

QUIS VADIT CUM VOBIS, GALILEO?

Institutional Aspects Of Europe's Own Satellite Navigation System

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Abstract

With the decision early 2002 to develop Galileo, the second generation European GNSS-system, and to have it fully operational by 2008, the member states of the European Union (EU) and the European Space Agency (ESA) have taken a large step forward. The question "*Quo vadis, Galileo?*" has therefore, by and large, been answered – 'Into orbit!' However, many legal parameters for the future system have yet to be defined; amongst those one of the most important is the definition and establishment of the institutional structure which should bring Galileo there and make sure it remains there, in a safe, sensible and operational manner. In other words: '*Quis vadit cum vobis, Galileo?*' – 'Who goes (there) with you?'

The paper will present a brief overview of the issues involved in determining and developing the future institutional structure of Galileo, starting with the current Galileo Interim Support Structure (GISS) and the Joint Undertaking (JU) which will be its successor. This will lead into the issue of the prospective public supervisor and private operator which are supposed to be at the core of that institutional structure, tied together by a Concession Agreement-type of arrangement.

In reflecting upon the various issues, attention will be paid to an interesting precedent from the satellite sector, i.e. the privatisation of INMARSAT and its transformation into Inmarsat. Other issues to be touched upon in this light concern the possibilities for non-EU and non-ESA member states to join the Galileo core

institutional structure, the need for co-ordination and interoperability with GPS and GLONASS (and possible other systems), issues of negotiation with non-European states, and dealing with liability issues.

1. Introduction

Early 2002, the member states of the European Union (EU) and the European Space Agency (ESA) gave the final green light for the development of Galileo.¹ According to the planned time schedule, by 2008 some 30 satellites in MEO will provide various timing, positioning and navigation signals, in a number of cases being vastly superior (in particular in terms of accuracy and integrity²) to signals emitted by the current GPS³ and GLONASS⁴ systems.

At ITU's WRC 2000 and the recent 2003 WRC the necessary frequencies for Galileo were secured. Then, last July also the contracts for the first two Galileo satellites were signed – one with Surrey Satellite Technologies, the other with Galileo Industries. In other words: all is set now for Galileo to prepare for Full Operational Capacity, due by 2008.

In further preparing the stage however, one of the major issues concerns the details of the institutional structure which is to run Galileo. Contrary to GPS and GLONASS, run by the military authorities of a single country with other governmental departments being merely involved through consultation boards and their likes, Galileo was envisaged from the beginning as a Public-Private Partnership (PPP). The private sector should be

fundamentally involved in financing, operating, maintaining and marketing the system – for in further contrast to GPS and GLONASS, Galileo will *inter alia* provide services against fees.

Whilst the question “*Quo vadis, Galileo?*” has thus by and large been answered, the question to be dealt with by this paper by contrast remains: ‘*Quis vadit cum vobis, Galileo?*’ – ‘Who goes (there) with you?’

2. The Galileo core services

Before going into further detail regarding this essentially institutional question, it is necessary to provide an overview of what the system will actually do, and why it was decided to develop it in the first place, in a little more detail.

Galileo will provide a number of signals, which through various combinations and the addition of data or other features will amount to five core types of services, considered as Galileo-only services:

- the Open Service (OS);
- the Commercial Services (CS);
- the Safety-Of-Life Services (SOL);
- the Public Regulated Services (PRS); and
- a contribution to existing Search-And-Rescue Services (SAR).

OS and CS might be classified as ‘private services’, in the sense that there are no direct public concerns – as opposed to general interests in economic and social benefits – calling for such services to be provided.

The Open Service essentially equates with the signals known as GPS SPS and GLONASS SPS (though it may offer somewhat enhanced accuracy and continuity), and will be provided without any integrity monitoring. As an open access signal it is available to anyone with the right receiver, without any user fee. Thus, there is no contract or quasi-contract involved. Such usage will as a consequence be individualised, and will

focus on a number of personalised mass-market applications.

The Commercial Services by contrast will be provided against a fee, and hence be covered by a contract, to any value-added service provider or end-user willing to pay the price for the data added onto the signal proper, as well as for a service guarantee to be provided and other benefits (such as relating to liability). The positioning/navigation services provided as Commercial Services will likely be incorporated by value-added service providers in such areas as banking services, various telecommunications applications and Location-Based Services (LBS) – services with a certain commercial value, but not safety-sensitive and hence not specifically requiring high levels of continuity and integrity.

SOL, PRS and the contribution to SAR might in contrast with OS and CS be classified as ‘public services’, since their *raison d’être* is a public need for safety- and/or security-enhancing services.

The Public Regulated Services in a sense also provide a second manifestation of a contractual Galileo service. Since their usage is envisaged in certain security-related and (other) governmental areas (police and emergency services, possibly also military usage), the signals will be encrypted and secured against unauthorised usage. Access to these services is principally available only to a closed user group of governmental (or closely government-aligned) entities, which will have to conclude a contract in some form to avail themselves of the necessary decryption keys required for access.

The Safety-Of-Life Services would then form the third manifestation of contractual core services to be provided by Galileo. They will also somehow – likely indirectly – be provided against fees, and will be fully augmented (including the level of integrity monitoring required by the aviation sector). Thus, somehow

contractual arrangements will underpin this service provision, though as of yet it is not certain how this would be structured, as a consequence of the current structure of navigation service provision in the aviation sector.

Additionally, Galileo will contribute to the existing global system of satellite-based Search-and-Rescue (SAR) services, notably as a European segment of the COSPAS-SARSAT system. In view of its special contributory character, however, this Galileo service will not further be taken into consideration here.

In addition to these five Galileo-only services as dealt with, from a broader perspective also Galileo local services are to be provided by Local Elements plus (optionally) Regional Elements; and Galileo combined services are to be provided by other systems together with any combination of Galileo, Regional Elements and various types of Local Elements.

The option of co-operating with Regional Elements is considered in order to allow those non-European regions interested in providing their own integrity monitoring to link up with Galileo. Local Elements are envisaged to be established wherever there would be a local need for even more enhanced accuracy and availability than the Galileo services themselves can offer.

3. Galileo: Towards a PPP

Galileo is a project initiated by the European Commission on behalf of the European Union and its member states and the European Space Agency and its member states.⁵ The overarching political, economic and social mission of establishing Galileo has been summarised as “to develop and implement a competitive, leading edge Global Navigation Satellite system, which provides the best in choice and quality to the end user, attracting business

investment and supporting ongoing social and economic growth in Europe”.⁶ In other words: Galileo is supposed to bring social, economic, safety- and security-related as well as political and strategic benefits especially to the European states and peoples involved, but in a wider sense to all states interested in such benefits.

It may be interesting to note in this respect that the People’s Republic of China has declared its willingness early in 2003 to discuss a contribution in the range of 200 ME to the development and deployment phase of Galileo in return for substantial and structural involvement in the system operations at the highest level – i.e. presumably either as member state of a relevant public supervisory body, or as partner thereof at a level of principled equality.

One key element of the Galileo project from the outset was the aim to include private participation, comprising from this perspective essentially both private investment and private operational and decisional involvement, in a fundamental and substantive fashion through some form of PPP. This aim is already reflected at the highest level in the choice to include both a public supervisor, taking care of the various public interests and concerns in Galileo, and a private operator reflecting the PPP at the core of the institutional structure.

The main reasons for involving a private operator as a key entity in the organisational structure for a system with obvious fundamental public aspects were the following:

- for flexible, non-bureaucratic and commercial modes of operation;
- for marketing purposes;
- for obtaining finances and investments from the capital markets in normal commercial modes;
- for dealing with IPR issues in a proper and more commercially-oriented fashion;

- for obtaining insurance against limited liability; and
- for making a sensible business partner.

A further envisaged beneficial aspect of a private operator is generally conceived to consist of the far better capabilities of, and opportunities available to, a private entity to develop new services and markets in a commercially assertive manner.

Vice versa, the reasons for involving a public oversight body as a key entity in the organisational structure for a system where private and commercial modes of operation have been deemed to be most beneficial were the following:

- for negotiating and concluding agreements with states 'external' to Galileo yet hosting Galileo-related assets/service providers;
- for licensing non-European augmentation and integrity providers (or negotiating and concluding agreements on such operations by the private operator);
- for serving the general public interests e.g. in regard of safety, security and search-and-rescue issues; and
- for (possibly) offering unlimited liability in the last resort to value-added service providers and end-users.

Further envisaged beneficial aspects of a public supervisor would generally be seen to consist of enhanced trust by the public at large in the system (with respect to such issues as certification and safety licenses), as well as by negotiating where necessary access for the private operator to the markets of states not belonging to the Galileo core group of states. Finally, also liaising with other relevant organisations (such as ICAO and IMO) would best be undertaken by such a public supervisor.

4. Galileo: the current status

Until recently, the task of preparing the ground for Galileo fell on the Galileo Interim Support Structure (GISS),

essentially embodying the assignment of a number of expert ESA staff members to work under guidance from the European Commission. The GISS, established December 2001, *inter alia* took over supervision of the study projects going on in the EU framework, as well as setting the scene for a more permanent and institutionalised entity once the political hurdles at the highest level would have been overcome.

Once this was achieved, the overarching aim of combining the efforts, expertise and input of both the public and the private sector in Europe resulted in the final establishment of the Galileo Joint Undertaking (GJU) this summer following the relevant EU Council Resolution of May 2002.⁷ Currently the GJU represents only the two key public partners in Galileo, the European Union through the Commission and the European Space Agency, whereas at a later stage it is envisaged that private partners would also participate (including through investments) in the GJU.

Legally speaking, the GJU is a unique animal: whilst it would, at least for the first period of its existence, essentially be the vehicle for co-operation of two intergovernmental organisations, the EU and ESA, it does not constitute an intergovernmental entity itself. To start with, it was not established by means of an international treaty, but through an EU Council Regulation. Furthermore, international legal personality was expressly excluded at various points in the texts. Whilst not a private entity properly speaking either, for the purposes of European law – or for that matter of the national laws of the state where the GJU is established, i.e. Belgium – it would nevertheless be subjected to the same regimes as private entities.

The present role of the GJU essentially consists of preparing the ground in general terms for the deployment and operational phases of the Galileo system,

and more specifically of selecting the private consortium which would come to play the central role in the institutional structure as the private operator by that time. Though nothing specific has been decided or even indicated yet with respect to such a scenario, it may tentatively be assumed that the GJU (especially after the private operator has been chosen) will also prepare the ground for the public supervisor, or possibly evolve itself into taking such a role.

This last option would likely require the absence of private participation in the GJU other than in an advisory or contributory capacity, since the public supervisory character would fit ill with a (co-)decision-making role of private entities. It may be noted here that the GJU as such is established for an interim period, which indeed so far leaves all options open.

5. The public supervisor

So, on the one hand it has been decided to establish a public entity of the international variant – currently going by the name of Galileo Supervisory Authority (GSA)⁸ – as a core element of the organisational structure for Galileo. This entity should at least take care of the evident public interests in Europe in building and maintaining the Galileo system in the first place (e.g. security, safety and general economic progress), as well as relevant international aspects (negotiations with third states), generally speaking by exercising some sort of control over the private operator.

In addition, the GSA may become the owner of the system as a preferred option; it should at a minimum be involved in maintenance, replenishment and further development thereof. However, this will be a matter yet to be determined by policy choices and concession negotiations.

More in detail the role of the GSA as public supervisor would have to focus on:

- providing the political credibility at the international level necessary to enhance, wherever necessary through international legal agreements, the business opportunities for the private operator, especially with regard to OS and CS;
- ensuring that the general public as well as specific European interests in Galileo are duly respected by the private operator's operations and activities, especially when it comes to SOL, PRS and the contribution to SAR;
- ensuring a proper and fair liability regime, possibly including a Compensation Fund, for relevant types of damage occurring in the course of Galileo activities and operations;
- ensuring a proper certification scheme as a specific means to enhance the overall trust of value-added service providers, end-users, consumers and the public at large in Galileo; and
- ensuring that any bankruptcy or other market failure of the private operator would not unduly prejudice the overall interests of the Galileo core states in Galileo, preferably through ownership of the system.

6. The private operator

On the other hand, the institutional structure shall at its core include a private company – currently named Galileo Operating Company (GOC)⁹: it should at least operate the system and market the services, as well as develop new markets, and in addition could possibly own the system or at least be closely involved in maintenance, replenishment and further development thereof. This, however, as indicated is in the last resort firstly a policy or political rather than a legal decision, and secondly, likely to be the subject of further negotiations as part of

the bidding process for the Galileo concession.

The role of the GOC as private operator would consequently focus on:

- using its market know-how and other advantages of private modes of operation for turning the provision of Galileo services into a profitable business, in particular with respect to OS and CS;
- ensuring that the obligations imposed upon it by or through the GSA will be properly balanced with guaranteed long-term revenues, such as by availability payments or shadow tolls, and other relevant assurances with respect to SOL, PRS, and the contribution to SAR; and
- ensuring generally that the risks imposed on it through the PPP would be those it is capable of handling best, and this moreover in return for the proper incentives.

It would be the GOC's business for example to conclude contracts with value-added service providers interested in integrating CS into broader services to be offered to the latter's customers; e.g. by adding databases and communications facilities offering taxi companies a detailed and continuously updated traffic information system.

Under circumstances, the GOC might also come to act itself as value-added service provider; especially for the purpose of developing new markets by way of pilot projects this is an approach currently being contemplated. Also, whilst as such the concepts of Regional Elements and Local Elements have been developed envisaging those to be entities outside the Galileo institutional framework proper, nothing in principle would prevent the GOC from taking up such a role. At the same time, both possible extensions of the GOC's role would lead to considerable complications as a consequence of additional legal regimes and issues being involved.

By contrast to the above therefore, another option open to the future GOC would be to actually establish a daughter company for

each of the Galileo core services which are to be delivered, in view of the fundamental differences between OS, CS, PRS and SOL (not to mention the contribution to SAR) also in terms of markets.

If commercially feasible, the private operator could also contract directly with individual users who are interested in Galileo timing or positioning information of a higher quality than the OS, and are willing to pay for it.

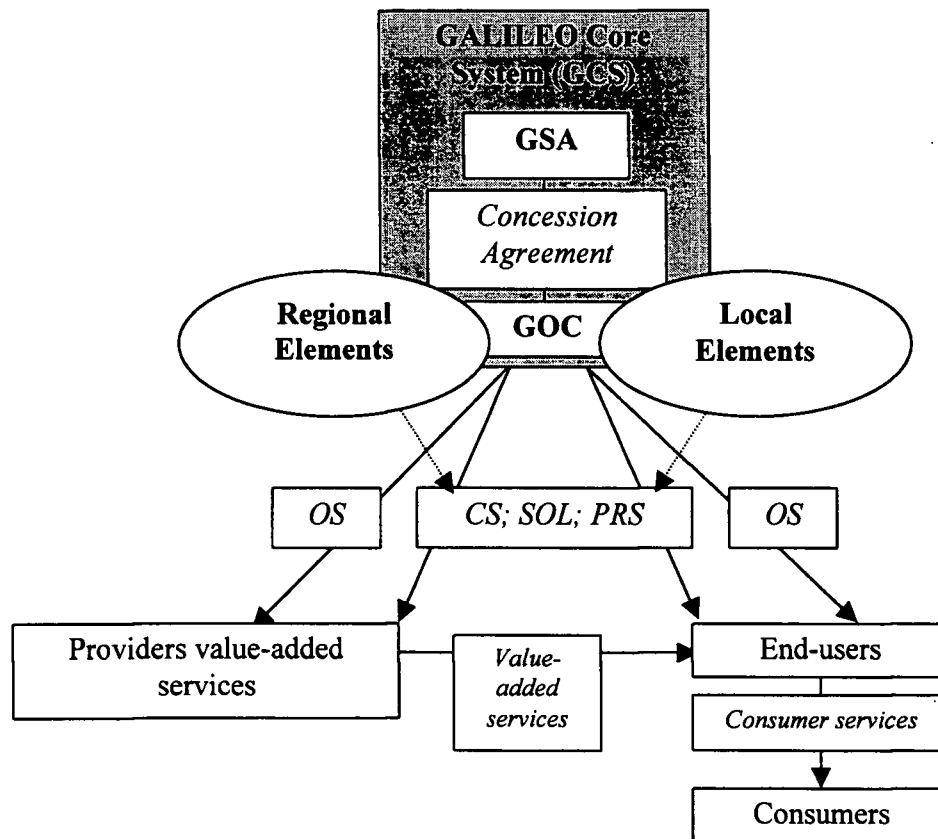
Finally, the GOC will serve the general public as well as the aim of opening up and developing new markets by the establishment of Service Centres of some kind, providing *inter alia* necessary information on standardisation and certification issues, liability arrangements and general opportunities for contracting with the GOC to obtain its services.

Again, as there are a number of serious alternative options available, in the end much will depend upon the bidding and negotiating process as well as upon who will finally win the concession.

7. The Galileo Legal/Functional Model

The above general analysis leads to a rather complex construction in terms of Galileo services and entities, which is best illustrated by the Galileo Legal/Functional Model developed in the context of various Galileo-related studies; a generic summary version of which, not including for example the special case of Galileo's contribution to SAR activities, is reproduced below as Table 1.

Table 1. The Galileo Legal/Functional Model (simplified generic version).



8. The Concession Agreement

The most important issue, in legal terms, of the PPP and the relationship between GSA and GCO at the heart of Galileo’s envisaged institutional structure, is provided by a Concession Agreement, serving as an umbilical cord between the two entities.

From this perspective, such a Concession Agreement, including wherever relevant flanking arrangements, should first of all establish clarity on key issues such as the financing aspects which are at the heart of any PPP – read the respective shares and modes of financial contribution from public and private sectors. This, in close co-operation and consultation with the private sector which has to bid for the concession.

Such financing arrangements to be proposed should closely mirror the

respective risks taken by public and private sectors under the concession PPP.

Generally speaking risks are to be borne by the respective PPP partner best equipped to handle them, and should thus distinguish between public and private risks. Public risks in this regard refer to such risks as policy, legal, regulatory and licensing risks, in particular as relevant for SOL, PRS and the contribution to SAR in view of the public characteristics of those services. Private risks would refer in particular to financing and commercial risks, such as revenue risks (especially for CS) and intellectual property rights-related risks (especially for OS). Finally, some hybrid risks should be dealt with jointly, such as most importantly liability risks.

The Concession Agreement either itself or through flanking arrangements should

furthermore deal with the following important issues:

- the distribution of (contractual) liability;
- the possible need for denial of Galileo services in security-sensitive situations;
- potential bankruptcy or other fundamental failure of the GOC;
- how IPR should be distributed and dealt with;
- to what extent service guarantees would be imposed (in particular for SOL and PRS, whereas with respect to CS it should be left largely to the commercial freedom of decision-making of the GOC);
- certification;
- long-term planning issues, including re-competition issues and availability payments or other public sector contributions; and
- the applicable commercial law for any business disputes.

9. The Example of Inmarsat

For the future drafting of a Concession Agreement and any flanking arrangements, the case of INMARSAT-after-privatisation would serve as an interesting example. The residual intergovernmental organisation IMSO maintains, through a binding Public Service Agreement which can not be unilaterally altered or cancelled, control over the private operator Inmarsat with respect to those public services which the latter is obliged to continue to provide.¹⁰ For Inmarsat, this mainly referred to the Global Maritime Distress and Safety System (GMDSS); in the case of Galileo, this should refer especially to the obligatory aspects of SOL, PRS and the contribution to SAR, as well as the more general obligations regarding security issues in particular.

The PSA is further 'flanked' by a set of arrangements, called Restructuring

Arrangements, dealing with other specific aspects of the relationship IMSO-Inmarsat and the transitional period. These concerned:

- The Master Transition Agreement, the principal agreement between the old INMARSAT, the new Inmarsat companies established under the UK Companies Act of 1985, and the Signatories. The other agreements, with the exception of the LESO Agreements, were attached as schedules to the Master Transition Agreement.
- The Master Novation Agreements between the old INMARSAT, the Company and each Signatory relating to the novation of Signatory contracts. Under the Novation Agreements, INMARSAT ceased to be a party to any contract and was replaced by the Company.
- The Business Transfer Agreement between INMARSAT and Inmarsat Ltd. relating to the transfer of the business from INMARSAT to the Company.
- The Licence Agreement between INMARSAT and the Company relating to the use of the INMARSAT name and logo.
- The Shareholders Agreement between Holdings and the shareholders, by means of which the shareholders agreed to support the company to carry out an Initial Public Offering (IPO).
- The Land Earth Station Operators (LESO) Agreements between Inmarsat Ltd. and each of the LES operators. The LESO Agreement authorises the LES operators to provide services via Inmarsat.

Thus, a whole set of well-elaborated arrangements was necessary to ensure a proper transition from the old to the new situation, as well as a proper relationship between the new public and private partners.

10. Towards a Galileo Convention?

For a number of reasons, it might be desirable moreover to establish a dedicated Galileo Convention, i.e. an international treaty between the Galileo core group of states acting as an umbrella over the Concession Agreement. This Convention should *inter alia* provide for the proper establishment of the GSA including some measure of international legal personality and functional immunities; as well as deal with the residual responsibilities of the states behind it, security- and safety-interfaces with other relevant organisations and authorities, liability solutions in terms of a Compensation Fund, Galileo international relations, certification schemes and the role and competencies of any Galileo-dedicated regulatory body if such a body were to be established.

It should be noted here from an institutional perspective, that such concepts as 'GSA' and 'Galileo-dedicated regulatory body' in first instance would be referring to abstract roles, without prejudice as to which entity, new or existing, would eventually be entrusted with the relevant tasks, status and role.

Any Galileo-dedicated regulatory body however would for reasons of transparency and fairness obviously need to be clearly separate from a GSA, even as the latter will have some important public and semi-regulatory competencies as well. This means that if, for example, the European Union as represented by the European Commission would come to take up the role of regulatory body – which it seems excellently placed to do, in view of the extended regulatory machinery which the Commission can avail itself of – the role of GSA by contrast should not be played by any entity too closely aligned to, or even part of, the EU institutional machinery.

Whereas in the long run a Convention would provide the optimum solution, it is clear it might take a long time to become realised, and might even turn out not to be politically feasible. For both reasons, certainly in the short run EC law harmonisation measures, taking advantage of the well-weathered legislative machinery existing within the European Union, should in particular *complement* existing law and regulation not to be changed easily – in other words: in particular in those areas not yet structurally covered by legal regimes (mostly focusing on the multi-modal aspects of Galileo therefore, exceptions mainly arising in such areas as rail and road transport) and dedicated to the novel, overarching and comprehensive features of Galileo.

11. A special issue: liability and Galileo

Liability, as the most down-to-earth and financially quantifiable issue in GNSS, also presents a special issue from the institutional perspective. In principle, a number of existing relevant regimes would remain applicable also to cases of damage involving Galileo even if none of them are to any appreciable extent focused on GNSS or navigation-related issues. They would moreover, to the extent agreed upon at the international level, or conversely to the extent constituting a matter for national law of non-Galileo core states relevant as potential Galileo markets, not be easily changed by any regulatory effort within those core states and/or the European Union. This concerns in particular non-contractual (third party/tort) and product liability. Any Galileo-dedicated liability regime should therefore be essentially built 'on top of' such existing liability regimes, e.g. by efforts to harmonise relevant third party liability for Galileo-related cases at an EU level – as it

was achieved to some extent in the area of product liability.

As to contractual liability, it would of course operate in first instance as between GOC and contracted service providers (and possibly end-users). The relevant contracts at the same time should deal most prominently with derogation of non-contractual liability claims addressed to the latter, to the extent erroneous or absent Galileo signals/services would be found to constitute the (ultimate) cause of the damage. This in turn requires the incorporation of monitoring equipment in the system, in order to distinguish such cases from those where other causes would be responsible for the damage, as well as a coherent certification system providing the GOC with a possible defence against undue claims.

Furthermore, in view of the Galileo business case, it would be desirable to establish a two-tier liability system in dealing both with direct non-contractual liability claims against the GOC, and with the contractual derogation of non-contractual liability claims against its contracted customers. The first tier would call for liability of the GOC up to a certain limit, for which the GOC would obtain obligatory insurance at reasonable cost. The second tier should be somehow taken care of by the GSA and/or the member states behind it, with the option of a Compensation Fund (similar to the cases of oil pollution¹¹ and the nuclear power industry¹²) presenting the preferable instrument.

Whilst these scenarios would obviously have to be integrated into the Concession Agreement or a flanking arrangement, preferably they would also be covered by the proposed Galileo Convention. In view of the distinct possibilities for such a Convention to be realised only at a later stage, or even not at all, it would be advisable in the meantime to use the contractual chain-concept developed for aviation-related liability in the context of

Eurocontrol and to be embodied in the relevant Framework Agreement as much as feasible also in the wider context of Galileo, to ensure that a reasonably proper and coherent liability regime would be in place from the start.

Such liability 'guarantees' finally should be incorporated as a core element into the broader concept of service guarantees, as these would be foreseen for (in particular) CS (similar guarantees could also be envisaged *vis-à-vis* SOL and PRS, but would take on a different character for a number of reasons; in the first case it might be better to refer to 'integrity guarantees', in the second case to 'security guarantees') – but obviously subject to the commercial feasibility as perceived by the GOC-to-be. Such service guarantees would, beside guaranteeing a certain service level, also guarantee the continuous availability of that service level – in other words, effectively integrity.

12. Concluding remarks

It is clear that a highly complex, and in some respects quite revolutionary system such as Galileo is going to be, *inter alia* requires a sound institutional and legal framework within which to operate. Whilst the main contours of such a framework have by now gradually become clear, such as the PPP-structure encompassing a public supervisor and a private operator at the heart of the system and the need for a comprehensive Concession Agreement-structure preferably backed up with a proper Galileo Convention, these contours only raise further and more detailed legal and institutional issues. Some of them, e.g. how risks have to be allocated, how liability will have to be dealt with, and how to balance the respective competencies of the two entities thus involved, have briefly been touched upon in this paper. Some others, such as how to

deal with IPR, standardisation and certification issue, still remain to be analysed in greater depth.

Yet, generally speaking, analysis would have to occur along the same lines; and the Galileo Legal/Functional Model also here may serve as an indicator as to how to proceed. In any event, there is still a lot of legal analysis and work to do, before Galileo will become operational in 2008.

Endnotes

¹. See Conclusions of the Council, 2420th Council meeting, Transport/Telecommunications, Brussels, 25/26 March 2002, SN 1790/02, pp. 19-21; Council Regulation (EC) No. 876/2002 of 21 May 2002 setting up the Galileo Joint Undertaking; OJ L 138, of 28 May 2002, pp. 1-8.

². 'Integrity' refers to the trust a user can place in the correctness of the signals, and to his being warned if the signals are no longer within the bounds of such correctness as indicated by certain parameters. For the purpose of aviation, to allow for the use of any navigation aid in the course of precision operations, ICAO requirements call for monitoring such integrity in order to allow a Time-To-Alert (TTA) of 6 seconds maximum, i.e. within 6 seconds of a signal straying outside the relevant boundary values, the pilot should be informed to no longer trust those signals, allowing him to switch to other navigation aids and/or perform the necessary manoeuvres.

³. GPS stands for Global Positioning System, the US system providing signals to civil users since 1994.

⁴. GLONASS stands for Global Orbiting Navigation Satellite System, the Russian system providing signals to civil users since 1995.

⁵. It should be noted here that Norway and Switzerland as ESA member states are not

member states of the European Union, yet shoulder their part of the financial burden at least when it comes to the development and deployment phases of Galileo. Conversely, EU-members Luxembourg and Greece are not members of ESA.

⁶. GALILEO Mission Requirements Document, Issue 5, Rev. 1.1, of 27 March 2003, p. 12. See further in more detail also GALILEO Mission High Level Definition, of 23 September 2002, pp. 12 ff.

⁷. Council Regulation (EC) No. 876/2002 of 21 May 2002 setting up the Galileo Joint Undertaking; OJ L 138, of 28 May 2002, pp. 1-8; Foundation Act of the Galileo Joint Undertaking by the European Community and the European Space Agency, ESA/LEG/274; 8 July 2003.

⁸. Alternative names have been coined, but the crucial issue is of course not the name chosen, but the legal character (in this case public), role, and competencies and responsibilities of such an entity.

⁹. Alternative names have been coined, but (again) the crucial issue is not the name chosen, but the legal character (in this case private) role, competencies and responsibilities of such an entity.

¹⁰. See Amended Convention on the International Mobile Satellite Organization of 1998, Artt. 3, 4(1); Public Services Agreement between the International Mobile Satellite Organization and Inmarsat One Limited and Inmarsat Two Company of 1998, Sec. 2.

¹¹. As per the 1992 Civil Liability Convention and the 1992 Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage.

¹². As per the 1960 Paris Convention on third-party liability in the field of nuclear energy and the 1963 Brussels Convention complementary thereto.