Airport Congestion at Frankfurt and the Law

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Abstract

Airport access has become a scarce resource in civil aviation. In part 1, this thesis uses the example of Frankfurt Airport to introduce to the phenomenon of airport congestion and argues that states are under a legal obligation to prevent a situation in which airports can no longer keep pace with the rapid growth of civil air transport. In part 2, possible remedies to airport congestion at FRA are identified and discussed in depth. Part 3 concludes with the argument that the expansion of the runway system at Frankfurt Airport will prove inevitable. However, since the expansion capabilities of airports are generally limited, it is further argued that airport access will remain as a scarce resource in the future. As a result, dealing with airport congestion should not be understood as synonymous with airport expansion. Instead, all available options should be identified and employed so that airport access can be allocated on a more reflective basis, taking into account measures which will prevent or at least minimize congestion in the future.

Abstract

Actuellement, l'accès aux aéroports internationaux est devenu une ressource rare pour l'industrie aéronautique. Notre étude concerne la congestion du trafic aérien dans les aéroports et en particulier celui de l'aéroport de Francfort. Nous verrons dans la première partie, les structures et les phénomènes qui entourent la gestion du trafic dans les aéroports; notre objectif principal sera de faire la preuve que les États sont dans l'obligation légale d'agir pour permettre aux aéroports de s'ajuster à la croissance rapide de l'industrie. Notre deuxième partie, présentera en profondeur les différentes alternatives offertes pour résoudre la congestion dans les aéroports. Nous conclurons en derniers lieux sur les arguments incitant l'expansion inévitable de la planification des pistes d'atterrissages à l'aéroport de Frankfurt. Toutefois, étant donné que les capacités d'expansions d'un aéroport sont très limitées, l'accès à celui-ci restera toujours une ressource limitée. L'expansion d'un aéroport ne doit pas être perçue comme étant la seule et unique solution à sa congestion. En effet, toutes les alternatives disponibles devront être identifiées et appliquées pour permettre de maximiser l'utilisation des accès aux aéroports dans le futur.

TABLE OF CONTENTS

INTRODUCTION

The term airport congestion is not technically defined. It is generally used to describe a condition in which the demand for the use of airport infrastructure approaches or exceeds capacity[1]. The capacity of an airport depends on the most limiting component, such as the runway system, parking positions, gates, immigration, customs, security and passenger terminal throughput (Check-in, baggage delivery etc.)[2]. This thesis deals only with airport congestion caused by the scarcity of runway infrastructure, as it occurs at Frankfurt Airport, the IATA code of which is FRA, and many other airports. The objective of this study is to identify possible remedies to airport congestion, using the example of FRA, and to discuss the role law currently plays in this process and could possibly play tomorrow.

Part 1 is mainly dedicated to describing the status quo with respect to the capacity situation at FRA and to offer some background information that the author of this thesis deems essential. The history of airport congestion and the problems caused by it are discussed. It is argued that states are under a legal obligation to ensure that airports on their territory open to civil aviation can accommodate air traffic corresponding to the civil aviation freedoms they have granted to other states. Part 1 then focuses on the specific situation at FRA and explains how existing capacities are used and to what extent the current demand for slots at the airport exceeds existing

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[1] See A. T. Wells, Airport Planning & Management, 3rd ed. (New York: McGraw-Hill, 1996) at 177.

[2] See IATA Scheduling Procedures Guide, 23rd ed. (Geneva, Switzerland: International Air Transport Association, 1998) at 2 [hereinafter Scheduling Procedures Guide].

capacities, and what the administration of FRA has done and is planning to do in order to meet the demands in the future more appropriately. Finally, the slot allocation procedures which are currently in effect for FRA are described.

Part 2 of this paper identifies, discusses and evaluates a number of options proposed to allay airport congestion at FRA and discusses legal issues raised by each of those options with respect to Public International, European and German law. It first discusses alternative, possibly more efficient slot allocation systems that could help in the distribution of slots in a more appropriate manner among applicants. The focus is then shifted to the creation of alternatives to the use of FRA, again with the goal of meeting the demand for slots there in a more efficient way. Finally, solutions focusing on the creation of additional airside capacities at FRA itself are discussed.

Part 3 briefly summarizes the results of chapter 2. A proposal on how the challenge set by airport congestion at FRA could be met is made.

PART 1: AIRPORT CONGESTION AT FRANKFURT

I Airport Congestion

The airport has become an element of key importance in our everyday lives. It serves as the "gate to the world" for travelers, both on business and leisure. It has a similar function for enterprises, using it as a gateway, to offer their products and services worldwide. Air transport has become a

very basic need of modern societies, comparable to energy supply and telecommunications, and has become an indispensable condition for our economic and cultural development. Large-scale air transport is unthinkable without the availability of highly developed airport infrastructure. This is one of the reasons why airports are usually among the first targets to be destroyed by the enemy in case of war. Once a war is over, airports are among the first elements of infrastructure to be rebuilt in order to support further reconstruction and development. Worldwide experience has shown that the fastest growing economies have developed in the vicinity of international airports[3].

The meaning of air transport within the German economic system is enormous: Germanys economy is largely dependent on the export of goods and services and closely linked to the world markets. In 1997, German exports grew by 11.2% to a total value of DEM 887.2 billion, ranking Germany the number two exporting economy worldwide[4]. An efficient, fast and cheap means of transportation for the exchange of goods and services is therefore of key importance. Businesses in the vicinity of major airports enjoy a competitive advantage because they can benefit from the airport's comprehensive and dense route network. This becomes especially important for example in the delivery of time-sensitive goods, such as spare

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[3] See N. Lammert, "Gute Chancen für den Luftverkehrsstandort Deutschland" (Investors day of the State of Brandenburg, Berlin, May 19, 1998) http://www.bmv.de/presse/archiv/1998/05/19_154_98.htm (date accessed: July 10, 1998) at para. 4.

[4] See "Entwicklung des Außnehandels der Bundesrepublik Deutschland 1997" http://www.bmv.de/infomaterial/aussen/aussenhandelsstatistik97.html (date accessed: September 9, 1998).

parts[5]. Furthermore, businesses and customers are enabled to rely on just-in-time-delivery, which allows a reduction in the costs of stock keeping. Airports also play an important role as employers and providers of indirect jobs on the German labor market. German airports currently employ more than 130,000 people, making them a "job-engine" in many regions. Including indirect and induced employment, German airports account for an estimated total of 700,000 to 1,000.000 jobs. This number is expected to rise by an additional 100,000 jobs within the next 10 years[6].

Many factors contribute to the congestion of an airport, the most obvious perhaps being the rapid growth of the air transport industry. World scheduled passenger traffic (domestic and international), measured in terms of passenger kilometers performed (PKP), has increased at an average annual rate of 8.9% during the 1960-1995 period. World airline scheduled freight traffic, measured in terms of ton-kilometers performed (TKP) has even grown at an annual rate of 11.1% over the same period. This growth has resulted in comparable growth in terms of aircraft seats and payload. Fortunately for today's already congested airports, aircraft movements, measured in terms of aircraft departures, have grown at a much smaller annual rate (2.7%) over the same period, due primarily to a large increase in average aircraft size during the last decades[7]. Flight

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[5] See P. Thiele "Freie Entfaltung in der Fracht nicht möglich" Deutsche Verkehrszeitung (April 30, 1998) 35.

[6] See N. Lammert, *supra* note 3, at para 3.

[7] See International Civil Aviation Organization (ed.), Outlook for Air Transport to the year 2005 (Circular 270-AT/111) (Montreal: International Civil Aviation Organization, 1997) at 1.

movements are expected to grow at an annual rate of 2.5% over the period 1995-2005[8].

The continuing trend to replace a route network of mostly nonstop services by connecting services (hubbing) has considerably increased the use of airport infrastructure as well. What was once one nonstop service between two smaller communities, without connection to a larger airport, now becomes two flights to and from a larger airport (the hub) in order to economically optimize the route network. Hubbing carriers are striving to schedule their connecting flights in a close sequence so as to reduce waiting time for their connecting passengers and to make their product more attractive to them. This has lead to the development of a wave structure in the demand for airside resources at hub airports, with peaks during those times of the day when the hubbing carrier transfers its passengers and in some cases with significantly lower demand during all other periods of the day[9]. This trend has been accompanied by a preference for smaller aircraft. Whereas the growth of demand in the 1960's and 1970's has been mainly met by raising the seat capacity of aircraft used, this trend has stopped and, in some cases, even reversed during the 1980's and 1990's. Air carriers found that frequency rather than size of aircraft was the keyword in meeting passenger demand in a more

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[8] *Ibid.* at 45.

[9] See R. A. Janda, "Auctioning of Airport Slots: Airline Oligopoly, Hubs and Spokes, and Traffic Congestion" (1993) 18 –1 Annals of Air and Space Law 153 at 157. See also the illustration of the example of FRA in W. D. Schaller, Slot is the Magic Word (Frankfurt, Germany: Flughafen Frankfurt Main and Scheduling Coordinator of the Federal Republic of Germany, 1996) at 10, 16.

competitive environment[10]. Another factor contributing to airport congestion is the growing concern about the protection of the environment, which has become an issue of top priority in many countries of the world during the last 30 years[11]. The growing awareness of the value of environmental resources has created a large forum for interest groups, that, for one reason or another, rejected a particular airport project and put political pressure on governments, as well as private entities, to refrain from constructing additional airport capacity. Among the environmental constraints on the expansion or construction of airports, noise is probably the most serious one[12]. Public resistance against jet noise has grown through the last decades since it not only frustrates the desire for privacy, rest, relaxation and sleep, but also leads to a significant decrease in the value of real estate in the vicinity of airports[13]. Today, airport noise pollution is one of the pervasive problems facing the aviation community[14] since even any kind of pollution seems no longer acceptable as an inevitable consequence of technological advance[15].

Airport congestion causes delays not only at airports concerned, but also affects the efficiency and punctuality of air transport in general. It is impossible for an air carrier to operate on schedule from a non-congested

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[10] See G. O. Eser, "Effects of Congestion and Aeropolitical Events on the Evolution of the Global International Airline System" (1988) 13 Annals of Air and Space Law 25 at 27-28; International Civil Aviation Organization, *supra* note 7 at 42.

[11] See also M. Skapinker, "Airbus defends industry's record on environment" Financial Times (U.S. ed.) (April 24, 1998) 7.

[12] See A. T. Wells, *supra* note 1 at 47.

[13] See G. M. Stevenson, The Politics of Airport Noise (Belmont, CA: Wadsworth, 1972) at 14.

[14] See G. A. Gratjios, Airport Noise Pollution: Legal Aspects (Montreal: Institute of Air and Space Law, McGill University, 1990) at 97.

airport when the aircraft needed is held up at a congested airport. The improvement of service is also hindered because a congested airport does not allow for large-scale introduction of new services or the addition of frequencies on existing ones. Since on-time performance and continuous improvement of service are of key importance to both air carriers and their customers, congested airports tend to be bypassed wherever possible[16]. The result is that a congested airport is in danger of losing traffic to other airports. One Lufthansa executive once observed in this context that experience has shown that in the air transport industry there is "either growth or decline. There will be no stagnation on a high level"[17]. This leads to the conclusion that airport congestion threatens the positive effects of airports mentioned above because traffic is lost to other hubs. The airports concerned cease to function as job-engines, and local businesses no longer enjoy the competitive advantage of being able to benefit from their dense route network. The economic development in the hinterland of the airport and jobs both at the airport and elsewhere are put at risk by the inability of the airport to meet customer demand.

Airport congestion also affects competition between air carriers in so far as it hinders the entry of new competitors in deregulated or liberalized

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[15] *Ibid.* at 1.

[16] See "Charme einer Eisdiele: Lange Wege und Wartezeiten auf dem Flughafen Frankfurt verärgern die Reisenden" http://www.spiegel.de/spiegel/wirtschaft/29076.html (date accessed: July 13, 1998).

[17] See "Frankfurts Oberbürgermeisterin zur Zukunft des Frankfurter Flughafens: Roth sieht keine Chance für Nordbahn" Deutsche Verkehrszeitung (February 28 1998) 6 [translated by author of this thesis].

markets[18]. "A concept that plans for open skies but closed airports will not work out."[19] It is not enough for a potential competitor to be able to purchase or lease an aircraft and to hire experienced personnel. In addition to all other barriers to market entry (such as the problem of gaining access to a computer reservation system and a frequent flyer program, overcoming brand loyalty of consumers etc.) he faces the problem of how to ensure access to congested airports. Even if he does get access, he cannot hope to be able to offer the frequencies and wide range of destinations that customers want, simply because there are not enough slots available. Besides that, he will not be able to fly during congested peak periods and will therefore have to fly during less busy times of the day. The consequence is that the major carriers compete only with one another on many routes. They know that without a slot, no competitor can enter a market, and hence benefit from the fact that slots represent one of the most significant barriers to market entry in the airline business today[20]. It is widely felt that only the entry of small start-up carriers can ensure that consumers receive the benefits promised to them when and where the air transport market is deregulated. "We have observed that when the major carriers compete with each other, their behavior is different from when they compete with low-cost, low-fare airlines, and that has been of some

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[18] See J. Goh, European Air Transport Law and Competition (Chichester, UK: John Wiley & Sons, 1997) at 165.

[19] G. Reimer, "Deutsche Flughafenpolitik ohne europäische Dimension?" (1992) 41 Zeitschrift für Luft- und Weltraumrecht 142 at 146 [translated by the author of this thesis].

[20] See also A. T. Wells, *supra* note 1 at 195; C. Jung, "Aviation Markets in the European Economic Area – International Treaties, Deregulation and Open Skies" (Third International Berlin Business and Trade Law Conference, Humboldt University Berlin, May 8, 1998) [unpublished].

concern to us" reports Patrick Murphy, who is in charge of aviation policy at the US Department of Transportation[21]. Airport congestion hence hinders the effectiveness of deregulation or liberalization because it protects the incumbent carriers. "If we are expecting liberalization to enable operators to offer more choice with more routes, more frequencies and better quality of service, at more competitive prices, it is obviously essential that the basic infrastructure is available to them at airports at reasonable charges, and congestion and delays – with their cost and impact on the environment – are kept to a minimum."[22] Deregulation must therefore not be limited to the very air transport services. Having due regard to the markets for ancillary services seems equally important.

The problems caused by airport congestion indicate clearly that those states affected would be well advised to ensure the availability of adequate airport infrastructure or at least should try to improve the situation by providing for a system that guarantees the most efficient use of the existing facilities. However, the question arises whether or not they are legally obliged to do so.

States enjoy full and exclusive sovereignty over the airspace above their territory[23]. Art. 1 is only declaratory in nature, affirming a principle that seems to be generally recognized under customary international law[24]. As

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[21] R. Tomkins "When fares aren't fair" Financial Times (Europe) (February 10, 1998) 13.

[22] N. Kinnock, Adress (Warburg's European Air Transport Conference, London, September 16, 1996) http://www.europa.eu.int/en/comm/dg07/speech/sp960916.htm (date accessed: April 18, 1998).

[23] Art. 1 of the Chicago Convention.

[24] See N. M. Matte, Treatise on Air-Aeronautical Law (Toronto: Carswell, 1981) at 132.

it is shown by Art. 13 –15 and those of Chapter IV of the Convention, the scope of applicability of the Convention is not limited to the airspace, but also encompasses the ground territory necessary for the operation of international civil aviation. Air sovereignty in the sense of the Chicago Convention therefore extends to parts of the land territory as well[25]. This interpretation only affirms again a principle generally recognized under customary international law and also expressed by Art. 2, section 1 of the United Nations Charter. It can therefore be concluded that in principle, states have a right to impose factual as well as legal conditions for the development and conduct of international aviation in their airspace and on their airports as they may choose. Therefore, they would therefore basically be free to decide whether they want to do something about airport congestion or not[26].

However, there are exceptions to the principle of sovereignty. As expressed in the Preamble to the Convention, member states have undertaken to foster the development of international civil aviation in a safe and orderly manner and to ensure it's economically sound operation. As it has been shown, airport congestion not only jeopardizes the further development of (not only) international civil aviation. The option to do nothing would therefore be inconsistent with the aims of the Chicago Convention as they have been expressed in the Preamble. In Art. 5, section 1 of the Convention, states have furthermore granted the right to

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[25] See K. H. Böckstiegel & P. M. Krämer, "Völkerrechtliche Gestaltungsvorgaben für die Einführung einer wettbewerbsorientierten Allokation von Start- und Landeslots" (part 1) (1995) 44 Zeitschrift für Luft- und Weltraumrecht 269 at 270 [hereinafter Böckstiegel/Krämer 1].

perform landings for non-traffic purposes (second freedom[27]) without the requirement of prior permission to aircraft engaged in non-scheduled air services. This provision must be read together with section 2 and concerns only non-commercial flights such as private, executive, training and test flights[28]. Even though this right is only granted "subject to the observance of the terms of this Convention", the Convention does not contain a condition with respect to the availability of airport infrastructure. Non-scheduled air services therefore have a right to perform second-freedom landings at the airports of other contracting states without having to ask for prior permission. Even though congested airports are often operating at maximum capacity without the possibility to accommodate additional, unscheduled traffic ground states do not have the liberty to request landing at a different time or another airport, using airport congestion as an excuse[29]. Hence, if contracting states allow airport congestion to reach levels where such non-scheduled landings can no longer be accommodated, they do so in violation of Art. 5, section 1 of the Chicago Convention. In Art. 5, section 2, contracting states have also granted third and fourth freedom rights to non-scheduled commercial air services. As opposed to the right granted in Art. 5 section 1, these freedoms are "subject to the right of any state where such embarkation or discharge takes place to impose such regulations, conditions or limitations as it may consider desirable"[30]. Such restrictions, however, may not render the

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[26] See *ibid.* at 270-71.
[27] See N. M. Matte, *supra* note 24 at 143.
[28] See Böckstiegel/Krämer 1, *supra* note 25 at 272.
[29] See Böckstiegel/Krämer 1, *supra* note 25 at 274.
[30] Art. 5 section 2 of the Chicago Convention.

provision of non-scheduled commercial air services to a particular airport impossible. The Chicago Convention stipulates these freedoms as a basic principle and merely leaves contracting states the freedom to impose restrictions or conditions, but not to completely revoke them[31]. Contracting states must therefore ensure that the rendering of non-scheduled commercial services remains possible at all airports open to civil aviation. A situation in which a congested airport cannot possibly accommodate such services at all is not acceptable. A substantial number of state parties have further limited their air sovereignty by ratifying the International Air Services Transit Agreement. This agreement stipulates in Art. 1, section 1 that contracting states grant second freedom rights to the aircraft of all other contracting states also with respect to scheduled international air services. Capacity constraints at the airports of signatory states may therefore not hinder the landing of an aircraft of a contracting state engaged in such service. Contracting states will have to provide for sufficient capacity if they want to avoid the risk of violating the agreement.

The commercially most important limitation of air sovereignty are bilateral air services agreements. These agreements basically provide for the exchange of traffic rights and the regulation of their exercise[32]. When states grant traffic rights to serve a congested airport, the question arises whether obligations under the bilateral include the obligation to provide for airport access or whether the traffic rights are to be seen independent of the issue of slot allocation. Some bilateral agreements contain a specific clause that obliges signatory states to secure airport access for flights conducted by

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[31] See Böckstiegel/Krämer 1, *supra* note 25 at 275.

the designated air carrier of the other party[33]. But even where such clauses do not exist, it would be against the spirit of the bilateral to regard the issue of traffic rights and airport access as distinct, because the latter is an indispensable condition to provide air transport services, thus enabling the agreement to actually come into effect. The goal of bilaterals is to receive traffic rights for the designated carriers not just on a theoretical basis. It is therefore concluded that, even in the absence of a specific clause, all bilaterals include an implied obligation to provide the slots necessary enable the exercise of the traffic rights that have been granted[34]. States that have granted traffic rights to other states are therefore under a legal obligation to ensure that sufficient airport capacity for the exercise of such rights is available. Unfortunately, this obligation is not always taken serious. For example, the bilateral between the Federal Republic of Germany and Japan stipulates that both parties have the right to designate two air carriers to exercise traffic rights granted in the bilateral. The Japanese side has designated Japan Airlines and All Nippon Airways. Lufthansa had traditionally been the carrier designated on the German side. The German charter carrier LTU, designated as the second carrier, had intended to introduce services to Tokyo-Narita Airport in 1994. However, since LTU has not received landing rights at Narita due to severe capacity constraints there, a substantial part of the traffic rights granted to Germany has

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[32] See N. M. Matte, *supra* note 24 at 142.

[33] See U. Brachmann, Die rechtlichen und tatsächlichen Möglichkeiten zugunsten eines effektiven Wettbewerbs trotz überlasteter Flughäfen im Europäischen Luftverkehr (Konstanz, Germany: Hartung-Gorre, 1994) at 66.

[34] *Ibid.* at 66 – 68; see also P. M. Krämer, "Tagungsbericht: Airport and En-Route Slot Allocation, Brussels, October 28, 1991" (1992) 41 Zeitschrift für Luft- und Weltraumrecht 86 at 87.

remained unused. The German Government has not attempted to help LTU and enforce the exercise of the granted traffic rights so as not to endanger the diplomatic climate[35]. However, there can be no doubt that the refusal to accommodate LTU at Tokyo-Narita constitutes a violation of the bilateral. From a legal point of view, this situation is unacceptable.

Summing up the above legal reflections, it is concluded that states are under a legal obligation to actively handle the problem of airport congestion. "States bear responsibility for ensuring that the facilities corresponding to the rights they grant are available"[36]. The do-nothing-option is, in the long run, not compatible with their obligation to accommodate the different kinds of air traffic mentioned above.

II FRA – the status quo of a congested Airport

Frankfurt Airport, located in the heart of the new "unified" Europe, is continental Europe's busiest airport and one of the major airports worldwide. In 1997, for the first time, it handled over 40 million passengers, ranking it number eight in the world and number two in Europe[37]. During the same year, it also handled 1 514 278 tons of cargo, which results again

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[35] Interview with M. Kuhne (Former Chairman of the German Airports Association) (June 20, 1998).

[36] P. M. Krämer, *supra* note 34 at 87; see also C. Howes, "Slot Allocation at Heathrow Airport: The Legal Framework (5th Annual Conference of the European Air Law association, Paris, November 5, 1993) (1993) 6 European Air Law Association Conference Papers 53.

[37] See "The World's Airports in 1997: Airport Ranking by Total Passengers" http://www.airports.org/pax97.html (date accessed: May 26, 1998); "New Annual Record: Frankfurt Airport Serves 40 Million Passengers in 1997" (December 29,

in rank eight of the world's airports. Growth rates in 1997 were rather modest, with 3.9% for passengers and 1.1% for cargo well below predicted worldwide growth. Most important for the purposes of this thesis, it is to be noted that aircraft movements in 1997 were at 392 121, 1.9% up from 1996[38]. Their number has grown considerably during the first five months of 1998[39]. Some 34 million people live within a 200-kilometer radius of Frankfurt Airport, which is a key destination for all carriers belonging to the so-called "Star-Alliance" between United Airlines, Air Canada, Scandinavian Airlines System (SAS), Varig of Brazil, Thai Airways and Lufthansa German Airlines. FRA is the homebase for several carriers, including Lufthansa, Lufthansa Cargo, Condor and Aero Lloyd. It is also home of the Rhein-Main airbase of the United States Air Force, which has been operating from the site since the end of world-war 2. Flughafen Frankfurt Main Aktiengesellschaft (FAG), the joint-stock company owning and operating FRA, is, in turn, entirely owned by public entities. The company has achieved the best result in it's history in 1996, with a turnover of roughly 2 billion CDN and net revenues of 75 million CDN[40]. Today, more than 54,000 people are directly employed at the airport, which is served by some 108 scheduled and about 70 unscheduled carriers and

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1997) http://www.frankfurt-airport.de/airport_company/anr_14_97_body.html (date accessed: May 26, 1998).

[38] See "The World's Airports in 1997: Airport Ranking by Total Aircraft Movements" http://www.airports.org/move97.html (date accessed: June 1, 1998).

[39] See J. Buxbaum, Gesamtverkehr: Flugbewegungen 1997/1998 [unpublished].

[40] See "New Annual Record: Frankfurt Airport Serves 40 Million Passengers in 1997", *supra* note 37.

offers passenger services to 276 destinations in 114 countries (summer 1997 schedule)[41].

Coordinators allow a maximum of 76 aircraft movements per hour at FRA. The runway system can accommodate a total number of up to 48 take-offs and up to 41 landings per hour[42]. The imbalance between take-offs and landings is due to the fact that runway 18 west, which was constructed in the early 1980's, is used for take-off only. Even though it was initially designed for dual use[43], it was found later that landings on runway 18 would raise noise pollution in some neighborhoods of Frankfurt above an acceptable limit[44]. The total number of permissible aircraft movements is expected to increase to 80 by the year 2000. The Board of Airline Representatives in Germany (BARIG) argues that this number will still be insufficient since airline requests for summer 1998 stand at 104 slots per hour already[45]. According to BARIG Chairman Jorgen Mollegaard (SAS), international airlines have already drawn their conclusions and are starting to withdraw from Frankfurt. The result is that Germany "exports" passengers in large numbers to neighboring countries. The main beneficiaries are Amsterdam, Brussels, Zurich, Copenhagen and some

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[41] See "Corporate Profile: Flughafen Frankfurt/Main AG" (October 10, 1997) http://www.frankfurt-airport.de/airport_company/bg_6_97_body.html (date accessed: May 26, 1998).

[42] J. Buxbaum, Slots & More: Frankfurt Airport (Frankfurt, Germany: Flughafen Frankfurt Main AG, 1998) at 3.

[43] Interview with Thomas Mickler (Member of the Air Navigation Commission and Alternate Representative of Germany on the ICAO Council) (July 14, 1998).

[44] Interview with C. Dössel (First Officer on Lufthansa Boeing 737, based at Frankfurt Airport) (August 13, 1998).

[45] See M. Momberger, "German Airports: A Panoramic View" (1998) 31 Airports International 12.

smaller regional airports along the German borders[46]. Even the management of Frankfurt Airport today admits that all possible capacity reserves with respect to runway will have been used up by the year 2003/2004[47]. The following table describes the slot situation at FRA during the summer 1998 schedule.

	ARRIVALS							DEPARTURES							TOTAL						
	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
0000-0059																					
0100-0159	0	0	0	0	0	0	0														
0200-0259	0	0	0	0	0	0	0														
0300-0359	0	0	0	0	0	0	0														
0400-0459	C	C	C	C	C	X															
0500-0559	X	X	X	X	X	X	X		C			C			X	X	C	X	X	C	
0600-0659	X	X	X	X	X	X	X	C	C	C	C	C	C	C	X	X	X	X	X	X	X
0700-0759	C	C	C	X	X	C	C	X	X	X	X	X	X	X	X	X	X	X	X	X	C
0800-0859	C	X	X	C	X	C	C	X	X	X	X	X	X	X	X	X	X	X	X	X	X
0900-0959	X	X	X	X	X	X	X	C		C	C	C	C	C	X	X	X	X	X	X	X
1000-1059	X	X	C	X	C	X	C	X	X	X	X	X	X	X	X	X	X	X	X	X	C
1100-1159								X	X	X	X	X	X	X	C	C	X	C	C	C	
1200-1259	X	X	X	X	X	C	X	X	C	X	C	C	X	C	C	C	X	C	C	C	
1300-1359	X	X	X	X	X	X	X	C	C			C			X	X	X	X	X	X	X
1400-1459	C	C	C	X	C	C	X	X	X	X	X	X	X	X	C	X	C	X	X	C	X
1500-1559								X	X	X	X	X	X	X	C	C	C	C	X		X
1600-1659	X	X	X	X	X	X	X		C	C	X	X		C		C	C	C	X		C
1700-1759	X	X	X	X	X	X	X								C	C	X	C	C	C	C
1800-1859	X	X	X	X	X	X	X			C				C	C	C	X	C	C	C	X
1900-1959			C	C	C		C	X	X	X	X	X	X	X		C	X	X	X		X
2000-2059									C		X	C		C							
2100-2159																					
2200-2259																					
2300-2359																					

Times are given in central European daylight saving time. 0 stands for hours which are curfewed for all users of the airport. X stands for hours during which no slots are available, and C stands for hours that are close to full, with only a very limited number of slots available. Only hours that do not show any mark offer sufficient runway capacity to accommodate a substantial number of additional flights.

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[46] *Ibid.*
[47] *Ibid.*

The analysis of the traffic structure at FRA on one average day, Tuesday, May 12, 1998, shows the following picture: The demand for arrival slots peaks between five and ten thirty in the morning, when most intercontinental flights, especially those originating in North America, arrive. Wide body equipment is dominant. This is the time when slots for both arrivals and departures are most sought after.[48] Further peak periods with respect to arrivals are from eleven to twelve thirty midday, with the arrival of many narrow-body continental flights of Lufthansa, from two to five in the afternoon, and from six to eight in the evening, again with the arrival of many Lufthansa flights. The latter periods show a mix of wide and narrow-body equipment. Demand for departures peaks between nine and eleven, with many flights to North America. About half of the flights scheduled use wide-body equipment. Further peaks are between twelve and two, with intercontinental departures to North America as well as to the far east, and between four thirty and six with both continental and intercontinental departures. The last departure peak is from nine to ten in the evening, again with mainly continental flights and almost exclusively narrow-body equipment until ten, when the last intercontinental flights take off. The analysis therefore allows the conclusion that air carriers tend to schedule their flights in a wave structure: Certain times of the day are perceived to be best for long-haul departures, and short-haul departures are scheduled closely together in order to allow for minimum connecting times. This is especially true for flights of Lufthansa and its airline partners in the star alliance since one of the major advantages the alliance promises to the

[48] J. Buxbaum, Verkehrsanalyse Frankfurt für Dienstag 12. Mai 98 [unpublished].

consumer is the fast and easy transfer from one flight to another at its hubs around the globe. This scheduling pattern becomes especially important in the case of FRA, where almost every second passenger is in transit[49].

In summer 1998, a supply of 78 slots available each hour met a demand standing at 104 for certain periods of the day[50]. Taking into account that many carriers that would be willing to fly to FRA do not even apply because they know that for one reason or another they will not receive the slots necessary to do so, it becomes clear that Frankfurt Airport is at a point in its history where it can no longer meet customer demand in a satisfying manner. The management is trying to meet the challenge by creating alternatives to the use of the runway system at FRA. The construction of a new high speed train (ICE = Intercity Express) link is underway and is expected to allay the slot situation by absorbing approximately 3 - 4% of the total aircraft movements[51].

Another attempt to create alternatives is the expansion of Frankfurt-Hahn airport, a former US air base located about 110 kilometers from Frankfurt Airport, between the cities of Mainz and Trier. FAG has recently acquired a 64,9% majority of the shares of the airport[52], which has the IATA three letter code HHN and is listed in the international schedules under the metropolitan area code of Frankfurt (FRA) since June 1998[53]. The airport now has a link to the passenger railway network and can be reached over

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[49] See I. Stockman, "Transparency and Lack of Conformity" (1998) 15 The Avmark Aviation Economist 11 at 13.
[50] See M. Momberger, *supra* note 45.
[51] See J. Buxbaum, *supra* note 42; interview with M. Kuhne *supra* note 35.
[52] See Flughafen Hahn GmbH, Press Release, "Ready for Take-Off: Hahn Airport – a future-orientated site of growing importance" (June 1998).

the newly expanded B 50 highway. It offers hotel accommodation, car rental, conference facilities, restaurants, free parking and other facilities for passengers. Its runway is 3040 meters long and therefore sufficient for take-off of most types of jet aircraft at maximum load, and two Boeing 747 freighters can now be parked on the new apron. Maintenance services are offered by American Airlines for almost all types of aircraft. The airport, which is Air France's new cargo hub for Germany, holds an official license for 24 hours operation. The management hopes to introduce HHN as a budget-priced alternative to Frankfurt Airport with respect to charter services as well as cargo services that do not depend on connecting services. The airport could also be attractive for cargo carriers that do not have the possibility to use more modern chapter III type of aircraft given the fact that FRA is actively trying to phase out noisier types of aircraft. The population in the less densely populated Hahn region has so far shown support for all the expansion projects most probably due to the closing of the US air base, which has raised unemployment in the area to 30%[54]. It seems clear, however, that the effect of this new airport on the demand for slots at FRA will remain rather small as long as HHN cannot offer a direct link to the freeway network and attractive railway connections to both Frankfurt Central Station and Frankfurt Airport. Once this has been achieved and the runway has been expanded to accommodate even the biggest types of aircraft at maximum load, it seems likely that at least some air carriers and their customers will want to benefit from the airports less

[53] See Flughafen Hahn GmbH, Press Release, "HHN=FRA – Listing of Hahn Airport under the metropolitan area of Frankfurt (FRA)" (April 1998).

busy environment and attractive cost structure by choosing one of the few airports in Germany which are not yet regulated.

III Administering a scarce Resource – the current Slot Allocation Process at FRA

Slot is a technical term referring to the permission to use the airspace above an airport and one of its runways at a certain time. It is defined as "the scheduled time of arrival or departure available or allocated to an aircraft movement on a specific date at an airport"[55]. The administrative process for the allocation of slots varies in different jurisdictions. The most important legal cornerstones governing the process of slot allocation at FRA, which does not differ from that at any other controlled German airport, are the following:

1. Article 15 of the Chicago Convention obliges signatory states to ensure that their public airports are open under uniform conditions to their own aircraft and those of all other contracting states[56]
2. The European Community Council Regulation 95/93 on Common Rules for the Allocation of Slots at Community Airports[57] provides rules for the schedule coordination process. It stipulates when an airport must be deemed congested and therefore coordinated and requires states to

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[54] Interview with C. Kaufmann (Marketing and Distribution Manager, Flughafen Hahn GmbH) (June 20, 1998).
[55] IATA Scheduling Procedures Guide, *supra* note 2 at 5.
[56] See C. Howes, *supra* note 36 at 51.
[57] EC, *Regulation* 95/93 of January 18, 1993 on common rules for the allocation of slots at Community airports [1993] O. J. L. 14/1.

appoint an airport coordinator for such airports. It provides for a priority formula to be used in the slot allocation process.

3. Sections 27 a, 27 b and 31 a, 31 b of the German *Luftverkehrsgesetz*[58] govern the institution of the *Flugplankoordinator* (flight schedule coordinator), its authorization to coordinate flight schedules filed by the aircraft operators and the procedures to be applied
4. The airport license held by FRA stipulates a night ban and has therefore an important impact on the slot allocation process. Scheduled services of homebased carriers using chapter III[59] aircraft (e.g. Lufthansa, Lufthansa Cargo, Condor, Taunus Air and Aero Lloyd) can take off 24 hours a day, but are not permitted to land between 1 and 4 AM. Scheduled services of non-homebased carriers using chapter III aircraft can also take-off around the clock, but are not permitted to land between 12 and 5 AM. Chapter III Air mail services are banned between 1 and 5 AM. Charter services scheduled less than 24 hours in advance (ad-hoc charter) are banned between 10 PM and 6 AM.[60]

Since the allocation process is governed by both the *Luftverkehrsgesetz* and the European Council Regulation 95/93, the question arises as to how they function together and which one prevails in case of conflicting rules. Art. 189 of the Treaty of Rome[61] is of key importance in answering this

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[58] Germany, *Luftverkehrsgesetz*, *Bundesgesetzblatt* 1981 I, 61.
[59] See Annex 16 of the Chicago Convention, vol. 1, on the noise-classification of aircraft.
[60] Interview with A. Zimmer (Member of the German Flight Schedule Coordination at Frankfurt Airport) (July 30, 1998).
[61] Treaty establishing the European Community, *Bundesgesetzblatt* 1957 II, 766 [hereinafter: Treaty of Rome].

question: It stipulates that Regulations of the European Council are of general validity. They are binding as a whole and directly applicable in all member states. The resulting hierarchy between European Council Regulations and national law has been further elaborated by the European Court of Justice. In its Costa-ENEL ruling of 1964, the court explains that the Treaty of Rome has created a legal order *sui generis*. Laws rooted in that new autonomous legal order prevail over national laws because signatory states have restricted their sovereignty by transferring some of their responsibilities to the European Community. This restriction of sovereignty cannot be unilaterally undone by national measures that are not in compliance with Community law. The consequence is that Eurpoean Council Regulation 95/93 prevails in application over sections 27 a, b of the German *Luftverkehrsgesetz*, rendering it inapplicable in case of a contradiction[62]. In order to assess the validity of sections 27 a, b of the German *Luftverkehrsgesetz*, it must therefore be determined whether these provisions contradict those of the Council Regulation. This becomes especially important for the scheduling priorities, as laid down in section 27 b. Both the European Council Regulation and the *Luftverkehrsgesetz* have priority rules that are to be applied in the slot allocation process. The set priority criteria are not equal and must be applied according to the rank given in the legal text.

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[62] See E. Giemulla & R. Schmid, "Nochmals: Wem gehört die Zeit?" (1995) 44 Zeitschrift für Luft- und Weltraumrecht 259 at 260; U. Brachmann, *supra* note 33 at 87; compare M. Schweitzer, Staatsrecht III, 5th ed. (Heidelberg: Müller, 1995) at 16-20.

According to the *Luftverkehrsgesetz*, the first and therefore most important scheduling priority is that of commercial flights over all other flights[63]. The principle of historical precedence (grandfathering) is of secondary importance[64]. The Council Regulation, however, stipulates that " a slot that has been operated by an air carrier as cleared by the coordinator shall entitle that air carrier to claim the same slot in the next equivalent scheduling period"[65]. Therefore, the grandfathering principle is the most important one to be applied in the slot allocation process. The priority of "commercial air services, and in particular scheduled services and programmed non scheduled services" appears as scheduling priority principle number two. Therefore, section 27 b, sub-clause 1, number 1 and 2 must be read in reverse order in order to be in compliance with the priorities set by the European Council Regulation[66]. The first scheduling priority principle to be applied by scheduling coordinators at Frankfurt Airport is the grandfathering principle. The principle of priority of commercial over non-commercial air services is applied only in cases where no historical precedence exists. Since the wording of the Regulation is much more specific with respect to both principles, the respective provisions of the *Luftverkehrsgesetz* must be construed narrowly in order to be consistent with the requirements of European Community law. The

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[63] Section 27 b sub-clause 1, number 1 *Luftverkehrsgesetz*.
[64] Section 27 b, sub-clause 1, number 2 *Luftverkehrsgesetz*..
[65] *Regulation* 95/93, *supra* note 57, Art. 8, sub-clause 1, (a).
[66] See E. Giemulla & R. Schmid, *supra* note 62 at 261; contra E. Giemulla & R. Schmid & W. Müller-Rostin, Frankfurter Kommentar zum Luftverkehrsrecht, vol. 1.1: Luftverkehrsgesetz, (Loose-leaf: 25th Supplement) (Neuwied, Kriftel, Berlin: Luchterhand, 1997) at § 27 b, at 4; E. Giemulla & R. Schmid, Frankfurter Kommentar zum Luftverkehrsrecht, (Loose-leaf: 17th Supplement) (Neuwied, Germany: Luchterhand, 1994) at § 27 b, at 4.

Luftverkehrsgesetz names two more priority principles, namely the priority of frequent comparable flights over less frequent flights during the same scheduling period[67] and of instrument flights over visual flights[68]. The Council Regulation stipulates that "the coordinator shall also take into account additional priority rules established by the air carrier industry and if possible additional guidelines recommended by the coordination committee allowing for local conditions, provided such guidelines respect Community law"[69]. Scheduling priority rules established by the air carrier industry are laid down in the IATA Scheduling Procedures Guide. Since this guide neither contains the principle of priority of frequent flights over less frequent ones nor that of instrument flights over visual flights, sections 27 b sub-clause 1 number 3 and 4 cannot be construed to be in compliance with the Council Regulation and are therefore inapplicable[70]. Additional priority rules to be taken into account by the coordinators are for example:

- the priority of a schedule change to a historical slot[71]
- the priority of the extension of an existing seasonal service to a year-round operation[72] and
- the priority of a schedule effective for a longer period of operation in the same season[73]

over other applications for the same slot. In addition, the coordinator is requested to take into account additional guidelines for slot allocation

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[67] Section 27 b sub-clause 1, number 3 *Luftverkehrsgesetz.*
[68] Section 27 b sub-clause 1, number 4 *Luftverkehrsgesetz.*
[69] *Regulation* 95/93, *supra* note 57, Art. 8, sub-clause 1, (c).
[70] Contra E. Giemulla & R. Schmid, *supra* note 62 at 261.
[71] See IATA Scheduling Procedures Guide, *supra* note 2 at 9.
[72] *Ibid.*
[73] *Ibid.* at 10.

recommended by the coordination committee[74], provided such guidelines respect Community law[75]. Until today, no such additional guidelines have been developed for FRA[76].

Section 27 b, sub-clause 2 of the *Luftverkehrsgesetz* allows a deviation from the principles set out in sub-clause 1 if this should prove necessary in the pursuance of the public interest. The provision names the public interest in traffic, obligations rooted in treaties and the requirements of regional and business air traffic. It provides for an exception to the principles laid down in sub-clause 1. Art. 9 of the Regulation 95/93 stipulates that certain slots may be reserved for certain types of scheduled domestic services. Since this provision is much more specific on the conditions for such a reservation, section 27 b sub-clause 2 of the *Luftverkehrsgesetz* (deviation from the general rules to pursue public interest in traffic and serve the needs of regional and business traffic) must be construed in accordance with those more detailed requirements. Art. 10 of the European Council Regulation provides for a slot pool that shall contain all newly created slots, unused slots and slots that have been given up by an air carrier or have otherwise become available. New entrants, as defined in Art. 2 (b) of the Regulation, shall receive up to 50 % of these slots. This exception to the general slot allocation rules puts in concrete terms the exception from those principles to pursue public interest, as stipulated in Section 27 b, sub-clause 2 of the *Luftverkehrsgestz*. This provision therefore remains applicable as long as it is construed narrowly

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[74] *Regulation* 95/93, *supra* note 57, Art. 5.
[75] *Ibid.*, Art. 8, sub-clause 1 (c).
[76] Interview with A. Zimmer, *supra* note 60.

enough to encompass only the goals mentioned in Art. 9 and 10 of the European Council Regulation.

Taking all the above into account, it is submitted that the priority rules to be applied in the slot allocation process at FRA are those laid down in the European Council Regulation 95/93. Priority is given to the historical precedence and to commercial air services, and additional rules of the IATA Scheduling Procedures Guide are to be applied. Special rules govern the allocation of slots for certain types of domestic air services (Art. 9) and for new entrants (Art. 10). Section 27 b of the German *Luftverkehrsgesetz* remains applicable, where it does not directly contradict the provisions of the Regulation, and must be consistently construed, bearing in mind both the spirit and the letter of the latter.

PART 2: POSSIBLE SOLUTIONS TO THE PROBLEM OF AIRPORT CONGESTION AT FRA

I: Optimization of the Slot Allocation Process: Striving for maximum Efficiency

1) The meaning of Efficiency – different Views from different Stakeholders

When discussing the efficiency of the slot allocation process, one first has to make clear what one considers to be efficient. Different proposals for making the allocation process more efficient are often based on different

interpretaions of the term efficiency, which again reflect different interests that people can have in an airport[77].

One of the principal sources of income for an airport are airport fees. These fees usually break down into landing, parking, and hangar charges. Today, such charges are primarily based on the weight formula, which uses the maximum permissible take-off weight as indicated in the certificate of airworthiness as the basis for assessment[78]. Another element of airport fees is passenger-service charges, which are assessed on the basis of the number of passengers served. Hence, it can be concluded that big aircraft, with a high permissible take-off weight and the ability to carry hundreds of passengers, create more revenue for an airport than smaller commuter aircraft. But both the intercontinental jet with a take-off weight of over three hundred metric tons carrying four hundred passengers and more, and the small commuter plane weighing only thirty tons and carrying only thirty passengers, use one slot for take-off and arrival. In fact, the smaller aircraft may even block the runway for longer than the larger one especially in the case of turboprop aircraft, as they have a lower take-off and climb speed and consequently take more time to clear the runway and the airspace for the next maneuver. In some cases, they also take longer to clear the runway after touchdown when taxiing to their parking position. From a strictly financial point of view, it is therefore more attractive for a congested

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[77] See also E. Giemulla, "Kopplung von Slot-Vergabe und Luftfahrzeuggröße aufgrund lokaler Sonderregelungen" (1996) 45 Zeitschrift für Luft- und Weltraumrecht 245 at 255.

[78] See International Civil Aviation Organization (ed.), Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services (5th. ed.) (ICAO Doc. 9082) (Montreal: International Civil Aviation Organization, 1997) at 5 – 6.

airport with only limited runway capacity to attract bigger aircraft because this allows for the increase of revenues without having to increase the airside capacity of the airport. Many proposals for a slot allocation system that would favor the use of bigger aircraft over the use of smaller ones are based on this reasoning[79].

Other parties interested in the issue of slot allocation stress the necessity of avoiding a negative effect of airport congestion on competition. They argue that the newly liberalized or deregulated market for air transport services requires that new competitors receive the practical opportunity to enter the market. The EEC Council Regulation 95/93 on common rules for the allocation of slots at Community airports for example stresses that it is "necessary to avoid situations where, owing to a lack of available slots, the benefits of liberalization are unevenly spread and competition is distorted"[80]. This opinion reasons that an efficient system of slot allocation must ensure that the entry of new competitors remains possible, even at a congested airport. Some seek to pursue this goal by granting preferential treatment to new entrants. The provisions of the said regulation regarding the distribution of slots placed in the so-called slot pool[81] can be seen as an example of this approach. However, parties who tend to distrust state interference in the allocation process favor a free market model that would allow new competitors to simply buy their slots on the free market.

A third opinion reasons that airports as well as the public have an interest in an extensive route network rather than in strong competition on selected

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[79] Interview with M. Kuhne, *supra* note 35 .
[80] *Regulation* 95/93, *supra* note 57, preamble, section 12.
[81] *Ibid.*, Art. 10.

routes that generate a lot of traffic. Consequently, making the slot allocation system more efficient consequently means supporting the market entry of anybody who would be willing to serve a new route, be it a carrier completely new to the airport or an incumbent carrier[82].

Yet another interest group stresses that an efficient system of slot allocation must be primarily concerned with the interests of air carriers already serving the airport. The argument is that air carriers need stability in their schedules in order to prepare for their future operations and to make necessary investments worthwhile. If this fundamental stability is not guaranteed, services will prove unprofitable and air carriers will cease their operations at the airport concerned. This group consequently favors a slot allocation system that ensures that, during future planning sessions, incumbent carriers will receive at least the same slots that they had in the past. This view receives strong support in the airline industry for obvious reasons and is the basic idea behind the so-called "grandfathering" of slots as it is seen in the IATA Scheduling Procedures Guide[83] as well as in the EEC Council Regulation 95/93[84].

Finally, efficiency in this context can also mean simply to secure the functioning of the air transport system as a whole. This view seeks to coordinate schedules in order to allow for an economic use of scarce resources and avoid an uneven distribution of flight maneuvers that would

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[82] Interview with M. Kuhne, *supra* note 35 .
[83] See IATA Scheduling Procedures Guide, *supra* note 2 at 9.
[84] *Regulation* 95/93, *supra* note 57, Art. 8, sub-section 1 (a).

overload air traffic control and airport infrastructure[85]. No further goals are pursued.

The above reflections point to the conclusion that the issue of slot allocation has a strong political dimension. Different stakeholders have different interests in the use of an airport and try to secure these interests by introducing or suggesting different models regulating the use of scarce airport infrastructure. While some parties only hope to minimize the negative impact that the situation has, or threatens to have, on their business, others are in fact trying to benefit from it. When discussing the advantages and shortcomings of different models, one should therefore bear in mind that each of the proposals discussed may be very efficient in serving one goal while at the same time not taking into account other justified interests. It is therefore submitted that preference of stakeholders for one method or another will tend to be based on rather political than legal or economic grounds.

2) First-come, first-served System

The so-called first-come, first-served rule does not provide for any long-range coordination of air carrier schedules[86]. The beauty of this system lies in the lack of any discriminatory element: Any air carrier that is willing to fly to an airport where this rule is in force is free to do so. The first-come, first-served system takes advantage of the fact that the number of aircraft that

[85] See Germany, *Bundestagsdrucksachen* (1991) 12/1801 at 14.

can operate from a particular airport is already reduced by the number of gates and other ground facilities available to them. The aircraft of airlines that do have the rights to gates line up on the taxiways and wait their turn for takeoff. The same principle is applied to the allocation of landing slots[87]. Slots are given free to anyone who has access to the ground facilities and is willing to waste enough time and fuel to await his turn for takeoff or landing. No further coordination is taking place.

Although widely used, this system does not appear convincing because it results in the allocation of a slot not to the most efficient carrier but to the one that has the most time to waste. It does not contribute in any way to make the allocation process more efficient by guaranteeing the profitable or, by some other standards, efficient use of scarce airport resources as no selection on economic grounds is taking place. By introducing such a system, the government would give up the chance of steering the further development of the air transport industry by, for example, granting preference treatment in the slot allocation process to commuter services or carriers willing to serve new routes. Given the enormous importance of that industry for the national economy and infrastructure, this would seem irrational. Slot allocation on a first-come, first-served basis would also not be a suitable basis upon which to encourage the market entry of new competitors. Even though it is true that they would be able to introduce services to congested airports more easily than they are at the present time, they would have to cope with the enormous costs of delay and waste

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[86] See U. Brachmann, *supra* note 33 at 271.

of fuel, which would make their market entry economically unattractive[88]. The experience of the past in Germany, where no allocation scheme existed until 1971, has shown that a first-come, first-served system, given today's quantity of aircraft movements, does not have the potential to efficiently regulate airport access. Before the introduction of flight schedule coordination in Germany, this system accounted for massive impairments of the air transport system as a whole[89]. Departures were delayed for hours, especially during summer seasons. This sometimes lead to an absurd situation, in which airports could no longer accommodate arriving aircraft because delayed aircraft waiting for departure were blocking all parking areas available[90]. The principle of first-come, first-served was also applied at New York's John F. Kennedy airport. Incoming aircraft had to wait for their turn to land for so long that crews, facing declining fuel levels, had to decide to land at other airports nearby or even to return to their point of origin, for example Boston[91]. A government commission that was set up in Germany in the summer of 1970 by the former Federal Secretary of Transport, Georg Weber, came to the conclusion that air traffic control alone could not possibly cope with the stress that the continuous growth had put on the air transport system. Some kind of coordination had to take

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[87] See R. M. Hardaway, Airport regulation, law, and public policy: The management and growth of infrastructure (Westport, CT, 1991: Quorum Books) at 195.

[88] See U. Brachmann, *supra* note 33 at 271; M. Wittmann, Die Liberalisierung des Luftverkehrs in der Europäischen Gemeinschaft (Konstanz, Germany: Hartung-Gorre, 1994) at 134.

[89] See *Bundestagsdrucksachen, supra* note 85.

[90] See Flughafen Frankfurt/Main, ed., Der Flugplankoordinator der Bundesrepublik Deutschland: Aufgaben und Verfahrensweisen (Frankfurt/Main: Flughafen Frankfurt/Main, 1983) at 2.

[91] *Ibid.*.

place before aircraft were even permitted to get off the ground[92]. The first-come, first-served rule makes on-time performance of air carriers extremely difficult, if not impossible[93]. Due to the lack of coordination, they can hardly foresee exactly how long they will have to wait in line and receive clearance for takeoff or landing and are therefore unable to include waiting periods in their schedule. This slot allocation method clearly contributes to the build-up of delays, thereby threatening the reliability of transit connections, which are so vital especially to FRA where every second passenger is in transit. Moreover, it results in an enormous waste of fuel. A Boeing 727 jet aircraft for example burns approximately 80 pounds of fuel per minute waiting for takeoff[94]. This does not seem compatible with the goal of making air transport as environmentally friendly as possible.

It has been shown that the bottleneck at FRA lies in the limited capacity of the runway system, especially with respect to arrivals[95]. Air carriers willing to fly to FRA are turned down because of the non-availability of runway capacity, not because they cannot get access to terminal space or other ground resources. Since the first-come, first-served system functions on the basis that the real rationing has already taken place through restrictions on access to ground resources, it would not fit to the specific situation at FRA. In this setting, the granting of access to the runway system on the basis of access to the less congested terminal area would be most likely to increase capacity constraints by attracting more aircraft than the system

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[92] *Ibid* at 3.
[93] See M. Wittmann, *supra* note 88 at 135.
[94] See R. M. Hardaway, The FAA "Buy-Sell" Slot Rule: Airline Deregulation at the Crossroads (1986) 52 Journal of Air Law and Commerce 1 at 61.

could possibly handle. For all the reasons mentioned above, it is submitted that the introduction of a first-come, first-served system of slot allocation would not have a beneficial effect on the slot situation at FRA.

3) Scheduling Committee

Scheduling committees are usually composed of representatives of all certificated scheduled air carriers using the airport[96]. Carriers wishing to enter the market are also admitted. Scheduling committees were first introduced in the United States in 1968 at five slot-constrained airports[97] to distribute scarce slots among incumbent carriers[98]. Since most experience with scheduling committees has been made in the US, this example will be studied in what follows in order to describe the functioning, the advantages and shortcomings of scheduling committees. There are individual committees for each airport where this scheduling system is applied. All members of the scheduling committee meet twice a year to discuss their winter and summer schedules and to coordinate them so as not to congest airport infrastructure and allow for on-time performance. The basic idea behind scheduling committees is that decisions on schedules can best be made by the entities directly affected by them. This idea is the fundamental principle behind both the IATA Schedule Coordination Conference and

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[95] See FRA – the status quo of a congested airport.
[96] See D. M. Grether, The allocation of scarce resources: experimental economics and the problem of allocating airport slots (Boulder, CO: Westview Press, 1989) at 14.
[97] Newark, Washington National, LaGuardia, John F. Kennedy and Chicago O'Hare.
[98] See R. M. Hardaway, *supra* note 87 at 56.

Scheduling Committees at more than 100 slot-constrained airports worldwide[99].

While the procedures of the committees were not detailed in the Civil Aeronautics Board order that created them, the basic rule for decision-making is unanimity. Any agreement must be endorsed by all carriers at a given airport[100]. Prior to each meeting, the carriers submit their requests for slots to the committee staff. These submissions form the basis for negotiations relative to the coming season. All agreements that the parties enter into must be voluntary; thus, no carrier can be forced by others into an agreement that it finds unacceptable. If carriers fail to come to an agreement, default provisions can stipulate that slots are allocated on the basis of a first-come, first-served rule, by the FAA, by lottery, or by free market trade. Another possibility would be to simply grandfather slots. With the exception of the latter alternative, all possible default regulations are likely to impose some cost to the incumbent carriers, either in terms of payment for slots that used to be free of charge (free market trade) or loss of slots (first-come, first served rule, lottery and administrative allocation)[101]. Hence, the ability of the committee to find a compromise and to accept new market entrants largely depends on what will happen if the committee defaults. If all the incumbent carriers have to fear is maintenance of the status quo, they are not likely to treat new market entrants generously because they have nothing to lose in case of a default. The author therefore holds the view that a default rule providing for the

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[99] See M. Wittmann, *supra* note 88 at 126.
[100] See D. M. Grether, *supra* note 96.
[101] *Ibid.*

grandfathering of slots would have a strong anti-competitive effect and would be unacceptable. If, however, default provisions threaten to impose costs on incumbent carriers and possibly favor new entrants, the latter would have a very strong bargaining position since they always have the possibility to default negotiations if they are not granted the slots they have applied for. They have nothing to lose from a default[102]. Once a carrier does have something to lose from a default, no further concessions can be expected from the other carriers[103].

Scheduling committees, by their very nature, provide a forum for competing carriers to discuss and coordinate their operations. Such negotiations may have an anti-competitive effect. In the United States, scheduling committees are a "conspiracy in restraint of trade or commerce among the several states, or with foreign nations" and are therefore in principal prohibited by section 1 of the Sherman Act[104]. In Germany, agreements restricting competition are prohibited by sections 1, 25 of the *Gesetz gegen Wettbewerbsbeschränkungen*[105] and by Article 85 of the Treaty of Rome. Due to the transnational nature of air transport, scheduling committees regulating access to one particular airport almost inevitably have an effect across borders that is felt in other member states of the European Union as well. It follows that they usually have an affect in the common market as a whole and fall under Article 85 of the Treaty of

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[102] *Ibid.* at 19.
[103] *Ibid.* at 44.
[104] 15 United States Code §§ 1 – 7.
[105] Germany, *Gesetz gegen Wettbewerbsbeschränkungen, Bundesgesetzblatt* 1990 I, 235.

Rome[106]. This provision prohibits "all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between member states and which have as their object or effect the prevention, restriction or distortion of competition within the common market". Hence, it also prohibits the activity of scheduling committees in principle. However, in the past, both the Unites States Department of Justice and the European Commission have acknowledged the importance of the long standing practice of schedule coordination between the carriers concerned and have issued exemptions. In the case of Germany, the European Commission is empowered by Article 85, sub-section 3 to exempt certain agreements from the application of Article 85, sub-section 1. Experience has shown that scheduling committees can have an unfavorable effect on competition between air carriers because members of the committee may be more concerned with hindering access of new entrants than with optimizing their own schedules. This disadvantage was not realized during the regulation of the air transport industry because all participants were incumbents protected either by CAB policy or by restrictive bilaterals. They hardly ever had to cope with the market entry of new competitors, since entering the market was almost impossible, or with a competitor undercutting their fares. This was because tariffs could not be set freely. When first organized, the major task of scheduling committees was not primarily one of allocating fixed airport capacity among competing and potential carriers. Instead the major problem was one of coordinating the operations of a fixed number of

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[106] See J. Goh, *supra* note 18; see also F. Rittner, Wettbewerbs- und Kartellrecht,

carriers[107]. The incumbents therefore did not have to fear any substantial competitive disadvantage resulting from the outcome of the scheduling conferences. There were ample incentives to reach an agreement because the alternative was to suffer the uncertainties of some more remote schedule coordination method, such as administrative allocation[108]. However, things became more difficult when governments deregulated or liberalized the air transport industry, especially in the United States and in Europe. The incumbent carriers were naturally reluctant to part with their slots or distribute newly available ones to potential competitors, who might undercut their fares, and it soon became apparent that some committees were deliberately trying to keep out competition[109]. A 1983 report of the Federal Trade Commission observed the results of a scheduling committee at Washington D. C.'s National Airport: "At the last meeting the dispute was so intense that nine airlines voted against a proposal that would have given each of them exactly the number of flights they wanted. They did so, they said, to keep New York Air and US Air from increasing their number of flights."[110] It has also been observed that decision-making of the committee is substantially complicated by the explicit strategic behavior of carriers. A good example of this was given at the session of the Washington National Airport scheduling committee's session on July 23 1979: Several entrants were asking for slots, and several incumbent carriers were asking for increased allocation as well. The representative of TWA, in particular, was

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5th ed. (Heidelberg, Germany: C. F. Müller, 1995) at 113.
[107] See D. M. Grether, *supra* note 96 at 18.
[108] See R. M. Hardaway, *supra* note 87 at 196.
[109] *Ibid.*.
[110] *Ibid.*

asking for ten additional slots. When asked by a representative of the airport whether he expected to get the extra slots, he said that he did not, but that he would nevertheless not reduce his request until the other carriers, whose requests were also discussed, would reduce their applications. This illustrates that decisions made by the committees are at least strongly influenced by motivations that have nothing to do with the increased efficiency of the use of the airport or the air transport system as a whole.

A study produced in 1988 came to the conclusion that any economic efficiencies obtained by the allocation of slots through a scheduling committee were purely coincidental[111]. This result appears to be convincing because the decisions of the committee are generally prompted by individual interests and not by the wish to increase the efficiency of the overall use of the existing airport structure. Incumbent carriers would rather keep a slot for themselves and use it for a low-valued flight than grant it to a competitor who might introduce a higher-valued flight and undercut their fares, offer a more attractive service or, especially in the case of Europe, deviate traffic to his own hub in order to bypass the incumbent carriers established route networks. This effect is worsened by procedural rules restricting discussions to scheduling at only one given airport and during a single time period. Although this precaution is necessary to avoid collusion among carriers who might use the slot coordination process as a means of market distribution, it also hinders carriers to look at the matter more globally in order to increase the overall efficiency of the air transport

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[111] *Ibid.*

system. For example, a carrier with very successful operations at one airport might be prepared to make concessions at other airports in order to increase capacity there. A carrier that has a lot of traffic during a winter season is likely to be willing to trade slots in the summer schedule in order to gain extra slots during the winter period. This would increase the efficiency of the use of existing airport infrastructure, but is prohibitive because of the possible impact on competition. Even though the representatives of carriers can express their hopes that their generosity at one meeting will be remembered at another[112], there is no way to systematically deal with the problem of interdependencies among airports[113] and scheduling periods. Decisions are taken as if in isolation and governed primarily by the default consequences for the meeting. Slots that would be very valuable to carrier A will therefore remain to be used on low-valued flights by carrier B, and carrier C will continue to use slots during the summer schedule for half-empty flights that would be more attractive to carrier D.

The allocation of airport slots through a scheduling committee therefore increases the use of scarce airport slots for low-valued flights[114]. It allows for comparatively easy market access of new carriers if default provision grandfathering slots is avoided, but it does so regardless of the economic viability of the new operation. As a result, market entry of a new carrier may be at the expense of a more efficient incumbent carrier. Moreover, it does not allow for the growth of incumbent carriers, even if their economic

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[112] See D. M. Grether, *supra* note 96 at 19.
[113] *Ibid.* at 49.
[114] See R. M. Hardaway, *supra* note 87 at 196.

performance would suggest growth, simply because their bargaining position is relatively weak once they have something to lose from default of the committee[115]. It therefore places a downward pressure on large carriers[116]. Finally, the individual committees are hardly able to coordinate operations at the system level[117]. Scheduling committees therefore do not appear to be the appropriate instrument to resolve the problem of equitable distribution of limited runway capacity with due regard to the maintenance or increase of the systemwide efficiency of the use of airport infrastructure. It is therefore not to be expected that the introduction of a scheduling committee procedure to allocate slots could have any potential to contribute to the more efficient use of runway capacity at FRA. It could, however, strengthen competition on certain routes because it would put a strong pressure on incumbent carriers, especially Lufthansa, to give up slots to new competitors in order to avoid re-distribution of all capacities[118].

4) The OPUS Approach

The OPUS (Optimization Program for Using Slots) approach has been developed and promoted by the administration of Düsseldorf Airport, where slot demand is approximately 40% higher than supply[119]. The goal is to achieve a growth of passenger traffic, even though airside capacities are

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[115] See D. M. Grether, *supra* note 96 at 19.
[116] *Ibid.* at 52.
[117] *Ibid.*
[118] See M. Wittmann, *supra* note 88 at 129-30.
[119] See L. Schmid, "Startrechte in Zukunft per Formel verteilen" (1997) 21 Fremdenverkehrswirtschaft 72.

full, through a more economical use of existing slots[120]. The allocation of a slot for a particular service is made dependent on the ratio between the frequency of flights and number of seats offered on that route (SFR – Seat Frequency Ratio). In practice, the number of services offered are divided by the average number of seats offered on each flight to determine whether a slot should be allocated or not. This is illustrated by the following example, with a set seat frequency ratio of 15:

Airline A offers 10 daily flights between Düsseldorf and Berlin. The average aircraft used has a capacity of 100 seats. This would make for a SFR of

$$100+10=\underline{10}$$

- well below the set SFR of 15 and therefore not sufficient to receive all slots necessary to keep up that service.

Airline A would have the option to either use bigger aircraft with an average capacity of at least 150 seats in order to keep its total number of flights

$$(150+15=\underline{15})$$

or reduce its frequency to 6 daily flights

$$(100+6=\underline{16.666}).$$

The prospected SFR for Frankfurt Airport would be somewhere between 20 and 30.[121]

Slots that become free under this rule could be placed in the slot pool and distributed evenly among incumbent carriers and new entrants[122]. They

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[120] *Ibid.*

[121] Interview with Dr. E. Krieger (Head of Traffic Planning Department at Düssldorf Airport) (August 14, 1998).

could, however, also be kept available for the carriers that used to have them for the introduction of new services. The latter approach, nicknamed "OPUS light", is today favored both among carriers and airport administrators and would very well match with a free market trade of slots[123]. If free trade of slots would be allowed, a slot would never have to be withdrawn from a carrier. Airlines would always be able to sell slots they are not permitted to use under the OPUS regime, thereby financially benefiting from them even though they are not willing or able to use them for their own purposes.

The OPUS approach mainly affects small commuter services that attract travellers with high frequencies between major urban centers. The route Düsseldorf-Munich, for example, is served 15 times daily by Lufthansa and 11 times daily by Deutsche BA, with both carriers using relatively small equipment on that route. "This is worse than a commuter train!" says Hans-Joachim Peters, chairman of Düsseldorf airport, commenting on the extremely high frequency between the two German cities[124]. Airport administrators believe that routes like this one use too many slots in a less than optimal way. They would prefer to see the slots used either with bigger aircraft, carrying more people, or by new services that would expand the airport's route network, thereby making it more attractive for connecting services and raising the total number of passengers served.

OPUS was initially designed as a voluntary agreement between the carriers using Düsseldorf and Frankfurt Airport. The airport authorities sought and

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[122] *Regulation* 95/93, *supra* note 57, Art. 10; see E. Giemulla, *supra* note 75 at 253.
[123] Interview with Dr. E. Krieger, *supra* note 121.
[124] See L. Schmid, *supra* note 119 [quote translated by the author of this thesis].

found the support of the Board of Airline Representatives in Germany, BARIG, as well as of the two carriers that would have been particularly concerned, Lufthansa and Deutsche BA, even though it was made quite clear to them that several of their services would be concerned. IATA expressed support for the idea and said they would consider implementation into the IATA Scheduling Procedures Guide once it had been shown that OPUS was functioning smoothly in Düsseldorf and Frankfurt[125]. The proposal was, however, fiercely rejected by small commuter carrier Eurowings. This airline offers six daily flights between Düsseldorf and Amsterdam, where passengers from Northrine-Westfalia are fed into KLM's international network.[126] Small turboprop aircraft are used on this route, and sales manager Karl-Friedrich Müller left airport administrators in no doubt that he disagrees with the with the ideas of efficiency cherished by them: "We will have to fight any new allocation rule that endangers the slots Eurowings has today!"[127]

After failing to introduce OPUS through a voluntary agreement between carriers, the airport authorities sought to have the system implemented as a mandatory slot allocation rule. Consultations with the European Commission and expert opinion commissioned by the *Flughafen Düsseldorf GmbH* has led to the conclusion that this could best be done by amending applicable domestic laws[128].

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[125] Interview with Dr. E. Krieger, *supra* note 121.
[126] *Ibid.*
[127] See L. Schmid, *supra* note 119 at 73 [quote translated by the author of this thesis].
[128] Interview with Dr. E. Krieger, *supra* note 121.

The wording of European Council Regulation 95/93 does not exclude the possibility of connecting slot allocation with aircraft size[129]. Number 8 of the reasoning for the said regulation states that "it is Community policy to facilitate competition and to encourage entrance into the market" and that "these objectives require strong support for carriers who intend to start operations on intra-Community routes". This clause refers to Council Regulation 2408/92[130], Article 9 of which stipulates that the exercise of intra-Community traffic rights may be made subject to certain conditions and limited or even refused where serious congestion and/or environmental problems occur. As it has been argued above[131], traffic rights and slots cannot be regarded as a distinct matter since the effective use of traffic rights requires appropriate slots. It is consequently submitted that Article 9 of Council Regulation 2408/92 does not only allow restriction of the exercise of traffic rights, but also implies a restriction of airport access, without which the restriction of traffic rights would be useless. Article 9 of Council Regulation 2408/92 is therefore not limited to traffic rights, but constitutes a legal basis on which to refuse, restrict or impose conditions to the use of slots as well. Since Council Regulation 95/93 refers to the said provision, it is submitted that, even though it does not provide for any allocation rules allowing for refusal, restriction or conditioning of slots, such rules, introduced under German domestic law, would not violate the letter or the spirit of that regulation. OPUS would connect the allocation and the use of a slot to aircraft size at congested airports. It would impose a

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[129] See E. Giemulla, *supra* note 77 at 248.

[130] EC, *Regulation* 2408/92 of July 23, 1992 on access for Community air carriers to intra-Community air routes [1992] O. J. L. 240/8.

condition that slots allocated be used by aircraft large enough to meet the applicable seat frequency ratio. Such a condition would be within the limits of Article 9 of Council Regulation 2408/92 and therefore in compliance with Council Regulation 95/93. Hence, German legislators could introduce OPUS on a mandatory basis with respect to intra-Community services to and from German airports.

The applicable legal basis for OPUS under German law could be section 27 b, sub-section 2 of the German *Luftverkehrsgesetz*. This provision stipulates that slot allocation may deviate from the priority rule listed in sub-section 1 if the pursuit of public interests, especially of the public interest in air transport, makes this necessary. The fundamental reasoning behind this provision is that the established scheduling principles of sub-section 1 cannot always ensure optimal use of scarce facilities. Consequently, there is a need for a legal basis for governmental interaction if this should be necessary to protect public interests[132]. The public interest in air traffic requires that traffic flow must be coordinated in order to foster it's further growth. Aspects to be taken into account when providing for transport infrastructure that is to meet the public transportation needs of modern societies are, among others, mode of transport, capacity, routing, departure and arrival times and connecting services. The fact that section 27 b, sub-section 2 allows deviation from the established scheduling priorities for reasons of public convenience and necessity suggests a possible hierarchy between the interests of entities providing air transport services and those

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[131] See *supra*, part 1 1) Airport Congestion.
[132] See Germany, *Bundestagsdrucksachen* (1990) 11/6745 at 17.

of the public[133]. One of the aspects of the public interest in air traffic is an extensive route network. This means in our context that section 27 b, sub-section 2 of the *Luftverkehrsgesetz* allows and requires government interference in the slot allocation process where this should prove necessary to pursue the public interest in a healthy mix of destinations served from a particular airport[134]. However, it may not always be easy to determine what is in the public interest and what is not. For example, when one carrier uses a large number of slots to establish extremely frequent services between two cities, he will most likely argue that he is doing so in the best interest of the public, such as that of frequent connections. It seems clear, however, that one service should not be so frequent that it hinders the introduction or development of other services in times of limited airport capacities. In that situation, the public interest and an extensive route network would have to prevail and could be pursued by obliging carriers to use larger equipment in order to reduce frequency and provide space for the introduction of other services[135]. It is therefore concluded that section 27 b, sub-section 2 of the *Luftverkehrsgesetz* constitutes a sufficient legal basis for the introduction of OPUS as a mandatory rule in the process of slot allocation. However, the term of "public interest in traffic" is very wide and not easy to clearly determine. The principal of unequivocal administration of the law, as encompassed in Art. 20, sub-section 3 of the German Constitution, the *Grundgesetz*, requires that legal norms be formulated so that entities concerned are in a position to understand them

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[133] See E. Giemulla, *supra* note 77 at 251.
[134] *Ibid.* at 251 – 52.
[135] *Ibid.* at 253.

and act accordingly[136]. It seems questionable whether section 27 b *LuftVG* fulfills this requirement[137]. Therefore, it would be desirable that this gap be filled in by the secretary of transport, who is empowered by section 32 *LuftVG* to pass official regulations governing the details of the slot allocation process[138].

Negotiations between representatives of both Frankfurt and Düsseldorf Airport and of the German Federal Department of Transportation failed in August 1997. It seems that the latter could not be convinced that existing laws do in fact offer a legal basis for the conditioning of slots[139]. The project has been shelved since that day. However, it is submitted that this approach would be both legal and feasible. Even though it can only be expected to create an additional 3 – 4% capacity[140], it would certainly be an appropriate instrument to deal with the current capacity constraints and immediately make available additional capacities for the introduction of new services.

5) Peak Hour Landing Fees

At most airports, congestion is not so much due to lack of total available capacity as to lack of capacity at peak hours. It has been shown that flights at FRA are scheduled in a wave structure and that consequently the

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[136] See C. Degenhart, Staatsrecht I: Staatszielbestimmungen, Staatsorgane, Staatsfunktionen, 10th ed. (Heidelberg: C. F. Müller, 1994) at 110.
[137] See S. A. Kaiser, "Die Neuregelung des Slotvergabe: Müssen sogenannte 'Grandfather'-Rechte gesetzlich verankert werden?" (1991) 14 Transportrecht 266 at 271; see also E. Giemulla & R. Schmid & W. Müller-Rostin, *supra* note 66, § 27 b, at 5.
[138] See E. Giemulla, *supra* note 77 at 253.
[139] Interview with Dr. E. Krieger, *supra* note 121.

runway system is not congested during all times of the day[141]. If flights were spread evenly over the operating hours, existing congestion could be significantly reduced or even eliminated[142]. Variable landing fees would help to achieve a more even scheduling structure by introducing economic criteria to the system of slot allocation. The use of airport facilities during peak hours would, according to demand, be more expensive than during off-peak times of the day. Peak hour fees could consist of a standard charge for wear and tear of airport facilities with a supplement for the use of such facilities during peak hours. The system would entail that high demand periods be identified and variable prices set so that the sum of services for all flight maneuvers in all periods can be provided at a marginal cost equal to the sum of the fees charged[143].

When the sum of all charges is no higher than the marginal cost of providing all necessary services, then off-peak fees would represent only a fraction of the marginal cost of services provided for a flight maneuver during off-peak hours[144]. Peak-fees would represent the marginal cost of services provided plus a peak supplement. This supplement would not be related to the costs of providing airport facilities, but rather to the time of their use. The setting of airport fees is governed by Art. 15 of the Chicago Convention. The airport is part of the state territory as defined in Art. 2 of the Chicago Convention. It could hence be argued that a peak hour supplement for the use of airport facilities is in fact a "charge in respect solely to the right of entry" into state territory at a certain time[145]. Such a charge is prohibited under Art. 15 of the Chicago Convention.

If off-peak charges would be insufficient to cover the cost associated with the operation of the airport during off-peak periods, then a peak-pricing system would also result in cross-subsidization: The lower off-peak fees

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[140] *Ibid.*

[141] See supra, FRA – The status quo of a congested airport.

[142] See R. M. Hardaway, *supra* note 87 at 201.

[143] See R. A. Janda, *supra* note 9 at 181.

[144] See also E. O. Bailey, "Article 15 of the Chicago Convention and the Duty of States to Avoid Discriminatory User Charges: The U.S.-U.K. London Heathrow Airport User Charges Arbitration" (1994) 19 – 2 Annals of Air and Space Law 81 at 90.

[145] See R. A. Janda, *supra* note 9 at 187-88.

would be made possible with the proceeds of peak operations. While on the one hand, it is acknowledged that the users shall bear their full and fair share of the total cost of providing airport services[146], it is on the other hand submitted that Art. 15 of the Chicago Convention does not allow for a fee structure that would result in charging some airport users for facilities and services they do not use. The provision stipulates that contracting states may impose charges for the *use* of airport facilities. This wording points towards a necessary link between the use of facilities and the cost occurred in providing them. Moreover, the provision explicitly prohibits a discriminatory fee structure that would favor aircraft registered in the contracting state. Such a system constitutes one example of cross-subsidization, namely of services rendered to aircraft registered in the contracting state with the proceeds of services rendered to foreign aircraft. Taking into account that airport congestion and consequently peak charges were not an issue at the Chicago Conference, it seems that the mere fact that the convention explicitly prohibits only one mode of cross-subsidization and is silent on all other possibilities cannot be construed as to allow for peak period fee structure. This view is also reflected in the Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services, which stipulates that "In general aircraft operators should not be charged for facilities and services they do not use..."[147]. The document further stipulates, specifically with respect to airport charging systems, that "Where any preferential charges, special rebates or other kinds of reduction in the charges normally payable in respect of airport facilities are extended to particular categories of users, governments should ensure, so far as practicable, that any resultant under-recovery of cost properly allocable to the users concerned is not shouldered onto other users"[148]. It is hence concluded that a fee structure providing for differential charges during different times of the day would result in cross-subsidization and therefore be in conflict with the principles of Art. 15 of the Chicago Convention.

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[146] See International Civil Aviation Organization, *supra* note 78 at 4.
[147] *Ibid.* at 3.
[148] *Ibid.* at 4.

One could argue that Art. 15 is in fact limited to overt acts of discrimination. If and when one charging system applies to all users of an airport, there can be no discrimination among users, even if that system results in different fees to be paid because of differences in each party's operations[149]. For example, if a charging system provides for peak hour charges, then such a system would not be discriminatory merely because one or several users of the airport have scheduled their operations during peak times of the day. This narrow interpretation of Art. 15 fails to take into account whether such users would have the practical opportunity to avoid peak period airport fees by changing their schedules, or whether this would be impossible because operations could not be shifted to off-peak periods due to a curfew at the destination airport or the non-availability of off-peak slots[150]. Moreover, this narrow interpretation, which would make peak hour airport fees appear legal, does not take into account today's scarcity of airport infrastructure. Where there are, for one reason or another, no alternatives available, a system that seems to apply the same charging rules to all users may in fact lead to disadvantageous economic consequences for certain international carriers despite the apparent uniformity of airport fees and other user charges[151]. Therefore, Art. 15 needs to be construed more broadly to encompass charging systems that appear to be uniform, but in fact leave no alternatives to carriers and are therefore actually discriminatory. Moreover, it should be emphasized that a peak hour pricing system would have to encompass all periods in which scarcity of airport infrastructure exists, because it would otherwise lack a rational basis and would again be discriminatory[152]. The scheduling structure at FRA[153] shows that, during most days of the week, capacity with respect to arrivals are full, or close to full, between 4 and 11 in the morning, 12 and 3 in the afternoon and 4 and 8 in the evening. Taking into account that the curfew applicable to non-homebased carriers with respect to landings is from 12 to 5 at night, only 6 hours out of 24 are neither

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[149] See E. O. Bailey, *supra* note 144 at 95-96.
[150] *Ibid.* at 95.
[151] *Ibid.* at 99.
[152] *Ibid.* at 97.

curfewed nor capacity constrained. With respect to departures, there are peaks between 6 in the morning and 1 midday, 2 and 5 in the afternoon, and 7 and 9 in the evening. Here, 13 hours would count as off-peak, with sufficient capacity to accommodate a substantial number of additional services during all days of the week. However, it is submitted that a substantial increase of take-offs at night would necessarily lead to the introduction of a curfew also with respect to departures. Out of those 13 hours, 6 are between 10 and 4 at night, with most destination airports closed. The situation becomes even more problematic for charter carriers or carriers that have no chapter III type of aircraft available. It is therefore submitted that even if carriers were compelled by a peak pricing structure and were willing and able to reschedule their flights to off-peak periods, nonetheless there would be no sufficient infrastructure during off-peak periods to accommodate them. As a result, a peak hour pricing system at FRA would inevitably be discriminatory in nature and not be in compliance with the requirements of Art. 15 of the Chicago Convention.

It is furthermore to be expected that carriers would not be willing to schedule their operations during less busy and less attractive periods of the day unless consumer demand warranted this in order to gain a substantial discount on air fares. However, landing fees represent only a comparatively small fraction of air carrier operating costs[154]. To achieve a substantial shift from peak to off-peak periods in the demand of air carriers, the difference between the two periods would have to be fairly high in order to be felt by both air carriers and their passengers[155]. Supplements to be charged during peak hours would therefore need to be so high that they would no longer correspond to the difference of demand and be unacceptable, at least from a political point of view. Apart from that, there is no guarantee that air carriers would not react to a change in the pricing structure by

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[153] See above, p. 14.

[154] In 1996, a total of CDN 200 million spent on airport user fees represented less than 5% of the total operating expenses of far more than CDN 4 billion in the operating statement of Air Canada. See Air Canada, Annual Report 1996 (Montreal: Air Canada, 1997) at 35.

[155] See A. T. Wells, *supra* note 1 at 193.

simply averaging the cost of peak-hour operations at FRA with lower costs at other times and places, and then pass this along to all their passengers as a general fare increase. They could thus create a system of internal cross-subsidization to cover the higher cost of airport access during peak periods. The average fare increase would be minimal, the economic signal to the travelling public would be diminished and travel behavior would most likely remain unchanged[156]. Finally, one must bear in mind that, in densely populated Europe, there is fierce competition between airports and air carriers. No European airport can afford to put at risk the beneficial effects that it has to the local economy by introducing excessively high airport fees because traffic could soon be lost to other nearby airports. The same is true for air carriers: If they want to remain competitive, they cannot afford to be based at an airport that has much higher charges without at the same time offering a competitive advantage over other, cheaper airports. Since there are not many scheduling alternatives available, it is submitted that the introduction of a peak hour pricing system would substantially increase costs of airport access for carriers based at FRA, especially Lufthansa, it's subsidiaries and Aero Lloyd, and would therefore not be in the interest of the city of Frankfurt, the state of Hessen and Germany as a whole. Since those entities are the shareholders of Frankfurt Airport Corporation, it is submitted that the political viability of this approach would be minimal.

6) Slot Lotteries

Slot lotteries would distribute scarce airport access by pure chance. They can be introduced either as the sole means of slot allocation or in combination with some other allocation scheme, for example scheduling committees[157]. In the following, only the former alternative will be examined. The great merit of the lottery approach lies in its equal treatment of all applicants, which would not only make the allocation process highly transparent and objective, but would also deter any one carrier from a

[156] See A. T. Wells, *supra* note 1 at 194.
[157] See D. M. Grether, *supra* note 96 at 18; M. Wittmann, *supra* note 88 at 128.

deliberate discrimination argument[158]. In spite of this,there are, however, a substantial number of shortcomings, which make this solution appear rather unfavorable.

Lotteries distribute scarce resources not by certain criteria, but solely by the roll of the dice. In a deregulated or liberalized economic environment, economic survival and prosperity should depend on efficiency and quality of service rather than on mere chance. The latter is, however, exactly the case if the practical chance of market entry is simply given away to anyone lucky enough to win a lottery, regardless of whether the carrier concerned will be able to serve a particular route efficiently or not.

The approach appears to facilitate market entry of new competitors, thereby increasing competition and benefiting the consumer. This reasoning, however, does not take into account that market entry of a new competitor requires a certain security of planning: Routes need to be developed, distribution channels need to be established, staff hired, the name and services of the new competitor need to be advertised, long-term contracts with caterers, fuel companies and maintenance providers need to be concluded. In order to justify such investments, the entrepreneur must be sure that he will be able to serve that particular route for long enough to reap the benefits. Lotteries, however, would have to redistribute slots on a regular basis to fulfill their purpose, namely, the opening of markets. This would most likely have to be done twice a year in order to comply with the current IATA scheduling procedures and with the varying demands during the summer and winter season. In this scenario, a new entrant could only be sure of his market access for a six months period. He could not be sure that he would receive sufficient slots during attractive times of the day to keep up his service during the next scheduling period. It has, for example, been estimated that the introduction of a new route generally requires at least four daily slots (four arrivals and departures) during the morning and evening period to ensure a long-term establishment of that service[159]. A lottery system cannot ensure that those four slots will remain available, and, unlike a large incumbent carrier, a new competitor might be swept out

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[158] See R. M. Hardaway, *supra* note 94 at 60.

of the market merely because of the loss of a slot[160]. The lottery system is therefore unable to provide for the planning stability necessary to introduce a new service.

Slot lotteries make it difficult to coordinate slots at different airports to build up a service: A slot at airport A, allocated by lottery, may be of very little value to a carrier that wants to fly to B without having a corresponding slot there. Slot allocation through lottery systems would therefore entail long and complicated aftermarket exchanges to enable carriers to build up a route network[161]. This trade would most likely prove far more difficult and time consuming than the slot swapping procedures at current IATA schedule coordinating conferences. Carriers would hence have to plan and coordinate their activities a long time ahead, which would make it much more difficult for them to react to sudden changes in consumer demand, as they occurred, for example, following the economic crisis in East Asia in 1997 or after the bombing of tourist locations in Egypt during the same year[162]. The alternative would be to distribute slots not only at FRA, but offer slots for city pairs or perhaps whole networks in cooperation with other airports and schedule coordinators. However, it appears to be at least questionable whether this approach would find a lot of support abroad. Moreover, there would be no assurance that a carrier, having received a city pair or a network, would be able to really benefit from it since it may not possess the right equipment or lack sufficient infrastructure to market its services[163].

The introduction of a lottery would also raise highly complicated questions with respect to the bilateral air transport agreements Germany has concluded with other states. As it has been explained above, the granting of traffic rights cannot be regarded as distinct from the allocation of airport infrastructure necessary to perform services according to the rights

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[159] See M. Wittmann, *supra* note 88 at 133.
[160] *Ibid.* at 132.
[161] See U. Brachmann, *supra* note 33 at 272.
[162] *Ibid.*
[163] *Ibid.*

granted[164]. Germany is therefore legally obliged to ensure that airport access is available to the air carriers designated by the states concerned. It will hence be necessary to provide those carriers with slots independently of the lottery process. The same would be true for Community carriers as defined in Art. 2 (e) of European Council regulation 95/93 since bilaterals with member states of the European Community remain applicable as far as rights and duties included in them do not contradict Community law[165]. If foreign carriers competing with German carriers on international routes receive slots independently of the lottery process, it would be indispensable, for political reasons, to grant the same treatment to German carriers on routes concerned in order not to unduly constrain their ability to compete with the former. This would exclude all international traffic from the lottery process. Since the remaining domestic traffic plays a comparatively modest role, it is submitted that the lottery approach would not be capable of significantly increasing the efficiency of the slot allocation process and the use of slots at FRA. Moreover, it must be borne in mind that domestic flights also usually serve as connecting flights to international passengers and that convenient transfer times are therefore desirable. If slots for domestic flights were to be allocated by lottery, the ability of German carriers to schedule them around the arrivals of important international services would be limited and the competitive position of both German carriers and FRA would be further constrained. The author therefore holds the view that pursuing the lottery approach would have very limited potential to increase the efficiency of the use of existing airport infrastructure at FRA and could lead to a possibly hazardous effect on the competitive strength of German carriers and Frankfurt Airport.

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[164] See Part 1: Airport Congestion.

[165] See W. Schwenk, Handbuch des Luftverkehrsrechts, 2nd ed. (Cologne, Germany: Heymann, 1996) at 516.

7) Slot Auctioning

Slot auctions are regarded by many authors as the most appropriate method of slot allocation. They argue that if airport access is, for whatever reason, limited, it should be regarded as a scarce resource and priced accordingly[166]. Slot auctions would increase the efficiency of the use of existing airport infrastructure by establishing a market for airport access that would favor the most economically valuable use[167]. Potential buyers with reasonable hopes to gain the highest profit from a slot would bid the most[168]: "The maximum price an airline would pay for a slot is the amount that, when added to other cost of the flight that will use the slot, equals the flight's expected revenues"[169]. The hoarding of slots in order to prevent market entry of a competitor would thus prove economically unsound[170]. Whereas the auctioning of slots would help to relieve the problems raised by the limited availability of airside airport infrastructure in a way that would best reflect market demand for airport access[171]. It would also encourage adjustment of schedules and fares to meet consumer demand more precisely than it is done currently: If the difference in slot prices were reflected in airfares, consumers wishing to travel during peak periods and willing to pay the applicable higher fare would be free to do so, while other customers preferring lower airfares to greater convenience of schedule could have their demands satisfied as well[172]. Slots at highly congested, but very attractive airports would fetch prices corresponding to that extraordinary market demand. Carriers not willing or able to pay such high prices would be forced to more actively search for alternatives to currently congested airside airport facilities. Short-haul traffic might, for example, be replaced by rail and road services. Long-haul services not promising

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[166] See A. T. Wells, *supra* note 1 at 195.
[167] See R. A. Janda, *supra* note 9 at 185.
[168] See S. Lerner, "Airside Commercialization Through Slot Allocation: Discussion on a Recommendation for Airside Ownership" (1996) 21 – 2 Annals of Air and Space Law 209 at 217.
[169] See R. M. Hardaway, *supra* note 87 at 194.
[170] See M. Wittmann, *supra* note 88 at 141 – 42.
[171] See R. A. Janda, *supra* note 9 at 185.
[172] *Ibid.*

sufficient profit could be rerouted to less congested and therefore cheaper nearby hub-airports and be fed by existing connecting flights. Connecting services could be replaced by non-stop services, which would substantially reduce the use of airport infrastructure altogether. Slot auctioning would thus encourage a more deliberate consideration of who really needs and can afford to use congested airport infrastructure, a consideration which is likely to lead to its more reflective use[173].

Since the number of slot applications for FRA today is far higher than the number of slots coordinated, it seems likely that slot auctioning would generate significant extra revenue because carriers currently holding slots would not only have to compete with each other, but also with those who were not lucky enough to receive the slots they applied for in the past. High demand will result in high prices. These funds could be used to expand airport facilities in a way indicated by the market[174]. However, it is submitted that airport operators may not feel compelled to invest in expansion of existing airport infrastructure, especially where this would meet fierce public resistance. If the scarcity of access to one particular airport results in extraordinary high prices for slots, expansion of facilities and hence increase of supply would almost inevitably lead to decreasing prices paid at auctions. Airport operators might therefore prefer not to undertake the cumbersome task of overcoming political opposition and maintain the scarcity of access to their airport in order to further benefit from the high revenues. The market-oriented allocation of slots may therefore very well set a trend in the wrong direction and prevent the increase of airport capacity[175].

The question as to how to organize the auctioning process efficiently has not yet been answered in a satisfactory way. The technical viability of a slot allocation method depends largely on it's capability to allow for the completion of a practicable schedule for the next planning period within the time limit of the current scheduling season. Hence, a knowledge of the number of items to be auctioned is crucial in determining the feasibility of a

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[173] *Ibid.*
[174] *Ibid.*
[175] See also S. A. Kaiser, *supra* note 137 at 269.

slot auctioning system. The auctioning process would have to apply at least to all hours during which capacities are currently full. The analysis of the average utilization of the runway system at FRA for the summer 1998 schedule[176] shows that with respect to arrivals, there are no capacities available during 9 hours on at least four days of the week. With respect to departures, this number stands at 7 hours. These figures are based on current scheduling procedures, which allow for a total of 41 arrivals and 48 departures, but no more than a maximum of 76 flight movements per hour[177]. Hence, a total of 9 % 41 = 369 arrival slots and 7 % 48 = 336 departure slots would have to be auctioned for four days at FRA. This makes a total of 705 slots at FRA to be allocated by auctioning for one of four days. This number would be only slightly lower during the remaining three days of the week. It is submitted that a good auctioneer can auction up to 60 objects per hour, so that the auctioning process for slots for only one day at FRA would take about 12 hours. However, since a slot, unlike most items usually auctioned, does not have a value of it's own, but must be coordinated with corresponding slots both at FRA and other airports, the actual auctioning process would take much longer to allow for the time necessary to determine whether a slot currently auctioned would be of value or not. On this basis, auctioning every single slot independently would take far too much time. The number of items to be auctioned would therefore have to be substantially reduced. This could be done by auctioning slots in clusters. One could for example offer the same slot on several days of the week or for more than one planning period or combine departure slots with corresponding arrival slots. However, such clusters may not necessarily be designed according to the needs of the carrier purchasing them. A charter carrier may need slots only during winter or summer season, a carrier with only little traffic may not want daily slots, but may be content with only one or two weekly slot pairs. It is difficult to offer corresponding slots for arrival and departure because the time aircraft stay at the airport differs depending on the type of service and the needs of the

[176] See above, "FRA – The status quo of a congested airport"
[177] See J. Buxbaum, *supra* note 42 at 3.

carrier. Most aircraft are fueled after arrival, but some are not. Most, but not all, do not only discharge, but also pick up passengers and cargo. While some get serviced, others only get checked quickly before taking off again. Some carriers offering long-haul services have to park their aircraft for some time on the apron before departure in order not to conflict with curfews at the next destination airport or they may simply need to meet the demand of customers who prefer a later departure. In all those cases, slot clusters offered in the auctioning process would most likely not fit all carriers needs. Therefore, after-market exchange and sale would be indispensable to allow carriers to adjust the number and time of the slots they acquired to the actual needs. This process would, again, require a lot of time, especially because slots would have to be coordinated with slots for other airports received through other scheduling mechanisms, for example the IATA schedule coordinating conferences. Moreover, the auctioning of slot in clusters would give the government or the airport operator the role of planning services to be performed by the airlines. However, it is the air carriers and not the airport operators who carry the economic risk of their operations. They should therefore have the freedom arrange their schedules on their own, rather than being assigned the role of private entities executing the will of public authorities[178]. It is therefore concluded that the auctioning of slots in clusters would not lead to strengthening competition, but would rather increase government interference. As such, this would therefore be in conflict with the Treaty of Rome, which strives for free competition[179].

The legality of slot auctions has been the subject of controversial discussion. The difference in cost of airport access resulting from an auctioning process has, in particular, raised the question whether auctions would be in compliance with the principles of pricing for airport services as they are laid down in Art. 15 of the Chicago Convention. This provision stipulates in the relevant part that

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[178] See U. Brachmann, *supra* note 33 at 268.
[179] *Ibid.* at 268 – 69.

"No fees, dues or other charges shall be imposed by any contracting state in respect solely of the right of transit or entry into or exit from its territory of any aircraft of a contracting state or persons or property thereon."

An "entry into or exit from" the territory of a contracting state is not possible without the use of airport infrastructure, for the use of which carriers have to pay. If carriers were to be charged for the allocation of a slot in addition to the normal landing fees covering the cost of operation of the airport, then states would have to prove that the revenue received from each slot in the auctioning process equals the costs that the use of this slot causes to the overall economy[180]. If this cannot be proved, then the mere act of asking for money for a slot would constitute a charge independent of the cost of providing airport facilities and "solely with respect to the right of... entry into or exit from" the territory of the contracting state concerned. It is submitted that the use of a slot triggers costs exceeding those of providing the necessary airport infrastructure, for example environmental costs, loss of value of real estate in the direct vicinity of airports, and costs of providing people exposed to airport noise with protective measures. However, it will most likely be impossible to exactly assess these costs in order to prove that charging for the allocation of a slot in the auctioning process is justified. Airport charges are also permitted to exceed the costs up to a certain extent in order to allow for "a reasonable return on assets... to contribute towards necessary capital improvements"[181]. But a slot auctioning process introduced in order to increase the efficiency of the slot allocation process and the use of existing airport infrastructure could hardly be justified with the need to create funds for the development of airport infrastructure. This is especially true in the case of FRA, where demand and resultant revenues from slot auctioning would be comparatively high. Given the fact that Frankfurt Airport Corporation has achieved an after tax profit of about CDN 70 million in the fiscal year 1996[182] and that no

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[180] See Böckstiegel/Krämer 1, *supra* note 25 at 281.

[181] See International Civil Aviation Organization, *supra* note 78 at 4.

[182] See "New Annual Record: Frankfurt Airport Serves 40 Million Passengers in 1997", *supra* note 37.

concrete decision about further expansion has been taken so far[183], it will prove difficult to explain the need for increasing the return on assets at FRA through the auctioning of slots. It is therefore concluded that charging carriers in addition to the operating cost of the airport will run foul of Art. 15 of the Chicago Convention.

The auctioning process could also be combined with a reduction of user fees corresponding to the proceeds of the auction so as to avoid a situation where the total revenues of airport operation exceed an amount permissible under Art. 15, giving rise to the complaint that carriers would be charged solely in respect to entry to or exit from state territory. However, this would result in an uneven distribution of the cost of providing airport facilities, with some carriers enjoying a considerable discount made possible with the money other carriers paid at the auction. Carriers concerned would rightly complain that their share of the cost is greater than their share in causing the cost and that such a system results in charging them solely with respect to entry or exit from sate territory, without a sufficient cost basis. They would furthermore be likely to argue that such practice is discriminatory in nature and therefore not in compliance with the principles set out in Art. 15[184].

Efforts have been made to refute these concerns. It has been argued that Art. 68 of the Chicago Convention gives contracting states the right to designate airports to be used by international air services. The *argumentum a maiori ad minus* is that if states have a right to eliminate access altogether, they should also be able to introduce a market oriented system of slot allocation, to which all users would be subject and which includes an element of price-discrimination[185]. This argument does not appear convincing when a parallel is drawn to the prohibition of Art. 15 to charge foreign aircraft solely with respect to the right of entry to or exit from state territory. All states enjoy complete sovereignty over their airspace, and nothing in the Chicago Convention or elsewhere restricts this

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[183] See J. Kauffmann, "Ausbau nur im Konsens mit der Region" Frankfurter Allgemeine Sonntagszeitung (January 18, 1998) 9.

[184] See also "Peak hour landing fees", above.

[185] See R. A. Janda, *supra* note 9 at 188.

sovereignty by obliging them to allow scheduled international air traffic to enter into or transit over their state territory. In fact, Art. 6 of the Convention explicitly provides that they do have the right to prohibit such service. If the argument described above was right, then it would mean in this context that, since states have the right to prohibit entry of scheduled international traffic into their airspace altogether, they must also have the right to charge carriers for permission. Even though this line of reasoning is not without example, it is nevertheless not consistent with the explicit prohibition to charge solely for the right of entry or transit contained in Art. 15. States have both the right to refuse the use of certain airports for international air services and to prohibit entry of scheduled international air services into their airspace. Both those rights are rooted in the principle of sovereignty of states over their territory. However, if they choose to open their airspace and their airports to foreigners, then the charging rules of Art. 15 do apply. Charges are prohibited altogether with respect to the entry to, transit over or exit from state territory. With respect to airports, Art. 15 stipulates a non-discriminatory, cost-based charging system. Unless Art. 15 is changed accordingly, the author does not see a chance to legally introduce slot auctions with respect to international traffic.

The introduction of slot auctions would also cause problems with respect to bilateral air service agreements. Since the traffic rights granted in those agreements and the allocation of slots indispensable for their actual use cannot be regarded as a distinct matter[186] and since traffic rights have been granted without further conditions than those laid down in the agreement, it does not seem likely that partner states would simply accept that their designated carriers would all of a sudden have to pay for the slots they used to receive without additional cost. The requirement of purchasing appropriate slots before picking up service would impose a condition on the exercise of traffic rights granted that is not contained in the bilateral. If Germany wanted to introduce a system of slot auctioning, appropriate

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[186] See "Airport Congestion", above.

clauses would have to included in the bilaterals it has already concluded with other states over the past decades[187].

Summing up all the above reflections, it is concluded that a state wishing to introduce slot auctions would have to overcome the legal obstacles set by Art. 15 of the Chicago Convention and by its bilateral air service agreements in addition to all the more technical, but nevertheless overwhelming difficulties described. It is therefore concluded that slot auctions do not have the potential of solving current problems at FRA within a reasonable period of time.

8) Free Market Models of Slot Allocation

8 a) Slot Sales

Open market sales of slots allow the allocation of airport access through market forces. Slots can be purchased only by those carriers that have reasonable hopes of making enough profit through their use to justify the price paid. Carriers owning a slot, but not making sufficient profit in the long run find it more economical to transfer their slot to another enterprise, thereby benefiting from the higher revenues this enterprise is hoping to achieve.

The legal status with respect to the sale of slots in Germany is somewhat ambiguous. European Council Regulation 95/93 stipulates in Art. 8, sub-section 4 that "slots may be freely exchanged between air carriers or transferred by an air carrier from one route, or type of service, to another, by mutual agreement or as a result of a total or partial takeover or unilaterally." According to this provision, the transfers must be "transparent" and are subject to confirmation by the coordinator. However, the regulation is silent on whether slots may actually be sold or whether it is precluded

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[187] See K. H. Böckstiegel & P. M. Krämer, "Völkerrechtliche Gestaltungsvorgaben für die Einführung einer wettbewerbsorientierten Allokation von Start- und Landeslots" (part 2) (1995) 44 Zeitschrift für Luft- und Weltraumrecht 371 at 381-82 [hereinafter Böckstiegel/Krämer 2].

that unilateral slot transfers and exchanges are to be done for free. But the unilateral transfer of slots in exchange for economic benefits is not without example at FRA. When Delta Airlines almost completely withdrew from their European operations at FRA in summer 1997, their slots were transferred to Lufthansa. In return, Lufthansa agreed to employ 50% of Delta's staff in Frankfurt[188]. Since Delta would have been under pressure to provide for compensation of those left unemployed after their withdrawal from FRA, it is submitted that the commitment of Lufthansa constitutes a genuine economic advantage for Delta. Therefore, all basic economic characteristics of a sale are fulfilled.

A slot can be defined as "the scheduled time of arrival or departure available or allocated to an aircraft movement on a specific date at an airport"[189]. It is hence non-physical in nature and comparable to a right. Consequently, the provisions for the sale and transfer of a right would be applicable in the case of a free-market trade of slots. The *Bürgerliches Gesetzbuch* (BGB)[190], the German civil code, defines sale of a right in section 433 as a contract that obliges the vendor to transfer the right to the buyer. Since the German civil law does not acknowledge ownership of a right[191], the provisions for the transfer of an obligation apply analogously (413 BGB) to the transfer of other rights. Sections 413, 398 BGB stipulate that the obligation, or the right in our case, the slot, must be transferred from the assignor, the beneficiary, to the assignee. The fulfillment of a sale of a right hence presupposes that the vendor has a property interest in the right. A vendor who does not and never will have a property interest in the right sold will be liable under section 437 BGB and may even be criminally liable for fraud under section 263 of the *Strafgesetzbuch*. It is therefore crucial to determine whether a carrier having a slot at an airport has a sufficiently strong interest in that slot, comparable to the interest of a creditor in an obligation, to allow for its transfer. This would be the case if the legal provisions governing the allocation of slots in Germany, sections

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[188] Interview with A. Zimmer, *supra* note 60 (June 22, 1998).
[189] IATA Scheduling Procedures Guide, *supra* note 2 at 5.
[190] Germany, *Bürgerliches Gesetzbuch*, *Reichsgesetzblatt* 1896, 195.

27 a and b of the German *Luftverkehrsgesetz* and Art. 8 of European Council Regulation 95/93, entitled carriers to demand allocation and re-allocation of their slots. It is therefore crucial to determine whether the said provisions aim at the protection of the interests of air carriers in the maintenance of "their" slots[192].

According to the drafting history of sections 27 a and b of the *Luftverkehrsgesetz*, the schedule coordination in Germany is aiming at the optimal economic distribution of scarce resources[193]. This wording seems to hint at a pursuit of solely public interests[194]. Moreover, the legislators even saw the interest in market entry of newcomers not as a private interest of those enterprises, but as part of the public interest in air traffic[195]. It seems therefore rather questionable whether schedule coordination was introduced in Germany to further the interests of air carriers. However, it must be borne in mind that the allocation of a slot is necessary for the rendering of air services, an economic activity protected under the German Constitution, the *Grundgesetz* (GG). Sections 27 a and b of the *Luftverkehrsgesetz* must hence be construed in the light of the *Grundgesetz* in order to determine whether they in fact protect the interests of air carriers or not.

Art. 14 GG protects the right of property. The provision does not only protect absolute rights, like the ownership of a physical object, but also relative rights and the interest in a right. It encompasses all rights of an economic value recognized by the legislator[196].

Slots are currently not earned, bought or leased, but allocated on the basis of European Council Regulation 95/93 and the *Luftverkehrsgesetz*, which are both part of public law. The question whether such rights are within the

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[191] See also F. Baur & R. Stürner, Lehrbuch des Sachenrechts, 16th ed. (Munich, Germany: Beck, 1992) at 665.

[192] See also E. Giemulla & R. Schmid, "Wem gehört die Zeit? Rechtsprobleme der Slotzuteilung" (1992) 41 Zeitschrift für Luft- und Weltraumrecht 51 at 56-57.

[193] See *Bundestagsdrucksachen, supra* note 85 at 16-17.

[194] See E. Giemulla & R. Schmid, *supra* 192 at 56.

[195] See *Bundestagsdrucksachen, supra* note 85 at 17.

[196] See *Bundesverfassungsgericht* (July 7, 1971) *Entscheidungen des Bundesverfassungsgerichts* vol. 31, 229 at 240 [Germany]; H. Jarass & D. Pieroth,

scope of applicability of Art. 14 GG is still subject to scientific dispute, but rulings of the Federal Constitutional Court have brought some clarity to the issue[197]. The court has made the decision dependent on whether public laws grant a right comparable to property. This is the case when and where public laws grant a right on the basis of individual achievements rather than on the basis of the duty of the government to provide welfare services[198]. Art. 14 GG is seen as supplementary to personal freedom and protects especially those rights that are an equivalent to personal accomplishments[199]. The more the right is rooted in personal achievements, the more it is attached to the person rather than to the government, and the more similar it is to other cases of property protected under Art. 14 GG[200]. The function of Art. 14 GG is to prohibit deprivation of property by the government. Art. 14 does not protect one-sided grants because the guarantee of Art. 14 GG does not extend to an obligation of the government to further enrich those who receive public support[201].

A slot can therefore be regarded as the property of an air carrier if it has been allocated, at least in part, on the basis of the achievements of that air carrier and cannot be seen as a one-sided government benefit. Carriers do incur huge costs for their operations, like the costs of buying or leasing and maintaining their equipment, hiring qualified staff, administration, distribution, advertising, paying for fuel, airport access and air navigation services and the like. All these costs are necessary before services can be picked up and hence before they can receive a slot. It has therefore been argued that these costs were an equivalent to the granting of a slot by the

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Grundgesetz für die Bundesrepublik Deutschland, 4th ed. (Munich, Germany: Beck, 1997) 331 [hereinafter Jarras/Pieroth].

[197] See T. Maunz et al., Kommentar zum Grundgesetz, vol. 2, (Loose-leaf: 33rd Supplement) (Munich, Germany: C. H. Beck, 1997) Art 14, 77 [hereinafter Maunz].

[198] See B. Pieroth & B. Schlink, Grundrechte: Staatsrecht II, 11th ed. (Heidelberg, Germany: C. F. Müller, 1995) 248 [hereinafter Pieroth/Schlink].

[199] See Maunz, *supra* note 197, Art 14, 81.

[200] See C. Gaebel, "Slots als Eigentum: Verfassungsrechtlicher Schutz von Start- und Landezeiten" (1990) 13 Transportrecht 407 at 410; Jarass/Pieroth, *supra* note 196 at 333.

[201] See Maunz, *supra* note 197, Art 14, 77; E. Giemulla & R. Schmid & W. Müller-Rostin, *supra* note 66, § 27 a, at 6-7.

government and that slots hence did fall under the protection of Art. 14 GG[202]. However, it must be borne in mind that everybody who receives government support incurs some kind of cost before he can benefit from it. For example, enterprises receiving subsidies from the government incur substantial costs to set up and run their businesses. Parents receiving government benefits for their children in accordance with the Bundeskindergeldgesetz incur all the costs involved in having children. Individuals receiving government benefits to be able to afford renting an apartment in accordance with the Wohngeldgesetz incur the costs of moving and paying the difference between the government grant and the actual rent and, possibly, an estate agent. Therefore, not all costs incurred in receiving government benefits can be counted as personal accomplishments justifying the treatment of those benefits as property.

The picture becomes clearer when one focuses on those government grants that have been found to be similar to property and hence within the scope of applicability of Art. 14 GG. Claims based on the social insurance system are a good example: The courts have found that retirement pensions[203], occupational disability pensions[204] and pensions for war victims[205] are all similar to property and therefore protected under Art. 14 GG. Retired people have paid for a lifetime part of their income into a government subsidized retirement scheme. The same is true for those hit by occupational disability. War victims have suffered damage to their health as a direct consequence of war. All of them have given something to the government, be it their money or their health, which has in one way or another enriched the government. They have given some kind of consideration for what they receive from the government, even though this consideration may not in all cases be equivalent to what they receive and

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[202] See C. Gaebel, *supra* note 200 at 411.

[203] See *Bundesverfassungsgericht* (February 28, 1980) *Entscheidungen des Bundesverfassungsgerichts* vol. 53, 257 at 290 [Germany]; *Bundesverfassungsgericht* (September 30, 1987) *Entscheidungen des Bundesverfassungsgerichts* vol. 76, 256 at 293 [Germany].

[204] See *Bundesverfassungsgericht* (April 8, 1987) *Entscheidungen des Bundesverfassungsgerichts* vol. 75, 78 at 96-97 [Germany].

[205] *Bundessozialgericht* (August 10, 1993) *Entscheidungen des Bundessozialgerichts* vol. 73, 41 at 42 [Germany].

their relationship to the government cannot be described as a *do ut des* relationship comparable to that between the parties of an exchange contract.

The costs air carriers incur in picking up and maintaining their services do in many ways benefit the public, for example by supporting traffic infrastructure, providing for employment, paying taxes and supporting international dialogue. These costs, however, are not a direct or indirect consideration for the granting of airport access[206] because they do not enrich the government more than any other economic activity. It is therefore submitted that the costs air carriers incur before they receive slots lack the characteristic relationship to their slots that would justify regarding them at least partly as their achievements.

The Federal Supreme Court (*Bundesgerichtshof*), the Federal Administrative Court (*Bundesverwaltungsgericht*) and the prevailing academic doctrine see also the right to one's business establishment as part of the property as protected by Art. 14 GG[207]. The provision hence protects not only all physical objects belonging to an enterprise, but also business and customer relations and everything else that constitutes part of the economic value of an enterprise as a whole[208]. Factors that contribute to the value of the enterprise without actually being part of it are not protected. Hence, mere economic chances based on such external factors are only within the scope of applicability of Art. 14 GG if the government made the owner of the enterprise trust in the maintenance of the said condition, thereby causing the latter to invest accordingly.

It is submitted that a slot constitutes more than a mere economic chance during each scheduling period. Slots give the right of airport access until the end of each scheduling period, and carriers therefore have a right to trust that they will continue to be able to use "their" slots as they have been allocated to them[209]. But since slots are allocated on a unilateral basis,

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[206] See E. Giemulla & R. Schmid & W. Müller-Rostin, *supra* note 66, § 27 a, at 7.
[207] See Pieroth/Schlink, *supra* note 198 at 247; Jarass/Pieroth, *supra* note 196 at 332.
[208] See E. Giemulla & R. Schmid, *supra* note 192 at 58-59.
[209] *Ibid.* at 57.

without any relation to the accomplishments of each carrier, they are nevertheless not part of the right to one's established business. They are always allocated for one period only, and it does not seem convincing that an air carrier would buy a particular aircraft or conclude a particular labor contract with respect to one or two specific slots that he holds at a German airport. It is therefore concluded that the right to one's business, as protected under Art. 14 GG, does not encompass the interest of air carriers in the slots they receive[210].

The interest of an air carrier in a slot is therefore not protected as property under Art. 14 GG. This provision does not allow the interpretation that the introduction of schedule coordination in Germany was also aiming at the interests of air carriers in airport slots[211].

An absolute interest in a slot could finally be based on Art. 8, sub-section 4 of European Council Regulation 95/93, which stipulates that slot may be transferred. The possibility to transfer a slot from one carrier to another as a result of a takeover or in particular unilaterally might be understood to mean that carriers are in fact free to buy and sell slots as they wish. Such a horizontal transfer is subject to the approval of the coordinator, but this does not necessarily exclude the possibility of a property right[212]. Merger cases, for example, are also subject to the approval of the appropriate competition authorities, but there is no doubt that the enterprises concerned are the property of the shareholders. However, the conditions for approval according to Art. 8, sub-section 4 are rather strict, and unless they are fulfilled, the slot can be transferred only vertically, that is to the coordinator. Here lies an important difference to merger cases: When approval to a merger is not received, the companies involved stay independent. Even if one of the companies files bankruptcy, it does not become public property, it is not "transferred vertically", as would be the case with a slot if one carrier is not willing or able to use it and transfer to another carrier is not approved. This allows the conclusion that the regulation does not see the horizontal transfer as the confirmation of

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[210] *Ibid.* at 60.

[211] See E. Giemulla & R. Schmid & W. Müller-Rostin, *supra* note 66, § 27 a, at 9.

[212] See E. Giemulla & R. Schmid, *supra* note 62 at 264.

property of the carriers, but rather as an economical means of avoiding the costs and loss of valuable time involved in the vertical transfer[213]. Consequently, Art. 11 of the regulation refers to the horizontal transfer as "the flexibility provided for in Art. 8 (4)". It is therefore concluded that a property interest in a slot cannot be based on Art. 8, sub-section 4 of European Council Regulation 95/93 either[214].

Taking all the above into account, the author holds the view that, under current German and European legislation, air carriers do not enjoy the legal protection of "their" slots as part of their property. Nevertheless, they are able to transfer, but not sell them. This result is in compliance with current legislation of the United States, which stipulates that slots for domestic operations may be bought, sold and leased at the so-called high-density traffic airports[215], but at the same time stresses that "slots do not represent a property right but represent an operating privilege subject to absolute FAA control"[216].

The introduction of a market for slots would therefore require appropriate German or European legislation. But the majority of the bilateral air service agreements that Germany has concluded over the last decades do not include clauses with respect to the allocation of airport slots[217]. Since the traffic rights granted in those bilaterals cannot be seen as a matter distinct from the allocation of necessary airport slots, it is submitted that the introduction of a free market for slots would require the inclusion of appropriate clauses in those bilaterals in order to state that traffic rights granted are limited with respect to airport access[218].

Given today's scarcity of airport access, slots represent a considerable value. In 1991, price estimates for London Heathrow were at about 1 million US$ for a slot during peak hours. Looking at prices that are paid officially in the United States for slots at airports affected by the high-

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[213] *Ibid.* at 265.
[214] Ibid.
[215] See 14 C.F.R. § 93.221.
[216] See 14 C.F.R. § 93.223; Pension Benefit Corp., et al. v. Braniff Airways, Inc., et al. 700 F.2d 935 (5th Cir. 1983); compare Federal Aviation Administration v. Gull Air, Inc. 890 F.2d 1255 (1st Cir. 1989).
[217] See Böckstiegel/Krämer 2, *supra* note 187 at 377.

density traffic rule, this estimation seems realistic[219]. Hence, incumbent carriers would be enormously enriched if Germany was to follow the example given by the United States[220] and allow them to translate the slots they hold to cash by selling them to competitors. It is therefore submitted that such an act would constitute a state aid granted to incumbent carriers. Such subsidies are in contradiction to the competition principles of the common market which are relevant to the member states of the European Union as they are laid down in Art. 92, sub-section 1 of the treaty f Rome[221].

Summing up the above considerations, it is submitted that slots are transferable, but nevertheless not tradable in Germany because they do not enjoy recognition as a property right under current German and European legislation. However, it might well be possible to amend their legal status in order to allow for a free market distribution of airport access that would be more similar to the distribution of other scarce resources in a market economy. However, the "privatization" of airport access would bring about unresolved problems both with respect to bilateral air service agreements and European competition law. Even though the author does not hold the view that these difficulties cannot be overcome, it is submitted that it would take quite a lot of time to conduct negotiations with all parties concerned and amend the applicable legal acts. Therefore, even if a market-based distribution of airport access can be regarded as desirable, it does not have the potential to resolve problems encountered with respect to capacity constraints at Frankfurt Airport at the present time.

8 b) Slot swapping

Slot swapping is an indispensable part of the IATA schedule coordination conferences. It is necessary to allow for the flexibility that carriers require in order to adjust the slots they have received in the coordinating process

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[218] *Ibid.* at 382.
[219] See M. Wittmann, *supra* note 88 at 119-20.
[220] See 14 C.F.R. § 93.221.
[221] See S. A. Kaiser, *supra* note 137 at 269.

relative to their scheduling needs[222]. The conferences provide for slot exchanges on a one for one basis (even trades), which are subject to final confirmation by the appropriate slot coordinator[223]. This process is also recognized by European Council regulation 95/93, which stresses that "slots may be freely exchanged between air carriers"[224].

The regulation, however, is silent on whether so-called uneven trades, that is trades that are not on a one for one basis, are permissible. If this was so, carriers could for example trade one highly attractive slot for several less attractive ones or one unattractive slot and some economic benefit, like the rendering of services or gate access, for an attractive one. Exchanges of one slot and a certain amount of money for another slot would also be imaginable. Given the fact that it is still possible at any airport to receive a slot during unattractive times of the day, such uneven trades would come very close to slot sales, with all the advantages described above. A new entrant could for example apply for and receive a certain number of slots during a commercially unattractive time of the day and then shop around for competitors willing to swap for a certain amount of money. Such practices are in fact not uncommon both in Germany and abroad, since most coordinators still insist that exchanges are concluded at least on a formal one for one basis[225].

This raises the question whether such deals are in compliance with existing laws. The wording of European Council Regulation 95/93 is somewhat ambiguous since it does not clearly stipulate that such exchanges must be carried out on a strictly one for one basis, with no other consideration involved. It could be argued that, as long as one slot is traded for another, coordinators should not look into the motivation behind the exchange and that therefore additional considerations could be permissible. This reasoning, however, would neglect the point that both German and European law does not recognize slots as private property. The applicable provisions of Art. 8 of Regulation 95/93 can be regarded as a less formal,

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[222] See IATA Scheduling Procedures Guide, *supra* note 2 at 13.
[223] *Ibid.*
[224] *Regulation* 95/93, *supra* note 57, Art. 8, sub-section 4.
[225] Interview with A. Zimmer, *supra* note 188.

more flexible way of slot allocation only[226]. Slot exchanges that are not carried out on a strictly one for one basis would recognize that slots are of different economic value and that this entitles the holder of a more valuable slot to some kind of additional consideration in case of an exchange. Therefore on a practical basis, slots would be treated as a property right, which is incompatible with the fact that neither German nor European legislation recognizes a property right in slots. Moreover, the European Council Regulation 95/93 contains the clause that "the principles governing the existing system of slot allocation could be the basis of this Regulation provided that this system evolves in harmony with the evolution of new transport developments in the Community"[227]. This wording allows the conclusion that this system, as laid down in the IATA Scheduling Procedures Guide, was found to be in compliance with European laws at least at the time of drafting and that it can hence be regarded as complementary to the provisions of the regulation. The IATA Scheduling Procedures Guide, however, is not ambiguous in its wording and explicitly stipulates that "allocated slots may be freely exchanged, on a one for one basis..."[228]. This leads *a maiori ad minus* to the conclusion that, if trading of a number of slots for one slot is not permissible, the granting of an additional consideration other than slots cannot be permissible either. The Scheduling Procedures Guide and hence the Council regulation are therefore based on the assumption that slot exchanges are to be carried out on a strictly one for one basis. The granting of any consideration other than a slot would cause an imbalance in the principle of "slot against slot" and would in effect give slots the character of a property right. So-called uneven trades would therefore not be in conformity with the system of slot allocation as provided for by the regulation.

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[226] See above, 8 a: Slot sales.
[227] *Regulation* 95/93, *supra* note 57, preamble, section 7.
[228] IATA Scheduling Procedures Guide, *supra* note 2 at 13.

8 c) Slot Leasing

Slot leasing also opens options similar to the sale of slots. A carrier that has received a slot allows another one to use it for a certain period of time for consideration. Hence, slots also gain a market value and can in the long run be used by those carriers that have the best chances of generating maximum revenue. However, it must be borne in mind that slot leasing does not allow for the same planning stability as slot sales or slot exchanges because the further use of the slot is always subject to the extension of the lease. Slot leases are currently permissible in the United States, where "slots may be...leased for any consideration and any time period..."[229] at high density traffic airports.

The German law applicable to leases is section 535 of the *Bürgerliche Gesetzbuch* (BGB), the German civil code. The provision stipulates that the lease obliges the lessor to grant the use of an object *(Sache)* to the lessee throughout the leasing period. However, section 90 BGB defines that *Sachen* (objects) in the meaning of the BGB are only physical objects. Since a slot is not a physical object, section 535 BGB would not be applicable to the lease of a slot. The "lessor" would therefore have to grant a right of usufruct of the slot in favor of the "lessee" in accordance with sections 1030, 1068, 413, 398 BGB.

The basic idea behind the granting of a right of usufruct is that one entity grants the right to enjoy the use and advantages of its property to another[230]. The law hence presumes that the object of the usufruct is part of the property of the party granting the right, the "lessor". However, it has been shown that German and European law does not recognize a property interest of carriers in the slots they have received in the allocation process[231]. Air carriers are therefore not able to grant a right of usufruct of the slots they hold to other carriers. Slot leasing is hence not an option under current German and European law.

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[229] 14 C.F.R. § 93. 221.
[230] See F. Baur & R. Stürner, *supra* 191 at 665.
[231] See 8 a) "Slot sales", above.

II: Creating Alternatives

1) Transfer of the Rhein-Main Air Base to another Airport

Frankfurt Airport Corporation is not the only user of the airside facilities at FRA, but shares them with the Rhein-Main Air Base of the U.S. Air Force. The roots of the American presence at FRA date back to 1945, when American troops reconstructed the first runway of the completely destroyed airport in summer 1945[232]. Three years later, between June 26, 1948, and September 30, 1949, FRA was used by the U.S. Air Force as the major gateway for the Berlin air-lift. During this time, American freighter aircraft took-off from FRA every three minutes, day and night, to provide the Western sectors of Berlin, which were cut off from the outside world, with literally everything people needed to survive[233]. Today, the Air Force uses Rhein-Main Air Base and hence the airside infrastructure at FRA almost exclusively for cargo flights. Their facilities are located next to the new Cargo City, south of the passenger terminal buildings. In times of international crisis, for example during the operations "Desert Shield" and "Desert Storm", the air base is used for both large-scale cargo and passenger operations. This has given rise to a number of complaints by the communities in the vicinity of the airport, especially because the Air Force uses the runways mainly at night and their equipment tends to be outdated as far as noise reduction is concerned.

Recent news reports have speculated that the U. S. Air Force might be prepared to withdraw from Rhein-Main Air Base before 2004 and relocate their operations to Ramstein and Spangendahlem[234], where there are other airports available for the exclusive use of the Air Force. The headquarter in Ramstein has not formally denied those reports, saying that the U.S.

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[232] See Flughafen Frankfurt/Main, ed., 60 Jahre Flughafen Frankfurt: Geschichte eines europäischen Verkehrshafens (Frankfurt/Main: Flughafen Frankfurt/Main, 1996) at 47.

[233] *Ibid.* at 50.

[234] See "Ausbau des Frankfurter Flughafens: Hessens Landeschef Eichel will Entscheidung im Jahr 2000" Deutsche Verkehrszeitung (June 3, 1998) 8.

Government was constantly studying whether their military bases were still appropriate or whether they should be modified[235]. Even though this does not necessarily allow the conclusion that the Air Force is in fact about to withdraw from Rhein-Main Air Base, it seems worth asking in the context of this thesis whether such a withdrawal could have a positive impact on the slot situation at FRA.

The Air Force do not have their own runway at FRA, which could become available for civil operations following their withdrawal. Positive effects would therefore be limited to the availability of the slots that are currently used by the air base and of the land that has so far been used for their facilities and which could possibly be used for the construction of airside facilities.

According to FAG spokesman Klaus Busch, the Air Force today accounts for less than one per cent of the total aircraft movements at FRA[236]. It is consequently estimated that a complete withdrawal would allow for a maximum of ten additional daily flights[237]. Even though ten additional flights, possibly during attractive times of the day, would certainly be better than nothing, these figures make it clear that the withdrawal of the Air Force alone cannot be regarded as some kind of miracle cure against airside capacity constraints.

A real impact would only be possible if the availability of the land currently used by the Air Force would allow for the construction of additional runway capacities south of the two main runways at FRA. The discussion arising from this issue has, for many years, been focusing on two options. One would involve the increase of the distance between the two main runways, runway north and runway south, in order to allow for their parallel operation in compliance with the applicable provisions of Annex 14 to the Chicago Convention. Today, the distance between the two is only 518 meters, which makes it necessary to observe a separation in time for take-off and approach. A minimum distance of 760 meters would allow for parallel take-

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[235] *Ibid.*

[236] See K.-P. Klingelschmitt, "Flughafen Frankfurt soll wachsen" Tageszeitung (May 19, 1998) 9.

off, whereas a minimum distance of 915 meters would be required for parallel approach[238]. The other option would be the construction of a new runway south of today's runway south. However, it seems that the administration of FAG has shelved those plans. Early this year, FAG's CEO, Wilhelm Bender, publicly stated that, due to the crossing runway west, the options in the southern part of the airport area do not seem feasible. The airport administration would therefore refrain from pursuing any expansion projects with respect to runway capacity in this area. It consequently seems that the withdrawal of the U. S. Air Force would not make possible any significant increase of the airside capacities of FRA.
Since the Air Force does not use a significant number of slots at FRA and since the withdrawal from their facilities in the south of the airport area would not allow for the construction of new airside capacities, it is submitted that the relocation of Rhein-Main Air Base would not have the potential to significantly allay the capacity constraints at FRA. This view is shared by both the airport administration and the Government of the State of Hesse[239].

2) Transfer of selected Traffic Segments to other nearby Airports: Wiesbaden-Erbenheim, Frankfurt-Hahn and Frankfurt-Egelsbach

Wiesbaden-Erbenheim is located in the direct vicinity of the city of Wiesbaden, north of the A 66 freeway and approximately twenty kilometers west of FRA. The airport is equipped with up-to-date navigation systems and its runway is 2153 meters long, which would be sufficient to accommodate not only general aviation, but also commercial short and medium range jets like the Boeing 737 and the Airbus A 320. The airport is currently used exclusively by the U.S. Air Force. When discussing the option of a future civil use of the airport, it should always be remembered

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[237] See "Ausbau des Frankfurter Flughafens: Hessens Landeschef Eichel will Entscheidung im Jahr 2000", *supra* note 234.
[238] See "Staffel-Anflug auf Frankfurt" Frankfurter Rundschau (January 17, 1998) 18.

that the U.S. Department of Defense has so far not shown any willingness to give up the airport[240]. The vicinity to FRA and the comparatively highly developed infrastructure would make a civil use of Wiesbaden-Erbenheim the ideal alternative to the expansion of FRA. This has also been acknowledged by the German Pilots Association "Cockpit", which holds the view that the civil use of Wiesbaden-Erbenheim would be the "last acceptable solution" if the expansion of FRA should prove not feasible[241]. However, the common enthusiasm about this option seems to end in the city hall of Wiesbaden. "We are determined to employ all legal aids available to us to prevent the civil use of Erbenheim", says Hildebrand Diehl, mayor of the city of Wiesbaden[242]. He argues that the area around the airport is much too densely populated to allow for the construction of "FRA 2".

Egelsbach Airfield is located even closer to FRA than Wiesbaden-Erbenheim, south of the Frankfurt suburb Langen, between the A 661 and A 5 freeways. The airport is currently used for general aviation only and its runway is only 800 meters long, which would definitely be too short for most types of commercial aircraft. The use of Egelsbach for commercial activities would therefore require substantial expansion. However, it is to be expected that such a project would meet the fierce resistance of local citizens' action groups[243].

The advantages and shortcomings of Frankfurt-Hahn Airport have been discussed above[244].

The short descriptions of the airports that could serve as an alternative to FRA allow the conclusion that, whichever alternative may prevail in the end, it will not be an easy task to gain acceptance of the new airport among

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[239] See "Ausbau des Frankfurter Flughafens: Hessens Landeschef Eichel will Entscheidung im Jahr 2000", *supra* note 234.
[240] See W. Schubert, "Keine schlüssige Antwort auf immer mehr Flugzeuge" Frankfurter Rundschau (January 17, 1998) 17.
[241] *Ibid.*
[242] *Ibid.* (translated by the author of this thesis).
[243] Interview with A. Zimmer, *supra* note 188.
[244] See above, part 1, 3): FRA – The status quo of a congested airport.

the current users of FRA[245]. Neither of the alternative airports offers a satisfactory railway connection, and neither of them offers quite as convenient access to the City of Frankfurt with all its business traffic as FRA. They would therefore probably be less attractive than FRA even for flights that do not depend on fast and easy transfers, as for example some charter services. The problem could be somewhat allayed if the reliever airport was owned and operated by the same entity because this, in theory, enables the operator to establish regulatory policies or economic incentives to encourage the diversion of particular segments of traffic. In practice, however, efforts to promote redistribution of traffic within an airport system have not been fully effective[246]. This raises the question of how potential users of an alternative airport, especially operators of small private aircraft, but also those of some charter and cargo services, could be influenced to actually make use of it, thereby allaying the current capacity constraints at FRA.

One way to achieve this would be to modify the structure of user fees at FRA so as to price smaller aircraft out of the use of FRA and influence them to use an alternative airport instead.
This approach encounters difficulties similar to the ones that have been described in the context of peak hour fees[247]. The higher fees would again be challengeable as fees charged solely with respect to the right of entry into state territory as defined in Article 2 of the Convention, Frankfurt Airport, and therefore as prohibited under Article 15. Moreover, they would constitute a cost burden on the operators of small aircraft that does not, and is in fact not meant to, reflect the cost of providing the airport services they actually use. This would be in conflict with the requirements set by the ICAO Council, which require that "no users shall be burdened with costs not properly allocable to them according to sound accounting principles"[248].

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[245] See also A. T. Wells, *supra* note 1 at 189.
[246] *Ibid.* at 190.
[247] See above, part 2 I 5): Peak hour landing fees.
[248] International Civil Aviation Organization, *supra* note 78 at 4.

Moreover, the pricing out of smaller aircraft would most likely lead to a rise in passenger numbers at the cost of connecting services that depend on the use of small aircraft. However, the economic success of an airport does not solely depend on the number of passengers served, but also on the route network that is offered[249]. The termination of service on a less busy route does not merely mean the loss of a few end-to-end passengers, but also the loss of connecting passengers, who will now travel via another gateway. The overall attractiveness of the airport therefore also depends on its ability to accommodate less busy services. It is hence submitted that pricing smaller aircraft out of the use of FRA in order to persuade operators to rely on alternatives would not be a viable option.

A second possibility would be to make the use of the airport by certain traffic segments dependent on prior permission of the flight schedule coordinator (PPR rule = prior permission required). This would in effect exclude the aircraft concerned from the use of FRA, except for a number of special cases where the schedule coordination may decide differently. However, it must be borne in mind that the airport operator as a monopolist is under a general obligation to accept all potential users according to section 45, sub-section 1 of the German *Luftverkehrs-Zulassungs-Ordnung*[250] *(Betriebspflicht)* [251]. According to the same provision, any exemptions from this duty require the approval of the authority approving the operation of the airport, which is in the case of FRA the Department of Economy, Traffic and Technology of the State of Hesse.
Some airports in Germany have sought and received an exemption from their duty to accommodate all potential users. At Munich's new Franz-Josef-Strauss Airport, for example, prior permission is required for all aircraft approaching and departing in accordance with the visual flight rules as well as for all aircraft with a permissible all-up weight of less than 2000 kg. This exemption was explained with the absolute priority of scheduled and charter traffic, which required the exclusion of general aviation for

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[249] Interview with M. Kuhne, *supra* note 35 .
[250] Germany, *Luftverkehrs-Zulassungs-Ordnung*, *Bundesgesetzblatt* 1979 I, 308.
[251] See W. Schwenk, *supra* note 165 at 412.

reasons of safety, capacity and noise control[252]. Such exemptions are not applicable in the case of FRA, where general aviation is in principle accepted, even though the flight schedule coordination admits that visual flights may sometimes be hard to accommodate during peak hours[253].

It is submitted that an exemption from the obligation to accept all potential users at FRA similar to the one that has been granted to Munich Airport would have the potential to considerably allay capacity problems there. However, it must be borne in mind that the interests of the operators of smaller aircraft in the use of FRA is not necessarily less justified than that of the operators of bigger aircraft merely because of the size or navigation equipment of their aircraft. In other words: It is not just size that matters. Since the exclusion of any traffic from the use of an airport constitutes at least a limitation of the constitutional right of freedom of action (Article 2, section 1 of the German *Grundgesetz*) and possibly also of occupational liberty (Article 12, section 1 of the *Grundgesetz*), the interest of the airport operator in an exemption of any traffic segment must be carefully balanced with the interests of the potential users.

The freedom of action, as it is laid down in article 2, section 1, is limited by the constitutionally established laws, that is by "the entirety of all laws that have to comply with both the formal and substantive norms of the Constitution"[254]. This means that, as long as all formal and substantive requirements are fulfilled, the exemption of smaller aircraft from the use of FRA would encounter no legal difficulties with respect to those aircraft operators who have no other legal interest in the use of the airport than their freedom of action.

According to the *Bundesverfassungsgericht*, a limitation of occupational liberty, as guaranteed in Article 12, section 1 of the *Grundgesetz*, can take the form of regulation of professional practice, subjective regulation of admission and objective regulation of admission. Whereas subjective

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[252] See *Bundesverwaltungsgericht* (September 27, 1993) 43 Zeitschrift für Luft- und Weltraumrecht (1994) 351 [Germany].

[253] Interview with A. Zimmer, *supra* note 60 (October 2, 1998).

[254] *Bundesverfassungsgericht* (January 16, 1957) *Entscheidungen des Bundesverfassungsgerichts* vol. 6, 32 at 37-38 [Germany] (translated by the author of this thesis).

regulations make the admission to a certain profession dependent on subjective criteria, for example a certain qualification, objective regulations make admission dependent on objective criteria, for example public necessity[255]. According to the three-step-theory of the *Bundesverfassungsgericht*, the legality of each of these three different kinds of regulation must be measured by a different yardstick, according to the intensity of the limitation of occupational liberty[256]. The exclusion of small, professionally used aircraft from the use of FRA would neither objectively nor subjectively regulate the admission of their operators or of people working with them to their respective professions. It would hence not regulate admission, but professional practice.

The right of occupational liberty would therefore not be infringed if it could be shown that this limitation was in pursuit of a legitimate cause and appropriate, necessary and reasonable to achieve its objects[257]. Reserving congested airport infrastructure for the use of bigger passenger aircraft would allay the congestion problems and hence further the safety and convenience of the travelling public. It would, moreover, ensure the availability of sufficient airport capacity in the future, which would be in the interest not only of thousands of people working at the airport itself, but also of businesses that are dependent on the airport. Pursuing these goals seems a legitimate cause. The exclusion of smaller aircraft from the use of FRA would be appropriate to achieve this goal. Since it is not possible to price certain traffic segments out of the use of FRA, there is no means of achieving the objects mentioned above in an efficient manner that would have a less limiting effect on the rights of the operators of small aircraft. An exemption of FRA from the obligation to accommodate small general aviation aircraft would therefore also be necessary.

The exclusion of small general aviation aircraft from the use of FRA would be reasonable if there was no imbalance between the limitation of the rights of the operators of smaller aircraft on one hand and the goal of ensuring the availability of sufficient airside airport infrastructure for scheduled and

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[255] See Pieroth/Schlink, *supra* note 198 at 228.
[256] *Ibid.* at 232.
[257] Ibid.

charter traffic on the other. When planning for the future capacity of the airport, authorities have to consider the interests of all individual users, as far as they are sufficiently concrete and go beyond the mere interest of being able to use the airport[258]. Here, a distinction should be made between the interests of private operators and those of aircraft operators who have a commercial interest in the use of FRA, for example air taxi services, flying schools etc. Moreover, one should differentiate between aircraft based at FRA and those based elsewhere.

The mere interest of the operators of small privately used aircraft that are not based at FRA to use the airport when occasionally travelling to the Frankfurt area is not sufficiently concrete to be part of the balance of interests that is required of the planning authority[259]: Any pilot in the world could have the idea to charter a plane and fly to FRA, but this does not and cannot oblige the planning authority to take into account the interests of all pilots in the world when deciding on the future capacity and use of FRA. It is hence submitted that the Department of Economy, Traffic and Technology of the State of Hesse could exempt FRA from the obligation to accommodate general, non-commercially used aircraft not based in FRA without unduly limiting interests the respective aircraft operators may have in the use of the airport. There would be no imbalance between the limitation of their interests and ensuring the availability of sufficient airside airport infrastructure for large-scale commercial aircraft operators.

However, facts and circumstances are quite different in the case of small commercially used aircraft and small aircraft based at FRA. An enterprise operating, for instance, a flying school or a charter business at FRA does have a concrete and individual interest in the further use of the airport. The same is true for the operator of an aircraft, regardless of its size and weight, that is based at FRA. Authorities will therefore have to carefully balance those interests with the interests of air carriers and the community in general regarding the availability of sufficient capacity for large-scale commercial operations in the future. It is beyond the scope of this paper to forecast what the outcome of this balancing of conflicting interests of

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[258] See *Bundesverwaltungsgericht*, *supra* note 252 at 352.

different users of FRA could look like. However, the author holds the view that, if the administration so chooses, a solution that limits the rights of general aviation while at the same time taking into account the interests of those users who are really dependent on the use of FRA for one reason or another would not be out of the question. It is therefore concluded that FAG and the Department of Economy, Traffic and Technology should further pursue the idea of differentiating between different user groups in order to allow for an economically more efficient use of existing facilities at FRA.

3) Transfer of short-haul Traffic to Rail and Road Services

Aviation is only one part of the overall transportation system. Others include railway, bus services and car transport. Each of these modes of transport has its specific strengths and weaknesses. A journey to, say, the city of Giessen, some 50 kilometers south of Frankfurt, cannot be made by plane since the city has no airport available for commercial aviation. However, a journey from Giessen to, say, Moscow by car or train would be very tiresome and would most likely take a few days. The easiest and most convenient way to travel from Giessen to Moscow would hence include at least two different modes of transport: One could travel to Frankfurt Airport either by rail or by car and continue from there by plane. This example illustrates that the transportation system cannot work efficiently unless all critical parts of the system, that is all important modes of transport, are connected. No matter how good the individual parts of the system may be, the effectiveness of the overall system depends on the connections a passenger or a shipment of cargo needs make in getting from a point of departure to a destination[260]. The systematic connection of different modes of transportation in order to improve the speed, reliability and cost-effectiveness of the overall transportation system is called intermodalism.
The goal of intermodalism is not to bypass one mode of transportation by replacing it with another, but rather to ensure that the most effective mode

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[259] *Ibid.*.
[260] See A. T. Wells, *supra* note 1 at 185.

of transportation for each part of the journey is available and that convenient connections are possible. In the case of aviation, it means that other modes of transportation are available at the airport to bring passengers and cargo to and from the airport and their point of origin and destination[261]. However, if the effectiveness of aviation is threatened by the non-availability of airside airport capacities, it could also suggest a need for the replacement of some segments of air traffic with alternative transportation services in order to maintain and further the effectiveness of air transport in those markets where no reasonable alternatives exist.

In Germany, with it's highly developed railway and freeway network, buses and especially trains are often a reasonable alternative to air transport when travelling short distance. The morning services between Frankfurt and Stuttgart may serve as an example: Lufthansa departs from FRA at 7:05 AM, arriving in Stuttgart at 7:50[262]. The rides to and from the airport take at least 20 minutes each, the check-in deadline for domestic flights ex FRA is 30 minutes. Even though travelling experience shows that these figures are somewhat theoretical, it is therefore submitted that one could make it from downtown Frankfurt to downtown Stuttgart in about two hours when taking the plane. The Intercity Express (ICE), Germanys high-speed train, departs from Frankfurt Central Station at 6:42 AM and arrives at 8:08 AM in Stuttgart[263]. In addition to the travelling time, one must count about 30 minutes to get to and from the station, which amounts to exactly the same travelling time as travelling by air. Taking into account that the Railway company offers more than 50 daily connections on weekdays, compared to only 5 air services, it is submitted that the train is a more efficient mode of transport than the aircraft when travelling between Frankfurt and Stuttgart. In fact, the German carriers have acknowledged that the introduction of the ICE in 1991 has rendered many air services unprofitable. "There is no need for us to bother to fly on routes where the Railway Company offers direct service of less than 3 hours", says Reinhard

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[261] *Ibid.*

[262] LH 230, Schedule valid July 1 through October 24, 1998.

[263] Schedule valid May 24, 1998 through May 29, 1999.

Santer, CEO of German regional carrier Eurowings[264]. Similar experiences have been made at Nürnberg Airport, where the route to Hannover was cancelled shortly after the introduction of the ICE[265]. One could therefore come to the conclusion that short-haul domestic services are in fact not necessary in Germany and that scarce airport capacities should therefore be reserved for the remaining routes.

In the past, some interest groups have found this argument so compelling that they have called for a prohibition of short-haul domestic flights in Germany. But despite the often impressive performance records of the railway in the end-to-end traffic, this reasoning neglects the fact that most people travelling on short-haul domestic flights are connecting passengers. In this market, the performance of the train is not quite as impressive, since passengers in most cases still have to collect their baggage after arrival at FRA, clear through customs, purchase a ticket for the train and then make their way to Frankfurt or Mainz Central Station. In addition to all this, the level of service on board most trains is considerably below that of aircraft. Hence, if Lufthansa were to cancel their services between Frankfurt and Stuttgart and offer current train services as an alternative, long-haul passengers travelling to Stuttgart would be likely to prefer travelling via other European gateways, where connecting air services to their destination in Germany are still offered[266]. The prohibition of short-haul services would therefore cause an enormous economic damage to both German air carriers and German airports.

However, even though a prohibition does not appear to be economically viable, the basic idea of introducing fast, high-quality surface transport in order to reduce short-haul air traffic does. If surface transport services would match the speed and service level of air transport, carriers would most likely be willing to cancel a considerable amount of short-haul services without threatening the position of FRA as one of the major hub airports in Europe. At FRA, the airport administration, Lufthansa and

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[264] "ICE-Züge jagen Eurowings Fluggäste ab" Süddeutsche Zeitung (October 27, 1997) 35.

[265] Interview with J. Kohstall (Head of Marketing Department at Nürnberg Airport) (June 20, 1998).

Deutsche Bahn AG, the German rail company, have started to set the course for an improved connection of air and rail services in 1972, when terminal 1 with an integrated railway station was opened[267]. Today, in addition to frequent services to the nearby cities of Frankfurt, Wiesbaden and Mainz, the airport has become a mainline station in the Intercity-network operated by *Deutsche Bahn AG* and offers direct railway connections to many cities in Germany, Austria and Switzerland[268]. Moreover, Lufthansa offers train services to Bonn, Düsseldorf, Cologne, Nürnberg and Saarbrücken. The services are operated by *Deutsche Bahn AG*, depart directly from FRA and are listed in the schedules under a Lufthansa flight number. Bus services have been introduced to Heidelberg, Mannheim and even Strasbourg in France[269].

A new stage in the combined efforts to merge air and rail systems into a single easy-to-use service for travelers is the construction of FRAs second railway station, the so-called AIRail Terminal, which is scheduled to go into regular service in spring 1999. The new terminal will be dedicated to long-distance services only and will also be integrated into the high-speed rail network. *Deutsche Bahn AG* expects between 25,000 and 30,000 passengers per day during the first year of operation of the new terminal[270]. The prime objective is to create a truly seamless travel system, with travel information, ticketing, baggage transport and other elements integrated as closely as possible, regardless of the mode of transport eventually used[271]. The plans of *Deutsche Bahn AG* and Lufthansa seem to show some resemblance to today's airline alliances. Similar, albeit more modest projects have been scheduled for the airports of Berlin-Schönefeld, Cologne-Bonn, Leipzig-Halle, Dresden, Stuttgart, Düsseldorf and Munich.

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[266] Interview with M. Kuhne, *supra* note 35.

[267] See "All Routes Lead to Frankfurt Airport: Europe's Intermodal Traffic-Port" (March 3, 1998), http://www.frankfurt-airport.de/airport_company/bg_4_98_body.html (date accessed: March 20, 1998).

[268] Ibid.

[269] Schedule valid from July 1, 1998 through October 24, 1998.

[270] See "All Routes Lead to Frankfurt Airport: Europe's Intermodal Traffic-Port", *supra* note 267.

[271] See "All Routes Lead to Frankfurt Airport: Europe's Intermodal Traffic-Port", *supra* note 267.

According to studies from the University of Cologne, 30% of domestic traffic in Germany will have been transferred to rail services by the year 2010[272]. However, the two future partners[273] aircraft and train still seem to have a long way to go in order to firstly overcome the public opinion that the aircraft is the preferable mode of transport if and where air services exist and, secondly, to establish rail services as a serious alternative not only in the end-to-end market, but also for connecting passengers. *Deutsche Bahn AG*, for example, has so far not been able to resolve the problem of luggage transport aboard its ICE trains and has hence refused to check through the luggage of connecting passengers. Lufthansa now fears that passengers will therefore refuse to accept the train as an alternative mode of transport to and from Frankfurt Airport and accuses the railway company of failing to cooperate[274]. It is in this context important to note that the ICE trains do not have an extra luggage compartment and that storage space on board is extremely limited so that it would be impossible for all passengers to accommodate only one, let alone two standard size suitcases aboard a fully booked ICE train. Nevertheless, *Deutsche Bahn AG* argues that the time involved in storing and discharging passengers luggage would cause undue delay at stations and that carrying passengers luggage in an extra cargo compartment would hence not make sense. It remains yet to be seen whether this problem will be resolved and whether the resulting railway connections will eventually offer a level of service acceptable to connecting passengers. If the new services fail to completely satisfy customers, air carriers are more likely to react to the introduction of the ICE link through the use of smaller aircraft than through the cancellation of existing services.

Both the FAG[275] and the German Airports Association[276] expect that the new ICE link at FRA will absorb 3 – 4% of the total aircraft movements

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[272] See Deutsche Bahn AG (ed.), Umweltbericht 1997 (Berlin, Germany, 1998) at 11.

[273] See J. M. Baumann, Die Luftverkehrspolitik der Europäischen Union (Berlin, Germany: Duncker und Humblot, 1995) at 30.

[274] See "Lufthansa wirft der Bahn Blockade vor" Süddeutsche Zeitung (March 23, 1998) 27.

[275] See J. Buxbaum, *supra* note 42 at 3.

once regular services have been established and air services to Cologne, Düsseldorf and Stuttgart have been cancelled. The new services will also affect and possibly cause the cancellation of air services to other nearby airports, for example Nürnberg Airport[277]. However, the German Airports Association holds the view that the introduction of the new ICE services to FRA must be regarded as an alternative to road, rather than to air transport and that the eventual impact of the project on the slot situation will therefore be rather limited[278]. If air traffic at FRA continues to grow at the present rate, the effect of the expected cancellation of 3 – 4% of the total aircraft movements will be nullified within a maximum of two years[279]. The author of this thesis therefore holds the view that, even though it seems reasonable to try to establish alternative modes of transportation where feasible, the transferring of air services to the railway does in the short term not have the potential to substantially resolve the problem of scarce airside capacities at FRA. In the long term, however, new railway technology might make it possible to project railway links also to other destinations further away. But since trains suitable for such services have so far not been tested, and since it seems questionable whether it would be desirable to transfer an even greater part of air traffic to the railway alone, thereby creating a monopoly there, it is submitted that, for the time being, other, additional ways of dealing with current capacity constraints at FRA will have to be found.

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[276] Interview with M. Kuhne, *supra* note 35.
[277] Interview with J. Kohstall *supra* note 265.
[278] Interview with M. Kuhne, *supra* note 35.
[279] *Ibid.*

III Creating additional Capacities at FRA

1) Construction of an additional Runway

The answer to current capacity constraints at FRA most hotly debated in public today is the construction of an additional runway. The discussion about whether and where such a runway could be built is not quite new and has for a long time been focusing on the construction of a new runway parallel to the existing southern runway, south of the airport area. Today, however, it seems that the management of FAG has shelved these plans, arguing that a new southern runway would cut the recently constructed runway west and hence be "unreasonable for operational reasons"[280].

The plans of the FAG for FRA itself seem to be focusing on the construction of a new runway in the northwest of the airport area, cutting the A3 freeway west of terminal 1[281]. However, the FAG seems anxious to avoid a direct confrontation with the public opinion, stressing that "we have not reacted to this discussion by voting for the construction of (an additional) runway, let alone a runway in a certain area in the vicinity of the airport"[282]. Jürgen Weber, CEO of recently fully privatized Lufthansa, appears to be bolder and states quite bluntly that he expects the construction of an additional runway. He argues that one cannot invite the European Central Bank to Frankfurt without providing for additional capacities at FRA so as to accommodate more flight movements: "In this case, infrastructure means airport, and that means airport capacity."[283]

The option favored by the FAG, in the northwest of the airport, is not without it's difficulties. In 1993, the forest in the north and the northwest of the airport has been declared "banned forest" (*Bannwald*) in accordance

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[280] W. Bender in J. Kauffmann, *supra* note 183 [translated by the author of this thesis].

[281] *Ibid.*; interview with J. Buxbaum (Slot Manager at Frankfurt Airport) (June 20, 1998).

[282] W. Bender, *ibid.*

[283] J. Weber in K.-P. Klingelschmitt, "Eine neue Startbahn West?" Tageszeitung (December 2, 1998) 9 [translated by the author of this thesis].

with section 22 of the *Hessisches Forstgesetz*[284]. The provision stipulates that the clearing of *Bannwald* is prohibited and was applied at the instigation of the Government of Hesse in order to avoid further expansion of the airport[285]. The same had been done before in all other areas where an expansion of the airport would theoretically be possible, so that since then the airport is almost completely encircled by *Bannwald*[286]. It would, off course, be possible to change the status of the forest again in order to allow for the construction of a runway, but since this would have to be decided upon by the very same government that took measures to protect the forest only five years ago, it is to be expected that it will be hard to justify this publicly. Petra Roth, mayor of the City of Frankfurt, has already drawn the consequences and expressed the view that the construction of a new runway in the north of the airport was out of the question because of the *Bannwald* north of the A 3 freeway[287]

The final decision on the expansion will be taken in the Parliament of the State of Hesse, which is the owner of a 45.2% majority of the shares of Frankfurt Airport Corporation[288]. The Government of Hesse is, at the same time, in charge of approving expansion projects at FRA in accordance with sections 6, sub-section 4 and 31, sub-section 2 number 4 of the German *Luftverkehrsgesetz*. Prime Minister Hans Eichel, who presides over a coalition between the Social-Democrats and the Green Party, seems to have learned a lesson from the construction of runway 18 west at FRA in the 1970's and 80's. At that time, the controversy about the expansion of the airport lead to confrontations between demonstrators and the police that sometimes resembled the character a of civil war. Farmers, students and housewives were fighting against the runway west, which had become, in their eyes, a symbol for a self-destructive ideology of prosperity and

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[284] State of Hesse, *Hessisches Forstgesetz, Gesetz- und Verordnungsblatt für das Land Hessen* 1978 I, 423.
[285] Interview with T. Müntze (Forester at Frankfurt Airport) (October 7, 1998).
[286] *Ibid.*
[287] See "Frankfurts Oberbürgermeisterin zur Zukunft des Frankfurter Flughafens: Roth sieht keine Chance für Nordbahn", *supra* note 17.
[288] See "Corporate Profile: Flughafen Frankfurt/Main AG", *supra* note 41.

growth[289]. The difficult task of balancing the opposing interests with respect to this project led to a total of 142 administrative procedures, trials and court rulings between 1965 and 1984[290]. The controversy about the expansion culminated on November 2, 1987, more than three years after runway west had entered into service, with the shooting of two policemen near the runway.

PM Eichel probably thought that all would work out better this time when he announced in May 1998 that the decision of the Parliament on an expansion should be taken in the year 2000 and based on the outcome of a mediation process between environmental activist groups, the Chamber of Commerce, Frankfurt Airport Corporation, air carriers, labor unions and municipalities affected. Given the fact that elections in Hesse are scheduled for February 1999, critics were quick to argue that the sole purpose of this mediation process was to keep the airport issue out of the election campaign because the approval of expansion plans would jeopardize chances of the Social-Democrats in the whole region[291]. PM Eichel, however, agues that the mediation group could not do its work properly in a shorter period of time and that voters unsatisfied with the decisions taken in the year 2000 could always correct them at the next election in 2003. Whatever the outcome would be: "Not a single tree will have been cut until then."[292] But not only the public opinion, even the cabinet seems to hold different views with respect to the necessity and desirability of an expansion. Lothar Klemm, Secretary of Economy and Transport of the State of Hesse, has publicly contradicted the view that Frankfurt Airport Corporation and the Government had no response to the expected traffic growth if an expansion should fail, claiming that FRA had

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[289] A. Stenzel, "Report Baden-Baden" (Südwestfunk, 1998) (date of broadcast: August 10, 1998).

[290] See H. Achtnich, "Länderbericht Deutschland" (International Conference on the Construction and the Expansion of Airports, Istitute of Air and Space Law at the University of Cologne, April 5 - 6, 1984) (1984) 33 Zeitschrift für Luft- und Weltraumrecht 384 at 392 – 401.

[291] See K.-P. Klingelschmitt, *supra* note 236.

[292] H. Eichel, in: "Flughafenausbau: Im Jahr 2000 soll Entscheidung fallen" Oberhessische Presse (May 14, 1998) Region/Roman [translated by the author of this thesis].

capacities "sufficient not only for today, but also for tomorrow"[293]. He argues that "improved coordination" at FRA could in the medium-term allow for an additional 60.000 slots yearly at FRA[294] Moreover, he expressed the opinion that a cooperation with Cologne-Bonn Airport had great potential to allay capacity constraints at FRA[295]. This view finds support from other Social-Democrats in the parliament, who promise that "there will be no further runway with the Social-Democrats."[296] But even though the current coalition agreement between the Social-Democrats and the Green Party prohibits an expansion of FRA, the floor leader of the Social-Democrats in the Hessian Parliament, Armin Clauss, is optimistic that a similar clause will not be part of a new coalition agreement after the 1999 election. He thinks that the Green Party, which today is still strictly against the expansion, will eventually approve it since "those people are not stupid"[297].

Today, it seems that PM Eichels attempt to "mediate away"[298] resistance against an expansion has failed. On July 29, 1998, the unified environmentalist groups opposing a new runway decided at a meeting in Frankfurt that they were not going to take part in the mediation process. They claim that the expansion had already been decided by the Government, which was now trying to hush up those plans so as to keep the issue out of the 1999 elections. "Government parties are afraid of the voters. They want to use this procedure as a means of getting through the elections without having to clearly express their standpoint on the issue of the airport expansion!", says Dirk Treiber, spokesman of the citizen's action group "No airport expansion"[299].

However, environmentalists are as well divided on the issue of the expansion of FRA. The question here is whether it would be more

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[293] L. Klemm in: "Frankfurts Oberbürgermeisterin zur Zukunft des Frankfurter Flughafens: Roth sieht keine Chance für Nordbahn", *supra* note 17 [translated by the author of this thesis].
[294] See K.-P. Klingelschmitt, *supra* note 283.
[295] See "Frankfurts Oberbürgermeisterin zur Zukunft des Frankfurter Flughafens: Roth sieht keine Chance für Nordbahn", *supra* note 17.
[296] See K.-P. Klingelschmitt, *supra* note 283.
[297] *Ibid.*
[298] A. Stenzel, *supra* note 289 [translated by the author of this thesis].
[299] *Ibid.*

reasonable from an ecological point of view to maintain a major hub, as FRA is today, or to rather encourage the development of the smaller airports, thereby bypassing the bigger airports through many direct services. Whereas the Green Party, at least in Hesse, seems to be in favor of the latter option, the renowned Wuppertal Institute for Climate, Environment and Energy claims that, as long as the further development of civil air traffic is not legally limited, it would be ecologically more reasonable to maintain a single hub. Karl-Otto Schallaböck from the Institute explains that the replacement of hub-and-spoke services at FRA with direct services to and from other airports would lead to the increased use of smaller equipment, which is by far less environmentally-friendly than bigger aircraft[300].

Given the fact that almost 4 million people in Germany are unemployed, estimates that one additional landing per hour at FRA would allow the creation of approximately 2,500 jobs have not been without effect on the public opinion. As a result, it comes to no surprise that the majority of the Hessian population has expressed support for an expansion in recent polls and that even an expansion outside the current airport area would be tolerated[301]. However, the prospect of new jobs seems without any significant effect on the supporters of the Green Party, the great majority of which object to any expansion of the airport[302].

Given the fierce objection against an expansion among environmentalists and the overwhelming majority of people exposed to airport noise already today, it seems unclear whether it will be possible to bring the discussion to a balanced and viable result in a rational and peaceful manner, as PM Eichel hopes. It is therefore submitted that the technological, economical and legal aspects of the construction of another runway at FRA will appear easy when compared with the political and psychological problems caused. There are more people benefiting from an airport than there are people affected by it, so it seems quite natural that there is usually more support

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[300] A. Stenzel, *supra* note 289.

[301] See R. Köcher, "Unzufrieden mit den Schulen, für die Erweiterung des Flughafens" Frankfurter Allgemeine Sonntagszeitung (October 4, 1998) 3.

[302] *Ibid.*

than opposition against construction measures. "Frankfurt Airport has a meaning for the whole of Germany. We need to explain to a small circle of people that what they are suffering from is for the good of the greater whole" says Hans Joachim Suchan, state secretary of the Hessian Government[303]. It seems doubtful whether the knowledge that the airport is important to the German economy alone will help changing the mind of people affected by airport noise. It is hence submitted that parties benefiting from an expansion, like business enterprises and municipalities in the vicinity of FRA, should think about methods of compensation for loss of quality of life. Since the negative effects of airport noise are basically undisputed, the focus of the discussion should perhaps be shifted to whether and how one could compensate people for the drawbacks of the airport and distribute this burden on more shoulders than in the past.

2) The Introduction of a Global Navigation Satellite System (GNSS)

The positioning and spacing of aircraft in the airborne traffic is of crucial importance in determining runway capacity. For the crew, it is important to know the exact location of the aircraft in relation to both the runway and the flight corridors around the airport. Today, this is accomplished by ground-based navigation equipment and airborne receivers. Air traffic controllers use surveillance radar to monitor the position of the aircraft on fixed approach and departure paths and in relation to other aircraft using the airport. The result of these efforts, navigation by the crew and surveillance by the air traffic controller, is largely dependent on the accuracy of the technology used. It is crucial that the aircraft is in fact where crew and controller think it is. Moreover, the frequency of signals used to locate the aircraft is also of paramount importance since it determines how recent the information used is and what might possibly have happened since the last time a navigation signal was received. In order to appreciate the extent of uncertainty connected with the frequency, it is important to know that an

[303] H. J. Suchan in: A. Stenzel, *supra* note 289 [translated by the author of this thesis].

aircraft during a typical jet approach can travel more than 300 meters horizontally and descend roughly 20 meters in the four seconds that lie between the successive scans of the radar presently used for air traffic control at airports[304].

Under good visibility conditions (visual meteorological conditions – VMC), the crew can visually confirm their location and supplement navigation systems. This allows for the reduction of spacing between aircraft to the minimum required by the applicable operating procedures. When visibility is lessened by darkness, rain or fog (Instrument meteorological conditions – IMC), the quick look out of the window[305] is not available as a navigation aid, and the crew must rely on navigation instruments and the controller on radar. In this case, an additional margin of safety must be added to the minimum spacing between aircraft, which in effect increases the time each aircraft needs to perform a flight operation (departure or approach) and results in a lowering of the throughput rate of the runway system. If the accuracy of navigation and surveillance aids could be increased, the capacity of the runway under IMC could come closer to that achievable under VMC[306].

The current guidance system for approach and landing is the instrument landing system (ILS). It provides guidance by radio beams that define a straightline path to the runway at a fixed slope of approximately 3 degrees and extending some 8 to 11 kilometers from the runway threshold . All aircraft approaching the airport under ILS guidance must follow this path, one after another, spaced at intervals dictated by the applicable technical standards and the need to avoid disturbance through wake turbulence. This long, straight-in approach to the runway is a bottleneck in runway capacity. If aircraft approaching under IMC could follow different approach paths, descend at different angles and aim at different points on the runway, the runway could be used more flexibly and aircraft could follow flight paths

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[304] See A. T. Wells, *supra* note 1 at 204.

[305] See J. Heermann, Warum sie oben bleiben (Hamburg, Germany: Rasch und Röhring, 1997) at 144.

[306] See A. T. Wells, *supra* note 1 at 204.

tailored to the direction they are coming from and aircraft performance characteristics.

The introduction of a satellite-based navigation system would cure those two shortcomings of current navigation and surveillance technology. The signals given by such a system would not be limited to one fixed approach path to be followed by all approaching aircraft. The remote area navigation capability of a satellite based navigation system would therefore permit the design of instrument approach procedures that more closely resemble traffic patterns used during VMC. Typically these result in shorter flight paths, segregation of aircraft by type, reduction of arrival and departure gaps, and avoidance of noise-sensitive areas[307]. Moreover, the data provided by the system would be far more accurate than that provided by traditional, ground-based navigation aids in every phase of a flight, including taxiing[308]. Satellite-based navigation would hence help allay runway capacity constraints and improve safety under poor visibility[309]. In addition, such a system would allow for the introduction of a comprehensive, centralized flight management system that would enable aircraft operators to follow more economical flight paths (user preferred trajectory)[310], which would generate savings in fuel cost and other aircraft operation costs[311]. Finally, it would allow for an improved sequencing en-route, which would bring aircraft to the terminal areas in a more efficient manner[312].

Even though it is hard to estimate to what extent the introduction of a satellite-based navigation system to worldwide civil aviation would exactly

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[307] *Ibid.* at 205.

[308] Unites States, The National Commission to Ensure a Strong and Competitive Airline Industry, "Change, Challenge and Competition", Report to the President and Congress (August 1993) at 7.

[309] See "Airports Expect Benefits as CNS/ATM Systems Become a Reality" (May 11, 1998) http://www.airports.org/mediarl01a.html (date accessed: May 26, 1998); Interview with G. Finnsson (Chief, Airport Route and Facility Management Section, ICAO Air Transport Bureau) (July 14, 1998).

[310] Interview with T. Mickler, *supra* note 43.

[311] International Civil Aviation Organization (ed.), Economies of Satellite-based Air Navigation Services, (ICAO Circular 257-AT/106) (Montreal, International Civil Aviation Organization, 1995) at 38.

allow for the creation of additional airside capacities at FRA, it is submitted that the technical facts described above allow the conclusion that the impact on the current slot situation there would be significant.

Today, two satellite navigation systems are in existence: the Global Positioning System (GPS), developed by the United States, and the Global Orbiting Satellite Navigation System (GLONASS), developed by the Russian Federation. The systems were originally developed for strictly military purposes, serving primarily the interests of the provider state[313]. Both countries have offered their systems for the use of the international community, free of direct charges for a period of ten years in the case of the American and fifteen years for the Russian system. Both offers have been accepted by ICAO[314].

Through the last years, satellite-based navigation systems have found substantial commercial application, for example in car navigation aids. The introduction of the system in civil aviation, however, seems to be taking much longer, regardless of the advantages of the system described above. It seems that the novelty and technical complexity of the concept have an inhibiting effect on decision making and legal analysis[315].

The question whether relying on an air navigation and surveillance aid part of which cannot be provided for by themselves would infringe their sovereignty seems to be of particular concern to states[316]. To fully appreciate this concern, it is important to bear in mind that, according to Article 1 of the Chicago Convention, "every state has complete and exclusive sovereignty over the airspace above its territory". Sovereignty can in this context be defined as the international independence of a state, combined with the right and power of regulating its internal affairs without

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[312] See "Airports Expect Benefits as CNS/ATM Systems Become a Reality", *supra* note 309.

[313] See M. Milde, "Solutions in Search of a Problem? Legal Problems of the GNSS" (1997) 22-2 Annals of Air and Space Law 195 at 197.

[314] See A. Kotaite, "ICAO's Role with Respect to the Institutional Arrangements and Legal Framework of Global Navigation Satellite System (GNSS) Planning and Implementations" (1996) 21 - 2 Annals of Air and Space Law 195 at 196-97.

[315] See M. Milde, *supra* note 313 at 197.

[316] *Ibid.* at 198; A. Kotaite, *supra* note 314 at 201.

foreign dictation[317]. If a state now relies on an air navigation system, a substantial part of which is provided by another state, namely the provider state of the satellite-based navigation system, it will no longer be entirely independent in the exercise of control in its airspace. Therefore, the introduction of a satellite-based navigation system would no doubt have a limiting effect on the sovereign exercise of power through states in the airspace above their territory[318]. However, it would have that effect even if the satellites were to be owned and operated by an international institution. It is one of the characteristics of international cooperation that it limits the sovereignty of participating states. In so far as this is the case, the introduction of a satellite-based navigation system does not differ from other forms of inernational cooperation in the field of civil aviation, for example Eurocontrol or even ICAO. However, satellite-based navigation "cannot and will not be imposed on states against their will, and their support of the GNSS will depend entirely on their will"[319]. It is therefore submitted that, even though the implementation of GNSS would require international cooperation between provider and user states, the system itself does not have an infringing effect on the sovereignty of states.

Another issue that has been of concern to potential user states is that of continuity and quality of service. According to Article 89 of the Chicago Convention, member states – including the provider states – have the "freedom of action" in case of war or national emergency. On this basis, it would be possible that the provider states simply "pull the plug" in such a case, thereby making safe air navigation substantially more difficult in states that have chosen to rely on the system in their provision of air navigation services. Both the Russian and the American offer make the provision of the signals moreover dependent on the availability of sufficient funds[320]. But again, even if the system were to be provided by an international institution, there would still be no guarantee for continuous, high-quality service. The system would still be vulnerable in case of

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[317] See H. C. Black et al., Black's Law Dictionary, 6th ed. (St. Paul, Minn: West, 1990).

[318] See M. Milde, *supra* note 313 at 198.

[319] *ibid.*

international conflicts or lack of funds, and, of course, subject to technical failure[321]. The author therefore holds the view that the system, again, does not differ from other forms of international cooperation and that states must decide for themselves whether they are prepared to accept the possible risk involved in the introduction of the system or not. If they are, they would be well advised to take precautions for the case of non-availability of the signal. The principle of redundancy has always been applied in many fields of aviation and would not only protect from the consequences of a deliberate interruption of service, but also in case of technical failure.

A third issue that needs to be addressed in the context of this paper is cost recovery. The provision of GNSS involves substantial expenses for the provider states. Even though this is presently not a problem for the international community because, for the time being, provider states have undertaken to offer the signal free of charge to anyone interested for a limited period of time, it is to be expected that this issue will sooner or later come up and that states considering the introduction of satellite-based navigation aids will also have to think about costs involved. The position of ICAO in this question is that possible charges for the use of GNSS shall be in accordance with the principles laid down in Article 15 of the Chicago Convention as well as those contained in the Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services[322]. The principles of Article 15, however, deal with charges for those air navigation facilities which states have undertaken to provide in their territory in accordance with Article 28 of the Convention. Since the reach of those facilities is limited to states territory, it appears questionable whether the principles developed for the recovery of the costs of their provision can automatically be applied for the recovery of costs involved in providing a navigation system not on a national but global basis[323]. Provider states should hence give a thought to including a clause referring to the issue of

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[320] *Ibid.* at 207.
[321] *Ibid.*
[322] International Civil Aviation Organization, *supra* note 78; see A. Kotaite, *supra* note 314 at 204; M. Milde, *supra* note 313 at 208.
[323] See M. Milde, *supra* note 313 at 208.

cost recovery in their respective System Policies or concluding service agreements addressing the issue with potential user states.

It remains unclear when and how the problems mentioned above will be resolved. However, it is to be expected that satellite-based air navigation will sooner or later become reality in civil aviation because states will in the long term not be able to ignore the obvious economic benefits provided by such a system. With respect to current capacity constraints at FRA, the introduction of such a system does not appear to have the potential to solve problems in the short run. Even if states could agree on the introduction of GNSS as soon as possible, its implementation would take time, most likely longer than Frankfurt Airport Corporation and its owners would be willing to wait. Another obstacle would be the availability of navigation equipment necessary to use a satellite-based navigation system aboard currently used aircraft. This is especially true for older types, since modernization may not be economically viable in all cases. Given the fact that more than half of the aircraft landing at FRA today do not have the equipment necessary to use all navigation aids already in existence there[324], it is submitted that it would take a long time until everybody could fully benefit from the advantages of GNSS. Even though this technology has great potential for the increase of airport capacity, this potential will not be ready for use in time to contribute to the solution of the questions that FRA faces today.

PART 3: CONCLUSION

The above reflections lead to the conclusion that several options to allay current capacity constraints at FRA would be available, even though a magic solution satisfying all interests does not exist.

Out of all the alternative methods of slot allocation discussed, only the OPUS approach seems to be viable in a widely regulated business environment that often hinders the application of market-oriented business strategies in the airline industry. This picture might change, however, if civil

[324] Interview with C. Dössel, *supra* note 44 (October 13, 1998).

air transport were regarded as a normal business activity and the current legal framework regulating it changed accordingly to allow for more competition on an international basis. In this scenario, free market models of slot allocation would most likely prove to be more viable than they appear today.

The transfer of Rhein-Main Air Base would only have a minimum impact on the slot situation at FRA. However, it is submitted that the space currently used by the U.S. Air Force could become very important for future expansion projects, for example the construction of an additional passenger terminal or cargo facilities. Governments should therefore nevertheless further pursue the creation of alternatives to the use of the air base by the Air Force.

The idea of transferring certain traffic segments, especially general aviation, to another nearby airport should also be further pursued. Even though aircraft concerned account for only a small fraction of the total traffic at FRA, small aircraft tend to take more time for take-off and landing. There is hence a disproportion between the number of flight maneuvers performed and the total time these aircraft require for approach, landing and take-off. Hence, an exemption from the obligation to accommodate such aircraft, similar to the one that has been issued to Munich Airport, but in compliance with constitutional requirements, should be sought.

The difficulties involved in the transfer of short-haul traffic to other modes of transportation are rather practical than legal in nature. Air carriers, especially Lufthansa and the other members of the Star Alliance, should press for an appropriate level of service aboard the rail services offered by *Deutsche Bahn AG* and do everything possible to ensure truly seamless travel. This will support the acceptance of those services among customers, thereby allowing for the cancellation of some existing services and helping to improve the slot situation at one of the most important hubs of the alliance.

The introduction of a satellite-based navigation system seems very promising. All parties concerned would be well advised to advocate the swift introduction of the system both in ICAO and other bodies. Nevertheless, GNSS will most likely not render the expansion of the

existing runway system obsolete. Parties interested in the availability of sufficient airside infrastructure in the future, like Frankfurt Airport Corporation and its shareholders, air carriers serving FRA, local industries and businesses and communities benefiting from the existence of FRA should therefore courageously defend this interest. They should do their best to make it clear that it will depend on the ability of German society to manage the obvious drawbacks of the further growth of civil air transport whether FRA will continue to be in the next century what it has been to the region and to Germany through the last decades. The use of state-of-the-art environmental technology will make this task easier as it will hopefully further limit the environmental impact of civil aviation. Moreover, thought should be given to whether people directly confronted with the negative aspects of an expansion of FRA might in the future more directly benefit from its economic advantages. If an expansion should be approved, the problem should not be regarded as resolved, but all other measures available to allay and prevent airport congestion, including the ones that have been mentioned above, should be further pursued in order to allow for a more reflective use of airport access, a resource that will most likely remain scarce in the future.

BIBLIOGRAPHY

LEGISLATION

EC, *Regulation* 2408/92 of July 23, 1992 on access for Community air carriers to intra-Community air routes [1992] O. J. L. 240/8

EC, *Regulation* 95/93 of January 18, 1993 on common rules for the allocation of slots at Community airports [1993] O. J. L. 14/1

Germany, *Bürgerliches Gesetzbuch*, *Reichsgesetzblatt* 1896, 195

Germany, *Gesetz gegen Wettbewerbsbeschränkungen*, *Bundesgesetzblatt* 1990 I, 235

Germany, *Luftverkehrsgesetz*, *Bundesgesetzblatt* 1981 I, 61

Germany, *Luftverkehrs-Zulassungs-Ordnung*, *Bundesgesetzblatt* 1979 I, 308

State of Hesse, *Hessisches Forstgesetz*, *Gesetz- und Verordnungsblatt für das Land Hessen* 1978 I, 423

Treaty establishing the European Community, *Bundesgesetzblatt* 1957 II, 766 (Treaty of Rome)

United States 15 USC §§ 1 – 7 (Sherman Act)

United States: 14 C.F.R. § 93.221

United States: 14 C.F.R. § 93.223

GOVERNMENT DOCUMENTS

Germany, *Bundestagsdrucksachen* (1990) 11/6745

Germany, *Bundestagsdrucksachen* (1991) 12/1801

United States, The National Commission to Ensure a Strong and Competitive Airline Industry, "Change, Challenge and Competition", Report to the President and Congress (August 1993)

DOCUMENTS OF INTERNATIONAL ORGANIZATIONS AND ENTERPRISES

Air Canada (ed.), Annual Report 1996 (Montreal: Air Canada, 1997)

J. Buxbaum, Gesamtverkehr: Flugbewegungen 1997/1998 [unpublished]

J. Buxbaum, Slots & More: Frankfurt Airport (Frankfurt, Germany: Flughafen Frankfurt Main AG, 1998)

J. Buxbaum, Verkehrsanalyse Frankfurt für Dienstag 12. Mai 98 [unpublished]

Deutsche Bahn AG (ed.), Umweltbericht 1997 (Berlin, Germany, 1998)

International Air Transport Association (ed.), IATA Scheduling Procedures Guide, 23rd ed. (Geneva, Switzerland: International Air Transport Association, 1998)

International Civil Aviation Organization (ed.), Economies of Satellite-based Air Navigation Services, (ICAO Circular 257-AT/106) (Montreal, International Civil Aviation Organization, 1995)

International Civil Aviation Organization (ed.), Outlook for Air Transport to the year 2005 (ICAO Circular 270-AT/111) (Montreal: International Civil Aviation Organization, 1997)

International Civil Aviation Organization (ed.), Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services (5th. ed.) (ICAO Doc. 9082) (Montreal: International Civil Aviation Organization, 1997)

COURT RULINGS

Bundessozialgericht (August 10, 1993) *Entscheidungen des Bundessozialgerichts* vol. 73, 41 [Germany]

Bundesverfassungsgericht (January 16, 1957) *Entscheidungen des Bundesverfassungsgerichts* vol. 6, 32 [Germany]

Bundesverfassungsgericht (July 7, 1971) *Entscheidungen des Bundesverfassungsgerichts* vol. 31, 229 [Germany]

Bundesverfassungsgericht (February 28, 1980) *Entscheidungen des Bundesverfassungsgerichts* vol. 53, 257 [Germany]

Bundesverfassungsgericht (April 8, 1987) *Entscheidungen des Bundesverfassungsgerichts* vol. 75, 78 [Germany]

Bundesverfassungsgericht (September 30, 1987) *Entscheidungen des Bundesverfassungsgerichts* vol. 76, 256 [Germany]

Bundesverwaltungsgericht (September 27, 1993) 43 Zeitschrift für Luft- und Weltraumrecht (1994) 351 [Germany]

Federal Aviation Administration v. Gull Air, Inc. 890 F.2d 1255 (1st Cir. 1989) [United States]

Pension Benefit Corp., et al. v. Braniff Airways, Inc., et al. 700 F.2d 935 (5th Cir. 1983) [United States]

BOOKS AND THESES

J. M. Baumann, Die Luftverkehrspolitik der Europäischen Union (Berlin, Germany: Duncker und Humblot, 1995)

F. Baur & R. Stürner, Lehrbuch des Sachenrechts, 16th ed. (Munich, Germany: Beck, 1992)

H. C. Black et al., Black's Law Dictionary, 6th ed. (St. Paul, Minn: West, 1990)

U. Brachmann, Die rechtlichen und tatsächlichen Möglichkeiten zugunsten eines effektiven Wettbewerbs trotz überlasteter Flughäfen im Europäischen Luftverkehr (Konstanz, Germany: Hartung-Gorre, 1994)

C. Degenhart, Staatsrecht I: Staatszielbestimmungen, Staatsorgane, Staatsfunktionen, 10th ed. (Heidelberg: C. F. Müller, 1994)

Flughafen Frankfurt/Main, ed., Der Flugplankoordinator der Bundesrepublik Deutschland: Aufgaben und Verfahrensweisen (Frankfurt/Main, Germany: Flughafen Frankfurt/Main, 1983)

Flughafen Frankfurt/Main, ed., 60 Jahre Flughafen Frankfurt: Geschichte eines europäischen Verkehrshafens (Frankfurt/Main, Germany: Flughafen Frankfurt/Main, 1996)

E. Giemulla & R. Schmid, Frankfurter Kommentar zum Luftverkehrsrecht, (Loose-leaf: 17th Supplement) (Neuwied, Germany: Luchterhand, 1994)

E. Giemulla & R. Schmid & W. Müller-Rostin, Frankfurter Kommentar zum Luftverkehrsrecht, vol. 1.1: Luftverkehrsgesetz, (Loose-leaf: 25th Supplement) (Neuwied, Kriftel, Berlin: Luchterhand, 1997)

J. Goh, European Air Transport Law and Competition (Chichester, UK: John Wiley & Sons, 1997)

G. A. Gratjios, Airport Noise Pollution: Legal Aspects (Montreal: Institute of Air and Space Law, McGill University, 1990)

D. M. Grether, The allocation of scarce resources: experimental economics and the problem of allocating airport slots (Boulder, CO: Westview Press, 1989)

R. M. Hardaway, Airport regulation, law, and public policy: The management and growth of infrastructure (Westport, CT, 1991: Quorum Books)

J. Heermann, Warum sie oben bleiben (Hamburg, Germany: Rasch und Röhring, 1997)

H. Jarass & D. Pieroth, Grundgesetz für die Bundesrepublik Deutschland, 4th ed. (Munich, Germany: Beck, 1997)

T. Maunz et al., Kommentar zum Grundgesetz, vol. 2 (Loose-leaf: 33rd Supplement) (Munich, Germany: C. H. Beck, 1997)

N. M. Matte, Treatise on Air-Aeronautical Law (Toronto: Carswell, 1981)

B. Pieroth & B. Schlink, Grundrechte: Staatsrecht II, 11th ed. (Heidelberg, Germany: C. F. Müller, 1995)

F. Rittner, Wettbewerbs- und Kartellrecht, 5th ed. (Heidelberg, Germany: C. F. Müller, 1995)

W. D. Schaller, Slot is the Magic Word (Frankfurt, Germany: Flughafen Frankfurt Main and Scheduling Coordinator of the Federal Republic of Germany, 1996)

M. Schweitzer, Staatsrecht III, 5th ed. (Heidelberg: Müller, 1995)

W. Schwenk, Handbuch des Luftverkehrsrechts, 2nd ed. (Cologne, Germany: Heymann, 1996)

G. M. Stevenson, The Politics of Airport Noise (Belmont, CA: Wadsworth, 1972)

T. Wells, Airport Planning & Management, 3rd ed. (New York: McGraw-Hill, 1996)

M. Wittmann, Die Liberalisierung des Luftverkehrs in der Europäischen Gemeinschaft (Konstanz, Germany: Hartung-Gorre, 1994)

ARTICLES IN JOURNALS AND NEWSPAPERS

"Ausbau des Frankfurter Flughafens: Hessens Landeschef Eichel will Entscheidung im Jahr 2000" Deutsche Verkehrszeitung (June 3, 1998) 8

E. O. Bailey, "Article 15 of the Chicago Convention and the Duty of States to Avoid Discriminatory User Charges: The U.S.-U.K. London Heathrow Airport User Charges Arbitration" (1994) 19 – 2 Annals of Air and Space Law 81

K. H. Böckstiegel & P. M. Krämer, "Völkerrechtliche Gestaltungsvorgaben für die Einführung einer wettbewerbsorientierten Allokation von Start- und Landeslots" (part 1) (1995) 44 Zeitschrift für Luft- und Weltraumrecht 269

K. H. Böckstiegel & P. M. Krämer, "Völkerrechtliche Gestaltungsvorgaben für die Einführung einer wettbewerbsorientierten Allokation von Start- und Landeslots" (part 2) (1995) 44 Zeitschrift für Luft- und Weltraumrecht 371

G. O. Eser, "Effects of Congestion and Aeropolitical Events on the Evolution of the Global International Airline System" (1988) 13 Annals of Air and Space Law 25

"Flughafenausbau: Im Jahr 2000 soll Entscheidung fallen" Oberhessische Presse (May 14, 1998) Region/Roman

Frankfurts Oberbürgermeisterin zur Zukunft des Frankfurter Flughafens: Roth sieht keine Chance für Nordbahn" Deutsche Verkehrszeitung (February 28 1998) 6

C. Gaebel, "Slots als Eigentum: Verfassungsrechtlicher Schutz von Start- und Landezeiten" (1990) 13 Transportrecht 407

E. Giemulla, "Kopplung von Slot-Vergabe und Luftfahrzeuggröße aufgrund lokaler Sonderregelungen" (1996) 45 Zeitschrift für Luft- und Weltraumrecht 245

E. Giemulla & R. Schmid, "Nochmals: Wem gehört die Zeit?" (1995) 44 Zeitschrift für Luft- und Weltraumrecht 259

E. Giemulla & R. Schmid, "Wem gehört die Zeit? Rechtsprobleme der Slotzuteilung" (1992) 41 Zeitschrift für Luft- und Weltraumrecht 51

R. M. Hardaway, The FAA "Buy-Sell" Slot Rule: Airline Deregulation at the Crossroads (1986) 52 Journal of Air Law and Commerce 1

"ICE-Züge jagen Eurowings Fluggäste ab" Süddeutsche Zeitung (October 27, 1997) 35

R. A. Janda, "Auctioning of Airport Slots: Airline Oligopoly, Hubs and Spokes, and Traffic Congestion" (1993) 18 –1 Annals of Air and Space Law 153

S. A. Kaiser, "Die Neuregelung des Slotvergabe: Müssen sogenannte 'Grandfather'-Rechte gesetzlich verankert werden?" (1991) 14 Transportrecht 266

J. Kauffmann, "Ausbau nur im Konsens mit der Region" Frankfurter Allgemeine Sonntagszeitung (January 18, 1998) 9

K.-P. Klingelschmitt, "Eine neue Startbahn West?" Tageszeitung (December 2, 1998) 9

K.-P. Klingelschmitt, "Flughafen Frankfurt soll wachsen" Tageszeitung (May 19, 1998) 9

R. Köcher, "Unzufrieden mit den Schulen, für die Erweiterung des Flughafens" Frankfurter Allgemeine Sonntagszeitung (October 4, 1998) 3

A. Kotaite, "ICAO's Role with Respect to the Institutional Arrangements and Legal Framework of Global Navigation Satellite System (GNSS) Planning and Implementations" (1996) 21 - 2 Annals of Air and Space Law 195

P. M. Krämer, "Tagungsbericht: Airport and En-Route Slot Allocation, Brussels, October 28, 1991" (1992) 41 Zeitschrift für Luft- und Weltraumrecht 86

S. Lerner, "Airside Commercialization Through Slot Allocation: Discussion on a Recommendation for Airside Ownership" (1996) 21 – 2 Annals of Air and Space Law 209

"Lufthansa wirft der Bahn Blockade vor" Süddeutsche Zeitung (March 23, 1998) 27

M. Milde, "Solutions in Search of a Problem? Legal Problems of the GNSS" (1997) 22-2 Annals of Air and Space Law 195

M. Momberger, "German Airports: A Panoramic View" (1998) 31 Airports International 12

G. Reimer, "Deutsche Flughafenpolitik ohne europäische Dimension?" (1992) 41 Zeitschrift für Luft- und Weltraumrecht 142

L. Schmid, "Startrechte in Zukunft per Formel verteilen" (1997) 21 Fremdenverkehrswirtschaft 72

W. Schubert, "Keine schlüssige Antwort auf immer mehr Flugzeuge" Frankfurter Rundschau (January 17, 1998) 17

M. Skapinker, "Airbus defends industry's record on environment" Financial Times (U.S. ed.) (April 24, 1998) 7

"Staffel-Anflug auf Frankfurt" Frankfurter Rundschau (January 17, 1998) 18

I. Stockman, "Transparency and Lack of Conformity" (1998) 15 The Avmark Aviation Economist 11

P. Thiele "Freie Entfaltung in der Fracht nicht möglich" Deutsche Verkehrszeitung (April 30, 1998) 35

R. Tomkins "When fares aren't fair" Financial Times (Europe) (February 10, 1998) 13

PAPERS DELIVERED AT CONFERENCES

H. Achtnich, "Länderbericht Deutschland" (International Conference on the Construction and the Expansion of Airports, Istitute of Air and Space Law at the University of Cologne, April 5 - 6, 1984) (1984) 33 Zeitschrift für Luft- und Weltraumrecht 384

C. Howes, "Slot Allocation at Heathrow Airport: The Legal Framework (5th Annual Conference of the European Air Law association, Paris, November 5, 1993) (1993) 6 European Air Law Association Conference Papers 53

C. Jung, "Aviation Markets in the European Economic Area – International Treaties, Deregulation and Open Skies" (Third International Berlin Business and Trade Law Conference, Humboldt University Berlin, May 8, 1998) [unpublished]

PRESS RELEASES

Flughafen Hahn GmbH, Press Release, "HHN=FRA – Listing of Hahn Airport under the metropolitan area of Frankfurt (FRA)" (April 1998)

Flughafen Hahn GmbH, Press Release, "Ready for Take-Off: Hahn Airport – a future-orientated site of growing importance" (June 1998)

ELECTRONIC MEDIA AND TELEVISION PROGRAMMES

"Airports Expect Benefits as CNS/ATM Systems Become a Reality" (May 11, 1998) http://www.airports.org/mediarl01a.html (date accessed: May 26, 1998)

"All Routes Lead to Frankfurt Airport: Europe's Intermodal Traffic-Port" (March 3, 1998), http://www.frankfurt-airport.de/airport_company/bg_4_98_body.html (date accessed: March 20, 1998)

"Charme einer Eisdiele: Lange Wege und Wartezeiten auf dem Flughafen Frankfurt verärgern die Reisenden" http://www.spiegel.de/spiegel/wirtschaft/29076.html (date accessed: July 13, 1998)

"Corporate Profile: Flughafen Frankfurt/Main AG" (October 10, 1997) http://www.frankfurt-airport.de/airport_company/bg_6_97_body.html (date accessed: May 26, 1998)

"Entwicklung des Außnehandels der Bundesrepublik Deutschland 1997" http://www.bmv.de/infomaterial/aussen/aussenhandelsstatistik97.html (date accessed: September 9, 1998)

N. Kinnock, Adress (Warburg's European Air Transport Conference, London, September 16, 1996) http://www.europa.eu.int/en/comm/dg07/speech/sp960916.htm (date accessed: April 18, 1998).

N. Lammert, "Gute Chancen für den Luftverkehrsstandort Deutschland" (Investors day of the State of Brandenburg, Berlin, May 19, 1998) http://www.bmv.de/presse/archiv/1998/05/19_154_98.htm (date accessed: July 10, 1998)

"New Annual Record: Frankfurt Airport Serves 40 Million Passengers in 1997" (December 29, 1997) http://www.frankfurt-airport.de/airport_company/anr_14_97_body.html (date accessed: May 26, 1998)

A. Stenzel, "Report Baden-Baden" (Südwestfunk, 1998) (date of broadcast: August 10, 1998)

"The World's Airports in 1997: Airport Ranking by Total Aircraft Movements" http://www.airports.org/move97.html (date accessed: June 1, 1998)

"The World's Airports in 1997: Airport Ranking by Total Passengers" http://www.airports.org/pax97.html (date accessed: May 26, 1998)

INTERVIEWS

Interview with J. Buxbaum (Slot Manager at Frankfurt Airport) (June 20, 1998)

Interview with C. Dössel (First Officer on Lufthansa Boeing 737, based at Frankfurt Airport) (August 13, 1998)

Interview with C. Dössel, (October 13, 1998)

Interview with G. Finnsson (Chief, Airport and Route Facility Management Section, ICAO Air Transport Bureau) (July 14, 1998)

Interview with C. Kaufmann (Marketing and Distribution Manager, Flughafen Hahn GmbH) (June 20, 1998)

Interview with J. Kohstall (Head of Marketing Department at Nürnberg Airport) (June 20, 1998)

Interview with Dr. E. Krieger (Head of Traffic Planning Department at Düssldorf Airport) (August 14, 1998)

Interview with M. Kuhne (Former Chairman of the German Airports Association) (June 20, 1998)

Interview with T. Mickler (Member of the Air Navigation Commission and Alternate Representative of Germany on the ICAO Council) (July 14, 1998)

Interview with T. Müntze (Forester at Frankfurt Airport) (October 7, 1998)

Interview with A. Zimmer (Member of the German Flight Schedule Coordination at Frankfurt Airport) (June 22, 1998)

Interview with A. Zimmer (July 30, 1998)

Interview with A. Zimmer, (October 2, 1998)