The international trade in launch services : the effects of U.S. laws, policies and practices on its development

Fenema, H.P. van

CHAPTER 5

Conclusions and recommendations

There is little doubt that the U.S. export controls, discussed in the preceding Chapters, intend to serve a respectable purpose, *i.e.* that of national and global security.
This involves controls on the flow of goods and technologies that (may) serve as weapons and a careful monitoring of the in -and export and R & D behaviour of other countries, either because they are known or suspected to be - potential - producers and sellers of these goods and technologies, or because they *im*port these goods and technologies thereby creating a threat to U.S., regional or global security, peace and stability.
In this connection, terrorist (-supporting) countries are of particular concern and are therefore subject to special scrutiny.

To the extent that other countries, allies of the U.S., share the same goals and perceive the same threats to the attainment of those goals (*e.g.* proliferation of chemical weapons or the Iraqi invasion of Kuwait), they will follow or support the U.S. in taking such measures as export restrictions, sanctions or other common actions.

The U.S.' role as the sole super power and global security guard, taking and initiating the measures it deems fit, commands respect rather than universal love.

But that respect may find its limits in a number of situations: first, in cases where disagreement arises about the type or extent of the danger (*e.g.* the sale of computers or encryption to Pakistan) or about the identity of, *c.q.* the threat posed by, the targeted 'villain' (*e.g.* Cuba) , or again about the severity of the measures proposed (*e.g.* restrictions on the export of satellites to China). The U.S. may also expect less respect and support for its actions or decisions when other than security considerations have influenced the choice of the measures concerned and/or the 'cure' has serious and unwelcome consequences or side-effects.

The first-mentioned situation, and the way it effects the U.S. export control measures and sanctions, has already been highlighted in this study.
We will focus here on the second situation mentioned above, before coming to a number of conclusions and recommendations.

The U.S. government's *missile control* policy aims at minimizing the risk of missile proliferation. That is a worthy goal. But the policy also denies countries, which seek to obtain a *civil* launch capability for peaceful purposes (the launch 'have-nots') the possibility to acquire the necessary launchers or launch technology, even when there is virtually no chance that this technology be used for military missile programs.
The U.S. government's justification for refusing to transfer launch technology to a country, when the latter has no missile program whatsoever which could benefit from the launch technology obtained, is that, because it is very difficult to turn a civil launch program into a commercially viable industry, there is a risk that either the technology will be turned to military uses in the receiving country after all or that it will be sold to third countries of the 'rogue' and 'missile-loving' type.
This reasoning has, of course, a touch of arrogance because it assumes (as almost inevitable) foreign governments' motivations and behaviour. It is also assumes that, basically, no country can be trusted with this technology. The inevitable result is a near total absence of cooperation in this field of civil space technology, a blocking of (foreign-based) innovation in the 'art' of launching, and a 'freeze' of the number and variety of launch providers world-wide.

Similarly, the U.S. government's controls of the *export of satellites*, including satellite components and technology, aim at keeping sophisticated means of telecommunications out of the hands of (the military establishment of) countries which are seen as a possible threat to regional/global peace, security and stability. That is, as such, a respectable goal.
But where these controls are used as a means to limit market entry and access and impose conditions in the form of capacity and price controls on foreign launch providers, another element is introduced, namely that of the unilateral regulation of international competition. Though these latter controls, in the form of bilateral launch trade agreements, have been gradually relaxed, and were in fact - slowly - on the way out, the recent 'China affair' again has shown that the mix of security and trade considerations, coupled with partisan politics and the always present threat of sanctions, has resulted in a trade-unfriendly environment, where unpredictability is the rule and both U.S. satellite manufacturers and operators and, in particular, foreign launch providers are the predictable victims.

The combined effect of the above phenomena is that under the 'security' umbrella, the U.S. government has adopted acts, formulated policies and taken enforcement actions, which have the, partly intended and partly unintended,

effect of preventing or at least severely limiting international development, innovation, cooperation and competition in the field of launch technology and launch services.

It could be argued that this is not necessarily bad, for two reasons: first, because - roughly speaking - national/global security is more important than international technology and trade development, and second because there is a *cornucopia* of promising technological approaches and developments, particularly in the U.S., but also, albeit to a lesser extent, in Europe and Japan, which will take care of all present and future space transportation needs. Thus the restrictions imposed on other - prospective - launch providers are of only marginal importance to the development of the exploration and use of outer space.
The *first* argument presupposes that specific U.S. security purposes are indeed more important and are indeed being served. In other words a careful weighing of aims and means has taken place, and the end result is, on balance, a positive one. At best, this is unproven. And not only the U.S. 'security establishment' and the trade, industry, science and technology representatives, but also America's friends and allies may have sharply different views, as *inter alia* the China affair has shown. We will revert to this matter below.

The *second* argument is of crucial importance to the future of the space launch service industry and its customers. It presupposes that the development of launch activities is in good hands, namely those of the incumbents, and that the latter will be in a perfect position to adequately meet all present and future space transportation needs. In other words, (to add a dash of demagogy) the collective scientific and technological knowledge of the rest of the world is considered to be irrelevant for the development of innovative, higher quality, and lower cost launch services: briefly, there is no need for new players and more competition.

Once again, there is a certain arrogance in this latter argument, but it is the understandable arrogance of the (launch) 'haves'. An important reason, though, to challenge that position, is the fact that the launch industry is a *service* industry: apart from having to meet the demands of *governments* in such areas as military and civil communications, including global positioning/navigation services and meteorological/geological/environmental remote sensing, it serves the - fast deregulating - worldwide telecommunications industry, the 'global information super highway' *in statu nascendi* (already in 1997 valued at some USD 550 billion and forecasted to grow to USD 1 trillion in the year 2000), of which satellite communications form a core part.[1]
Additionally, the U.S. government's Global Positioning System will increasingly be used by the aviation, automobile, marine and (other) private

1. See *State of the Space Industry, 1997 Outlook, supra* Ch. 1, note 1, at 41, 42.

consumer sectors, and by the year 2000 the GPS industry's growth (since 1996) is anticipated to exceed 500 percent.
Also, satellite remote sensing produces increasingly sophisticated images which, computer-enhanced, provide crucial information for the oil and gas industry, forestry, agriculture, mining, mapping, water management etc.

The space infrastructure, *i.e.* satellites, including spaceports and ground control operations as well as the launch vehicles, are a crucial part of these new, dramatically developing, space hardware-dependent service industries, just as the launch part, which has been calculated as representing only about 10 to 15 percent of the total value of the space infrastructure through the years, is a crucial service within that space infrastructure.
Whether the respective launch companies perform according to expectations, now and in the future, is something their above - increasingly demanding - *clients* will determine.
In that connection it should be recalled that the presently available launch service providers offer a combined product which, notwithstanding important internal differences in performance, has been repeatedly depicted, by government and private customers alike, as unreliable, inflexible and much too expensive. This is still the situation today. In a relatively short period of 9 months ending early May 1999, the U.S. experienced six significant launch failures with combined satellite and launch vehicle losses totalling USD 3.5 billion. These failures affect both government and private customers' space programs.[2] As for the cost of launching, NASA's stated goal is to reduce the cost of putting payloads into low-earth orbit from USD 10,000 per pound in 1998 to USD 1,000 per pound by 2007 and USD 100 per pound in the year 2022;[3] an indication of how this agency thinks about the present cost of launching.

It must be clear that, notwithstanding abundant availability of U.S. launcher know-how and experience, additional efforts by non-U.S. launch industries, both existing and new, are neither superfluous nor a luxury.

We come to the following conclusions and recommendations:

The commercial/financial interests and the national and international economic importance of the earlier-mentioned U.S. and global 'clients' are so much bigger than those of the launch companies serving them, that the following suggestions appear justified:

2. NYT (May 12, 1999) at 1 ("Series of rocket failures unnerves U.S. space launching industry").
3. See NASA's aeronautics/space goals, AW/ST (Oct 19, 1998) at 40.

1. The development of the launch industry should not continue to be artificially restricted to, or oligopolized by, the launch companies of one country or of a very limited number of countries. Neither should it remain fundamentally dependent on and subjected to national security-inspired but in reality largely nationalistic laws, policies and practices which also address other, not security-related interests and concerns.

2. A) In the 'trade versus national security' battle that is inherent in the above suggestion, it is, in the absence of any noticeable pro-trade initiative on the part of the U.S. government so far, the responsibility of the *U.S. telecom industry* and the other U.S. clients of the launch industry - using data which document and substantiate their actual and forecasted importance for the U.S. economy - to pressure the U.S. government, *i.e.* both the Administration and Congress, to show the utmost restraint in using 'national security' as an argument for taking such measures as (i) forbidding U.S. launch companies to engage in *bona fide* civil launch cooperation - involving the exchange of launch know-how - with foreign companies, whether existing commercial launch companies or launch 'have-nots' with peaceful civil launch aspirations, (ii) forbidding or severely limiting U.S. satellite manufacturers to exchange such satellite-launch vehicle interface information with foreign launch companies as will permit the latter to improve their services to the benefit of their U.S. and foreign clients, and (iii) severely limiting and discouraging the use of foreign launch companies through the imposition of price and capacity restrictions on some of those foreign launch companies and through - the threat of - strict application of export controls or sanctions.

B) In view of the global character and scope of the satellite constellations and the *international telecom conglomerates* using these systems, it is evident that the latter should join the U.S. telecom industry and put similar and concurrent pressure on the U.S. government. In that connection reference could be made to the dramatically increasing importance of their industry for the global economy, brought about by the liberalization of global telecom, initiated, through WTO, by the same U.S. government.
At the same time the telecom parties concerned should formulate the launch (quantity, quality and price) requirements necessary to accommodate the expected growth of their industries and to meet the expectations of the consumers relying on their services.

3. The above would also imply that serious consideration should be given by these industries to promote, either through GATS (by way of a U.S. commitment with respect to launch services) or - initially - on a separate multilateral basis, the adoption of a 'national treatment' arrangement with respect to the use of (private) U.S. spaceports. This would enable foreign launching states and entities to perform launches from the safe and well-equipped U.S. facilities on the same conditions as the U.S. launch companies. Similar offers, outside GATS, on the part of Brazil and Australia, though the

spaceports or facilities concerned may not be fully comparable in sophistication and value-for-money, have set a precedent in this connection.
Another logical step to be promoted in the context of a wider availability of launch services for the public and private clients and the creation of more free competition between the international launch companies, would be the opening up of the U.S. government *civil*, *i.e.* non-military, non-'national security-sensitive' satellite launch market to foreign launch providers, to be accomplished either through a corresponding amendment of the U.S. launch services exclusion in the WTO Agreement on Government Procurement or - initially - on a separate multilateral basis.

We will refrain from using exhortative "the WTO should ..." language. In fact, we mention the use of the WTO arrangements as instruments of change with some hesitation, for the following reasons.
First, it has been noted that launch services have not - yet - been liberalized to the same extent as the industries they serve. In fact, there is today a notable absence of a pro-competitive international environment for launch services. This will prove to be a serious handicap for the WTO Basic Telecom Agreement realizing its full potential. That in itself, both for reasons of principle and for practical purposes, provides already ample justification for a serious effort on the part of the same countries concerned, to accomplish at least a start of liberalization of launch services during the new round of WTO-GATS discussions which start in November 1999. In particular the U.S. should feel that responsibility, having pushed so hard for the global adoption of its 'free competition and fair trade' principles to be applied to international (satellite) communications through the above agreement, and continuing to energetically spread that gospel.[4]
An additional reason for strongly favouring a WTO approach would be the legally binding effect of the resulting treaty arrangements and the predictability and stability this would bring for the U.S. and foreign industries concerned (as compared to the present situation in the U.S. in this field).

But, it is at this stage difficult to predict whether the U.S. government will, at that occasion, act in the interest of the international telecommunications

4. The Chairman of the FCC, in a March 1999 statement before a Congressional Committee outlining his agenda for the rest of 1999, submitted, *inter alia* the following points: "... promote competition in all sectors of the marketplace ... continue to deregulate ... ensure broad access to communications services and technologies ... foster innovation ... *we will advance these concepts worldwide, serving as an example and advocate of telecommunications worldwide ... and aggressively work on the worldwide adoption of the WTO Agreement for Basic Communications"* (emph. add.), see Statement of William Kennard, Chairman FCC before the Subcommittee on Commerce, Justice, State, and the Judiciary, Committee on Appropriations, US Senate, on the FCC's FY 2000 budget estimates (Mar 25, 1999) <http://www.fcc.gov/Speeches/Kennard/Statements/stwek917.html>.

industry and, perhaps, offer a commitment to provide foreign access to its commercial satellite launch market.
This difficulty to predict has two reasons: first, a detailed analysis of WTO rules and practices, including members' practices in the field of commitments, national security escape-clauses, exemptions and *quid-pro-quo* bargaining, would have to form the basis for a serious discussion of the various scenarios and possibilities with respect to government action in the WTO context in the field of the trade in launch services: this falls outside the scope of this study. A second reason is the fact that any action or initiative on the part of the U.S. government during the next round of negotiations will necessarily be preceded by domestic (soul-searching and) decision-making on the advisability of changing the prevailing approach. In other words, the political will of each individual member state, and in this case in particular of the U.S., is decisive for the chances that change occurs, whether through WTO or through other means.
That brings us back to the domestic 'national security versus international trade' battle and to the ensuing views of the U.S. Administration and Congress on the advisability of changing *any* of the relevant laws, policies and practices.

4. The above state of affairs in the U.S. forces all parties interested in change to distinguish between measures based on *real, realistic and serious national security concerns* on the one hand and measures *not* belonging to that category on the other hand.

Clear examples of the *latter* are:
- the bilateral launch trade agreements with China, Russia and the Ukraine, in so far as they regulate market access, pricing and other aspects of market access and market behaviour;
- government policies which forbid or restrict the use, for commercial launches by foreign launch companies, of U.S. federal launch facilities or private spaceports;

Other examples belonging to the same category are:

- 'fly U.S.' laws and policies in so far as they apply to *civil* government satellites and forbid the launch companies of *e.g.* NATO members and major non-NATO allies access to that market;
- 'Strom Thurmond' treatment of all commercial communications satellites as arms or munitions for export licensing purposes, at least in so far as they include satellites with a relatively low level of sophistication, destined for 'friendly' nations or destinations;
- 'Strom Thurmond' based controls on the launch of U.S. commercial communications satellites by foreign launch providers in so far as the latter fall under the jurisdiction and control of NATO members or major non-NATO allies;

- 'Strom Thurmond' based controls on the launch of U.S. commercial communications satellites by China in so far as conditions are attached to export licenses which are of a strictly economic, trade or other 'non-national security'-related character;

Of a somewhat different nature, but nevertheless falling in this category because of the relatively low national security 'content' of the measures, are the following:
- measures which forbid, restrict or sanction a U.S. satellite manufacturer, which has received a permit for the Long March (or Proton) launch of his commercial communications satellite, to discuss such satellite-launcher interface aspects as will assist the Chinese (or Russian) launch provider in improving the chances for a successful launch of the U.S. satellite into the proper orbit;
- measures which forbid, restrict or sanction quality control discussions between a U.S. launch company and his Russian and or Ukrainian partners in joint ventures using Russian or Ukrainian launch vehicles.

Obviously, the transfer of missile technology or launch technology to terrorist countries or other countries posing a threat to national, regional or global security is, as such, a matter raising serious national security concerns. But on the scale of such national security/weapon proliferation concerns there is a vast difference between this case on the one hand and, for example, launch (technology) cooperation between a U.S. launch company and its non-military counterpart from *e.g.* a NATO country on the other hand.
Both MTCR and the respective U.S. Administration policy emphasize that *bona fide* peaceful national space programs or international cooperation in such programs should not be impeded by MTCR (-based) controls, as long as such cooperation could not be used for or contribute to delivery systems for weapons of mass destruction (WMD).
The U.S. however, as we have seen earlier, in 1996 added a national criterion which is not only patronizing but also of doubtful relevance for national security purposes:

"For MTCR countries we will not encourage new space launch vehicle programs which raise questions from a proliferation *and economic standpoint.*" (emph. add.)[4a]

In the light of a dearth of new, ambitious, and innovative launch companies outside the U.S., the emphasized clause seems inappropriate and, as one of the measures with a low national security content, fit for review.

4a. See Ch. 2 supra, (text to) note 352.

Of course, the above should not be interpreted as an attempt to disqualify serious U.S. national security concerns, but rather as an effort to separate the wheat from the chaff.
This serves two purposes:
first, to have the telecom industry and other users of launch services focus on those elements in the above government measures which should - and, from a national security point of view, *could* - be singled out for the purpose of liberalization;
second, to increase the likelihood that national measures which address real, realistic and serious national security concerns will be followed and supported by U.S. allies. For, as we have observed before, the more blunt, oversimplified or 'polluted' - by other than national security considerations, aspects or consequences - these national controls are,[5] the less international support for those measures can be expected.
And where, as we saw before, other members of the Wassenaar Arrangement, MTCR and NATO, but also non-members of these arrangements possess both satellite and missile/launch technology and may see important economic, scientific, technical or political benefits in cooperating with one another in these fields - without necessarily fully sharing the U.S. security concerns - there is ample reason for the U.S. authorities to make a major effort in selecting only those objects or targets for measures of control or sanctions which will command respect and support from their friends and allies.
The overall effect of the above (lobbying) efforts should be a change in U.S. policy from "do not transfer sensitive or dangerous high tech goods and technologies to any foreign countries, *unless* ..." to "promote space launch cooperation and competition, *unless* ..."[6]

5. In the words of a U.S. State Department official, "like applying a meat cleaver where laser surgery would be more appropriate", see Eizenstat 1997, *supra* Ch. 4, note 77.
6. One of the dilemmas the regulators will continue to grapple with is that of the identical/similar characteristics of launch vehicles and missiles. In the China affair, there was, and still is, no unanimous agreement among various U.S. experts about the military (missile) benefits for China of the transfer of U.S. satellite and - possibly - launch technology information. But if the question is phrased along the lines of the MTCR, *i.e. could* the technology be used for WMD delivery systems, it is difficult, given important similarities of the technologies concerned, to answer in the negative. But, in fact, that would apply to many technologies unrelated to launch vehicles. It therefore makes more sense to look at the potential user, the relationship between the parties concerned and the sophistication of the programs involved to estimate how big the chance is that launch technology cooperation will substantially benefit a missile program of concern. Is the missile program of a NATO partner of concern to the U.S.? If not, civil launch cooperation with that country should not pose a problem. An example comparable to Hughes' alleged transfer of technology to Long March is the situation which may result from the launch on the Indian PSLV of 3 foreign satellites, Korean (Kitsat-3), German (DLR-Tubsat) and Belgian (Proba), see Space News (Apr 5, 1999) at 16; the satellite-launcher interface information exchange may, if the Hughes analogy is used, result in a more reliable performance of the Indian launch vehicle and that knowledge could be transferred to India's missile program. Whether that indeed happens, and if so whether that is serious enough to discourage the three

More than anything else, that will set the stage for a responsible liberalization of the international trade in launch services.

5. As for the economic and trade aspects of the matter, a comparison with the ongoing liberalization of international *air transport,* and the U.S. role in that development, may be useful.
This transport activity is different from launching or space transport, in the sense that it is bilaterally regulated between states on the basis of the principle of a state's sovereignty over (the use of) its airspace, as compared to the launch activity's legal basis, the freedom - and free use - of outer space, a *res communis omnium* which is not subject to claims of sovereignty. On the other hand the international trade in launch services, seen from the U.S. perspective, shares with international air transport the characteristic that the U.S. government exercises sovereign control over foreign access to the U.S. market (of satellites to be launched and launchers to be sold, including the respective technologies and components). Thus, the U.S. government, in both cases has a considerable influence on the operational and/or commercial well-being of the foreign companies concerned.

Until some ten years ago, international market access was, with few exceptions, only obtainable for airlines through bilateral, inter-governmental negotiations characterized by protectionist concepts such as *quid-pro-quo*, 'equal exchange of economic benefits' and 'equal capacity', which would usually lead to a bilaterally exchanged access for the national airlines concerned to the other party's air transport market at a level determined by the weakest or least interested party. Where that latter party, in many cases, would be the least dynamic, least innovative, and, (also) in its own perception, least prepared for the effects of free market forces, the end-result was a system of restrictive bilateral treaties, stifling competition and short-changing the customer in quantity, quality and price of the transport products available to him.
The U.S. was the first country with a large aviation market to, initially only domestically, but later also internationally, 'deregulate' aviation, by removing protective domestic and international rules and regulations, in order to expose the industry to the harsher environment of free(r) competition and market forces.
This has fundamentally changed the (composition and behaviour of the) American and international airline industry.

Wassenaar Arrangement parties concerned to use the Indian launcher is debatable to say the least. A similar question can be asked concerning - the dangers of - the Arianespace-Antrix agreement of Oct 1998 on mutual sales of small payload capacity on India's PSLV and Europe's Ariane respectively. In the end, only technical developments resulting in civil launch technologies becoming *unfit* for missile applications would give the guarantees and certainties sought by the national security establishments; a concerted effort to that effect may therefore be worth considering.

The U.S.' reasons for changing its regulatory approach towards this service industry may contain lessons which could be used for the liberalization of the launch industry.

The underlying principle for 'deregulation' was the long-standing U.S. trade philosophy of free trade ('let the market, the customer decide'), which is seen as giving those companies the best chances for survival and prosperity which, in free competition with other companies and with minimal regulatory interference, consistently please the customer with the best quality at the lowest price.

The application of that principle *in internationalibus*, however, was (and is) not an automatic one, but depended in the case of aviation on such factors as (a) the perceived level of maturity and survivability of the U.S. airlines concerned, (b) the benefits deregulation or liberalization of market access would bring to these airlines (compared to what it would bring in competitive benefits to foreign airlines) and (c) the benefits for the (American) public and the national economy.
On the basis of the positive outcome of its appraisal, the U.S. government (not the U.S. airlines!) saw sufficient reason in the late seventies to actively promote aviation deregulation internationally, and has continued to do so ever since.

Applying the above U.S. approach to the space launch field, we have at an earlier stage, in Chapter 4, come to the conclusion that the U.S. launch companies are sufficiently mature and equipped to meet foreign competition. We also indicated above our belief (which is partly based on the same economic rationale that led to the adoption of WTO/GATT and GATS principles and is reinforced by the experience gained with international deregulation in the field of air transport), that free(r) competition in space transport will benefit important growth industries such as global telecommunications which depend on space hardware and space transport, and, as a result, will also benefit U.S. state, national and global economies.

The above aviation parallel (in addition to the U.S.' official pro-liberalization stand with respect to trade in another important category of services, namely that of telecommunications), would appear to support the conclusion that the U.S. government should take its first decisive steps towards liberalization of the launch industry.
There is one element however, that would also have to be addressed, as it may stand in the way of a soonest U.S. launch liberalization 'move', namely the absence of substantial foreign launch markets that would become available to the U.S. launch industry through market access liberalization, comparable to the U.S. private and, in particular, the government satellite launch market to which foreign launch providers would get access: as long as the latter market is far superior in size and value, one cannot expect the U.S. launch companies

to enthusiastically espouse the idea of a 'swap' of access to government markets (particularly if one also takes into account the fact that the European government markets are not as closed to U.S. launch companies as the other way around).

There are a number of arguments why that imbalance in new launch opportunities should not prevent the U.S. government from moving ahead:
one, if the U.S. government follows the aviation precedent, it will again place a higher value on the application of free market principles and the benefits these entail in the long term for the national economy, than on a short term - unattainable - *quid-pro-quo* for its launch industry;
two, also in international air transport the benefits of international deregulation at first mainly accrued to the foreign airlines which obtained access to the important and rich U.S. market, rather than to the U.S. carriers (hence the initial resistance of the latter against this form of international deregulation);
three, the relative importance, in size and value, of the U.S. government satellite launch market is slowly but definitely decreasing as compared to the private commercial satellite launch market; and it is in the latter market, and more in particular in the LEO satellite systems market that the U.S. launch providers are catching up with their main competitor, Arianespace;
four, the U.S. launch companies are part of and/or participate in aerospace and telecommunications conglomerates; the latter, as customers, (must) see the advantages of additional competition and innovation in the international launch market, brought about by wider access to all sectors of that market.[7]
In conclusion, we suggest that the time is ripe for the first solid steps on the part of the U.S. government towards a liberalization of the international trade in launch services along the lines as indicated above. Further, it is primarily up to the aforementioned 'space hardware' - dependent communications and other launch service user-industries - those which are most immediately affected by the consequences of the present U.S. laws, policies and practices

7. In the context of the aviation parallel, two additional developments in the U.S. are worth noting because of their possible application to the (de-)regulation of the launch business: 1. the adoption by the DOT of the so-called Undeserved Airports Policy of 1990: this policy allowed foreign airlines - under certain conditions, but outside the usual bilateral *quid-pro-quo* bargaining process - access to those secondary U.S. airports which had no (U.S. or other) direct airservices with the country of the foreign airline concerned. The adoption of the policy was the result of a concerted lobbying effort on the part of the respective airport and state authorities and was based on the argument that international airservices would stimulate the local and regional economy; though launch services are different in many aspects, the economic (jobs!) argument as such is a valid one, which should be explored by the U.S. spaceports looking for (foreign) clients; 2. with the advent of international airline alliances involving U.S. and foreign carriers, the American fly U.S. rules applicable to aviation have been interpreted so as to allow, under certain conditions, U.S. government traffic to be carried by the foreign alliance partner concerned; with the same *caveat* as above, this approach is worth exploring by both Boeing's Sea Launch and Lockheed Martin's ILS.

in this field - to take the necessary initiatives to convince both the Administration and particularly Congress that these steps are long overdue.

At the same time it is in the interest of the U.S. government, both in its quality of guardian of free trade principles and of customer of the launch industry, as well as in its role of 'global security guard' - in the field of export controls dependent on other countries to properly perform its job -, to make a strict and precise distinction between measures *exclusively* aimed at addressing 'with laser surgery' real, realistic and serious national/global security concerns on the one hand, and all other measures on the other hand. Only in that way, may the U.S. government hope, in its enlightened selfinterest, to be able to promote trade in launch services and at the same time meet essential security needs.

According to the author Naisbitt, telecommunications and information technology are two of the three "paradigm industries" which will drive the service-led economies of the 21st Century.[8]
Also from that point of view, it is justified to analyse as a matter of priority, in both national and international fora, the effects of the present regulatory regime, as described in this study, on the development of the launch industry and, consequently, on the development of these paradigm industries. Such an analysis should include forecasts as to the consequences for these industries of the various possible liberalization scenarios envisaged.

We briefly return to the need for increased international cooperation and competition between the U.S. and foreign launch companies, both incumbents and new, to make two final points:

1. The history of - the effects of - U.S. refusal or hesitation to transfer launch technology to foreign countries and/or its insistence on attaching strict conditions to the use thereof, has taught us that it is at best doubtful whether this has indeed effectively, and also in the long term, prevented the development of civil and/or military launch systems in the countries concerned. Europe, Japan, India and Brazil are, as we saw, examples of countries which, in stead of being discouraged by the U.S. attitude, rather felt confirmed in the view that they should 'go-it-alone', and, where necessary, look for other, less-

8. John Naisbitt is the author of Megatrends 2000 and Global Paradox. According to the author, the third 'paradigm industry' is *travel and tourism*, as approvingly noted (and quoted) by the World Travel and Tourism Council (WTTC) in its Millennium Vision. The WTTC, a global coalition of about 100 CEO's from all sectors of the travel and tourism industry, including transportation, has a solid reputation for promoting the liberalization of international aviation and telecommunications and, in that connection, the abolishment of trade barriers and protectionist policies, on the basis of - particularly - economic analyses, see <http://www.wttc.org> *passim*. The WTTC could be an interesting ally of the above space hardware dependent industries in underpinning and promoting the liberalization of the international satellite launch industry.

principled partners for assistance. Similar recent reactions, on the part of Europe, have been observed in the field of global navigation satellite systems and military observation (spy) satellites: also in these cases, an - apparent - overdose of foreign policy or national security-inspired cautiousness on the part of the U.S. only results in the countries concerned going their own way.
One may wonder whether - this - history has not taught us that a transfer of space (launch) hardware and/or technology, embedded in a peaceful space cooperation program, in the end would prove to be a more effective method to address missile proliferation worries and make the world a safer place to live.

2. To the extent that national security-based American policies maintain the gulf between U.S. space 'haves' and foreign 'have nots', and thus widen the technological and economic gap between the two groups, such policies have at the same time a peace, security and stability *threatening* effect. That affects not only the economic, political and security interests of the U.S. but also the corresponding interests of the world community at large.
For that reason in particular, the provisions of the Outer Space Treaty of 1967 and of the Outer Space Benefits Declaration of 1996, quoted in the previous Chapter, appeal to member states to engage to the maximum extent possible in international cooperation in the exploration and use of outer space. In fact, that is the central theme, the spirit of space law as a *lex specialis* of international law.

Laws, policies and practices, which virtually exclude cooperation in a sector of the above space activities, violate that spirit.

That should provide the framework for U.S. government efforts geared at the establishment of an international regime which does deserve the title "free and fair trade in launch services".