

well established. By the mid 1980s, the Arianspace series of Ariane launching systems had obtained almost half the commercial satellite launch world market.³⁵ Furthermore, following the misfortunes of NASA, the European launching vehicle Ariane began to win the interest of commercial satellite owners worldwide. Arianspace is expected to have a new generation of launching vehicles, Ariane 5,³⁶ in operation by 1995 and to market eight or nine vehicles per year during the next few years, 50 per cent of which are expected to be for non-European satellites.

Several governments now understand that commercial launching activities can help finance space development. Consequently, Arianspace and NASA are no longer the only ones operating in this field. In the U.S.S.R., Glavkosmos, the Soviet commercial space services agency, has had contracts with Intospace in Hannover, Federal Republic of Germany and with Payloads Systems in Cambridge, U.S. China has proposed to launch the telecommunications satellite Arabsat for less than half the amount it would have cost with Arianspace or McDonnell Douglas.³⁷ Thus, the U.S.S.R. and China, along with Japan, could become major participants in the commercial space launching market.

In the satellite field, the European industry has not been successful in penetrating the larger world market, mainly because of the scale of the business and ESA's nature and operating procedures. The only success obtained has been in association with U.S. companies. However, as far as the platform elements are concerned (such as structure, thermal control, propulsion, power and data handling), basic capabilities exist in Europe and can sustain technical comparison with products from other parts of the world. This is also the case for navigation systems, meteorological instruments and surveillance sensors satellites (SPOT).

The prime weakness of European companies lies in the area of advanced sensors for aspects of surveillance and early warning. European manufacturers also have difficulties in producing price and performance competitive final products, especially in the satellite communications space and

ground sectors. In comparison, U.S. systems benefit from a much larger scale of U.S. space activities, both military and civilian.

Accidents that occurred in the past have resulted in buyers modifying their specifications. This, in turn, has resulted in an increase in satellite costs and complexity. This trend has intensified competition in an already active satellite manufacturer's market. The availability of satellites is presently greater than the demand, and a major market restructuring is expected before the next decade.

The expected restructuring could be particularly significant in Europe. There are perhaps five potential prime contractors in the U.S. satellite business. Thus, using a comparative analysis, the number of European satellite manufacturers could decrease from six to two, or even to one. Some rationalization is necessary, but none of the major nations is willing to see its ESA contribution being used to strengthen the industrial capability of another. The economies of scale necessary to remain competitive will, however, force companies to collaborate. Effects of this restructuring are already evident. British Aerospace Systems is reinforcing ties it has already established with its partners, such as the French company Matra.

The relatively little explicitly European military space activity is largely confined to communications, such as the U.K. Skynet program, the French independent military communications capability and a possible expansion of SPOT to aspects of military reconnaissance. The IEPG list of military products does not include space systems or equipment.

1.2 Defence Industry

a) Canadian Defence Industry

The Canadian defence industry is made up of companies that produce both civilian and military products, although their activities are more civilian in nature. The companies in the Canadian defence industrial base are characterized by a pronounced degree of specialization, and very little vertical integration. The principal military activities are: