying dedicated encrypted messages;



4) public services, certified services providing performance guarantees with a very high level of security which can, in emergencies, be activated on authority, for public service applications which must always be free of interruption or disturbance.

6.2.1 In addition to these four basic services, Galileo will have to provide an efficient databank system in order to ensure efficient and secure use of other external terrestrial and satellite networks on a multifunctional basis, such as UMTS or UHF and DHS systems, or scientific or technological research and development systems. At the same time, Galileo will have to develop regional certification and reliability systems, with integrity confirmation, for GPS signals and related services in terms of interoperability with Galileo for North America and the Europe-Asia region.

6.3 The Committee underlines the need for Galileo's space infrastructure to be integrated with the various terrestrial systems and technologies to meet the needs of users wherever they may be: in urban areas (where satellite transmissions without ground-based relays may be blocked by buildings), in high-risk areas (construction sites, factories, depots), isolated areas (where the cost of installing and maintaining terrestrial communication systems may be prohibitive), regions in the higher latitudes (where satellite signals are weaker), and on the oceans, in deserts and in the air (where greater risks are present).

6.4 In the Committee's view, the approach to setting up a navigation infrastructure must be based on the requirements expressed by the potential users of the services offered, from the end user to the service providers, and including the public authorities responsible for implementing the rules and regulations.

6.5 The Committee is therefore convinced that large-scale consultation is necessary to obtain a clear understanding of the need for a global service that covers the entire globe, including the oceans and desert areas, with a view not only to ensuring the continuity of services involving maritime and aviation applications but also to enabling system and receiving equipment manufacturers to achieve economies of scale in an unsegmented market.

6.6 Integrating the navigation system with communication systems, in order to exploit them to the full, is essential if positioning, navigation and dating data integrated with added value services are to be transmitted. The concept of a "panoply" of services must consequently be incorporated into the parameters of the navigation system.

6.7 The Committee underlines the need for reliable and short timescales for programme qualification and service definition on the basis of catchment areas, allowing competitive services with global cover to be supplied not only to the general public, businesses and the EU or ESA authorities, but also for sale on a commercial basis on a wider scale, to external players on the world market.

6.8 An approach of this kind, under which Galileo would be open to external uses, and especially in the sphere of communication services, requires rapid definition of the regulatory aspects, particularly the licensing and interconnection arrangements for telecommunications networks and

systems. It could be extended to include applications to improve mapping in Europe and beyond, especially in developing countries with which the Community has special relations. Applications focusing on earth observation will also be studied as part of a global and sustainable development strategy.

6.8.1 In the Committee's view, it is extremely important that an on-board satellite subsystem be developed to permit a modern public search and rescue service. The interest expressed by the signatory states to the International COSPAS-SARSAT Convention, which are currently implementing a system of this kind covering the entire globe, in developing a new complementary service to be provided by Galileo must be sustained. The Committee believes that the system should be set up in such a way as to be complementary with the US system which will emerge from future generations of the GPS.

## 7. **Towards a joint strategy**

7.1 The Committee believes that at the current stage of development of the Galileo programme, a joint strategy must be defined embracing all the players concerned, especially the Commission, the ESA, the public authorities of the Member States and the private sector. The strategy should be based on:

- a single management structure with clear identification of those involved, a defined mandate and a clearly-delineated platform for the development of new-generation services, in the form of a joint undertaking in accordance with Article 171 of the EC Treaty, as a single internal and external representative, the legal bases needed for a fully-fledged European Galileo Agency possibly being laid down subsequently;
- designing and subsequently creating a "Galileo Promotion Company", underpinned by its capacity for integration, market knowledge, financial capacities, expertise in organising navigation systems, and ability to develop and exploit the market;
- establishing implementing arrangements in successive modules which can be monitored and optimised in proper order, by means of effective market demonstrations, integrating Egnos (the European geostationary navigation system), which was launched in 1996 and will be operational from 2004, together with the regional terrestrial GRAS system, into Galileo in order to accelerate its entry onto the market and the resulting income from professional air, maritime and road transport services, applications for the general public, particularly in relation to road traffic, and security and rescue services;
- accelerating the deployment in orbit phase, with the launch as early as 2006 of an initial service module for public and private use, designed with the full participation of the private sector in order to ensure immediate activation of a first range of competitive, broad use services. This would guarantee Galileo's success based on its ability to turn the positioning concept into the "managing mobility" concept of an in-built connection between location with mobile information available to users;

- co-existence and compatibility with GLONASS and GPS and with their future developments, by means of proper guarantees regarding the implementation and technical efficacy of the systems, particularly in the field of signal specification, satellite constellation and terrestrial infrastructure. These should be official established by international agreements, retaining the civilian nature of the Galileo system under civilian control;
- coordinating frequencies with the existing global satellite navigation system as well as with other systems in the event of reallocations of existing frequencies: the WRC2000 allocations for the dedicated European frequency plan should be consolidated on the occasion of WRC2003 on the basis of: three broad bands open to Galileo signals with the capacity to carry navigation, integrity and commercial data to support open commercial and rescue services; two regulated broad bands for the regulated public services, subject to security encryption; signals available on request and integrated Egnos-Galileo signals to back up the Galileo integrity services;
- defining technical standards, to be drawn up and agreed at global level taking account of the need for effective, commercial standards to be drawn up by a forum of the operators directly concerned, but also of the fact that the Galileo system is designed for a large number of user terminals and a vast range of infrastructures: a core of details standards is needed, as is flexibility in the way they are applied to different business scenarios and to the technical requirements of different operators. In accordance with the "new approach" of the Community policy on telecommunications, these requirements should be defined in qualitative terms, leaving quantification to the standards bodies such as CENELEC, IMO, ISO, ICAO and ETSI, on the basis of coordinated action, with a new structure made up of experts from various fields;
- a timetable which, while providing secure successive phases and deadlines, is at the same time flexible, so that it can optimise the position on the world market in line with technological developments and the competitive pressures in play on it.

7.2           The Committee believes that such a strategy is essential in order to sustain (i) the European system's competitive impact at global level, ensuring that it is fully autonomous and that integrity is upheld, free of military inference, and (ii) the economic impact in terms of jobs, covering (a) the human, financial and organisational resources engaged in creating, certifying, implementing and upgrading the system's technical performance, and (b) users and user services with beneficial effects in terms of creating new businesses, new services, new occupational approaches and greater economic and social cohesion within a Europe extended to include the applicant countries, together with new opportunities for cooperation and support for development.

7.3           The Committee would also highlight the key role of a realistic, but well-structured communication campaign geared to ensuring full credibility on a competitive, high-risk market: a dedicated budget line should provide a quality mark for the entire Galileo implementation process and guarantee a foundation of reliability on which industrial, commercial and public service products, services and applications can be developed. This action must be based on a consistent, centralised

global strategy which conveys a message of unity both within and outside Europe, extending to issues of service transparency/security/continuity/integrity for consumers/users.

## 8. **From a joint undertaking to a European Galileo Agency**

8.1 In view of Galileo's importance for the implementation of common European transport policies, for example regarding urban congestion and maritime, rail, road and air safety, as well as for other Community policies such as agriculture, forestry, fisheries, regional development and the environment, together with industrial policy and the Union's external policy, the Committee considers it important that the Galileo management structure is, and is seen to be, a single entity.

8.2 In this regard, the Committee urges the Council and the European Parliament to create a single platform for new generations of services by setting up a "joint undertaking" under Treaty Article 171, within a time-frame extending to 2003, and to back this up with a fully-fledged European Galileo Agency embracing technical, research, standards and standardisation factors, enjoying a high profile in the eyes not only of operators and users, but also of the rest of the world as part of a service-based approach to the global market, with the ability to monitor and check the timetable containing the various phases and deadlines, and with an advanced capacity to communicate information to ensure a European quality mark for the entire process.

8.3 The joint undertaking and subsequent European agency should embody four pillars: an official steering committee open to public and private players; a high-level ethics committee to ensure that the requirements of transparency, exclusively civil use, and safeguards for privacy are satisfied; a regulatory body to provide adequate interoperability guarantees; and an operating body along the lines of the American JPO (Joint Program Office).

## 9. **"Galileo Promotion Company"**

9.1 The Committee is convinced that it is essential, from the outset, that the commercial structure assume the form of a "Galileo Promotion Company" bringing together the public authorities through the European Galileo Agency in order to launch systems to define and certify costs, and to stabilise the system's system of expansion, development, reinforcement and maintenance: ownership of the company should gradually shift from full public control to private investors who, by the end of the process, should bear the full financial responsibility - technical and political control and responsibility remaining with the public sector.

9.2 In the Committee's view, the private sector should therefore be involved from the inception of the Galileo Promotion Company, even if on a minority basis, although this should ensure its participation in defining services and designing the system; responsibility, costs and risks should subsequently be fully borne in tandem with the growth of return on investments in services as they come on stream.

9.3 The establishment of an implementation system for Galileo involving successive modules should make it possible not only to check on the product's market quality rapidly, and lend

credibility to the process, but also to speed up profitability and gradually relieve the public sector of part of the financial cost of managing Galileo. Technical and political responsibility for Galileo must however remain in the public sphere, given the sector's highly strategic nature.

## 10. **Interoperability between Galileo and other satellite navigation systems**

10.1 It is the Committee's view that a "standards war" must be avoided by ensuring that Galileo is fully interoperable with other existing and future satellite navigation systems, at the same time establishing control over full service integrity and continuity, and the civilian nature of the European navigation and positioning system, as an essential requirement of the system.

10.2 On this point, the Committee considers it important that a new structure be created bringing together European and international standards bodies from the various sectors concerned in order to ensure a coordinated approach based on quality of requirements and flexibility of quantitative standards, tailored to a vast range of operators, infrastructures and receiver terminals.

10.3 The Committee stresses that coexistence and interoperability must in any case be put on a formal legal footing by means of international treaties covering guarantees for signal specification, satellite constellation and terrestrial infrastructure. These guarantees must in any case include a multiannual financial programme sufficiently long to ensure continuity of service provision on a reciprocal basis.

10.4 The Committee believes that clear intellectual and industrial property arrangements must be established in order to safeguard rights over technological applications developed from Galileo, together with new services introduced at European level. This should be achieved by clarifying the relationship with non-European intellectual property rights, particularly those arising from American GPS operations.

## 11. **The Galileo system and civil society**

11.1 The Committee is convinced that clarity about the likely economic and social impact of Galileo for all the components of civil society is the only way of creating the high level of consensus which is needed if citizens/taxpayers are to bear the costs of bringing the system into operation.

11.2 To this end, the Committee considers it crucial to define the services, new businesses and new jobs which should be generated in line with the declared strategy of the Heads of State and Government in March 2001 at the Stockholm European Council of becoming "*the most competitive and dynamic knowledge-based economy in the world capable of sustainable growth with more and better jobs and greater social cohesion*"<sup>10</sup>.

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<sup>10</sup> Conclusions of the Stockholm European Council, 22 and 23 March 2001.

11.3 Turning to transport and the environment, it is worth focusing on the use of, and the market for, the satellite navigation system in reducing pollution, especially CO<sub>2</sub> emissions, in keeping with the commitments assumed in the Kyoto Protocol: Galileo's impact on transport efficiency - particularly cars, lorries and buses, together with light commercial vehicles and air services - is already one of the most requested services not only for environmental purposes, but also in order to reduce transport stress and times, and fuel and related costs. Safety in road, rail and air transport, together with the development of trans-European networks and control and management of the Single European Sky is also a key element for the general public and society, reflecting the legislative initiative currently being carried forward by Community policies<sup>11</sup>.

11.4 In the maritime sector, satellite navigation can make shipping safer at all stages, providing images and positions of vessels, monitoring illegal discharges into the sea and automatically identifying vessels, lessening the risk of ecological and human disasters triggered by meteorological, routing or cargo-related factors, facilitating the growth of marine wildlife and biodiversity, and monitoring fishery activities and oceanic and glaciation trends.

11.5 In the area of agriculture and the environment, the Committee stresses the importance of the contribution the Galileo system can make by means of a comprehensive listing of services available for measuring surfaces, harvesting dates and deadlines, targeted use of fertilisers and pesticides, the level and structure of irrigation systems, the prospects for afforestation, soil conservation combined with measures to counter desertification, and boosting rural development.

11.6 With regard to convergence of communication systems - mobile communications in particular - the Committee is of the view that citizens, business and society in general should be provided with a clear view of the prospects for secure, reliable services offering a range of combined positioning-communication options relevant to private, individual use, business-to-business purposes and contact with public administrations, as well as for functions such as e-learning, e-commerce and new, integrated mobile Internet platforms.

11.7 The Committee sees a proper balance between open, no-charge services, services subject to payment and public services, and between the cost of such services for individuals and for society as a whole, as a key point. The Committee has already voiced its views on the universal telephone and telecommunications services, and on the costs related to the telephony liberalisation process<sup>12</sup>. Costs can clearly vary and ensure greater accessibility in proportion to the number of users on the European and global market.

11.8 The problem of payment of fees for such services remains open, especially regarding controlled access to signals for users such as air-traffic controllers, airlines, public service network

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<sup>11</sup> The Committee has adopted a number of opinions relating to safety in the different transport modes, e.g.: the ESC opinions on maritime safety/Erika I (OJ C 14 of 16.1.2001) and Erika II (OJ ...), and the ESC opinion on the Communication on priorities in EU road safety - progress report and ranking of actions, OJ C 14 of 16.1.2001.

<sup>12</sup> ESC opinion on the Proposal for a Directive of the European Parliament and of the Council on universal service and users' rights relating to electronic communications networks and services, OJ C 139 of 11.5.2001.

managers, rail companies, road traffic controllers, customs services etc. Another unresolved question concerns services with high security requirements: in the Committee's view, the signal encryption option should be built into the financial estimate and confirmed during the validation phase.

11.9 Concerning public services which require a high level of signal precision and quality, and absolute reliability of transmission, the Committee believes that the issue of certification should be resolved in accordance with the regulations applicable to the various modes of transport, such as the ICAO for air transport and the IMO for maritime transport, in order to guarantee integrity and continuity against any malfunction.

## 12. Galileo's socio-economic impact

12.1 The Committee is convinced that the social impact of the Galileo system is the key to its acceptance and promotion. This applies to both the benefits for society and in terms of quality of life, new and better jobs, and new high-tech businesses.

12.2 The development of the aerospace industry and related sectors has already been discussed in a Committee opinion<sup>13</sup>: it is a strategic sector, where Europe occupies a prominent place on the world market and is making major efforts in terms of human, financial and research resources, as demonstrated by the numerous projects launched under the Community's multiannual research and development programme.

12.3 Europe's SMEs could benefit enormously from the Galileo programme: those involved in supplying space programme activities and those involved in the use and development of applications and services generated by the programme. In the Committee's view, spin-off actions involving these applications and services should be promoted, as has happened in the United States, where more than 300 SMEs have come into being thanks to GPS applications.

12.4 With regard to employment, Galileo's macroeconomic impact is hugely important in terms of both investment in human resources and in new activities, and of developing European services supplied using European technologies: this involves both training of highly-qualified scientific and technical staff, and the emergence of new operators and service organisers with exponential growth prospects.

12.5 Galileo could pave the way for major developments in remote medicine, particularly in the area of digital tomography, permitting remote consultations for patient treatment and care: it could have a significant part to play in graduate, post-graduate and continuing training for the medical profession.

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<sup>13</sup> See note 4.

12.6 The Committee considers that the Galileo programme could help spread knowledge of the Union's distinctive cultures, and could enable educational programmes to be directed to all sectors of the community.

12.7 The Committee's view on safeguards for privacy is that appropriate measures to ensure confidentiality and respect for individual, fundamental freedoms and for commercial information must be devised. This should be achieved through the full application of existing Community law relating to protection of private life<sup>14</sup>, and by providing technical means for protection and encryption, matching the new capacities of integrated identification, positioning and communication services.

12.7.1 The Committee recommends that a high-level ethics committee be set up in conjunction with the joint undertaking and subsequent European agency, in order to guarantee transparency, exclusively civil use and safeguards for privacy at every stage of the development and final implementation of the Galileo programme.

### 13. Conclusions

13.1 In the light of the above comments, the Committee lends its full support to the Galileo programme as a key strategic element for the competitiveness of the European system, and on account of Galileo's potential positive impact at world level, its innovative spin-off in economic, employment and social terms, and its potential to enhance the quality of life for civil society.

13.2 The Committee therefore wishes to be kept regularly briefed on the Galileo programme, so that it can take an active part in future practical developments. It further urges that a joint strategy be defined in the near future, and that efforts be speeded up so that not only operators, but also the general public, can see for themselves an initial range of attractive and effective services.

Brussels, 12 September 2001.

The President  
of the  
Economic and Social Committee

The Secretary-General  
of the  
Economic and Social Committee

**Göke Frerichs**

**Patrick Venturini**

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<sup>14</sup> See the ESC opinion on the Proposal for a Directive of the European Parliament and of the Council concerning the processing of personal data and the protection of privacy in the electronic communications sector, OJ C 123 of 25.4.2001, p.53.



