

techniques, inertial navigation technology, low power lasers for ranging, target making, EW, jammers, some missiles guidance systems, and millimetric wave sensors.

The weakness of the European defence electronics industry lies in the lag it has in micro-electronics, particularly in: (i) the development of advanced high-speed multi-current chips and Application Specific Integrated Circuits (ASIC) for military use, (ii) some aspects of advanced opto-electronics such as multi-element arrays, (iii) radar solid state antennae arrays and (iv) harnessing of computer software and hardware to systems. As a result of the rapid pace of development and the speed with which the U.S. and Japan can move from development to marketable systems, micro-electronics technology is viewed as the most critical area and a source of potential threat.

The anticipation of diminishing opportunities in the defence field has induced changes in the industry. Subsidiaries of Plessey (U.K.) have gone to Siemens (Federal Republic of Germany), and the submarine and avionic division of Plessey have gone to the General Electric Corporation (GEC). The bulk of Philips' (Netherlands) interests have been bought by Thomson-CSF, a French state-owned group. Philips in Sweden was bought out by Bofors. The acquisition of Messerschmitt-Bolkow-Blohm (MBB), the principal German aerospace and missile company, was effected by Daimler-Benz, which held a significant share of the country's military electronics.

For the most part, this consolidation has taken place within the borders of the countries concerned. However, transnational groupings are under way. British Aerospace and Thomson-CSF have paved the way by finalizing the merger of their radio-controlled weapons activities to form Eurodynamics. BAe has agreed for the first time to use a French guidance system for air-to-air weapons, and GEC-Marconi has concluded a similar agreement with Thomson-CSF's competitor, Electronique Serge Dassault.⁵³ The motivation behind these groupings is to ensure possession of a large range of important technologies in order to be in an advantageous position vis-a-vis weapons projects, and to provide the necessary funds to finance ever-increasing R & D costs. For example, BAe has placed great

importance on Merlin, the new anti-tank "intelligent" system, but has done so without government aid. Individually, European countries have realized that they do not represent markets of sufficient importance to justify the R & D expenditures necessary to enable manufacturers to compete with U.S. companies. Thus, concentration and collaboration seem inevitable.

France is the only European country with a defence sector similar to that of the U.K.; that is, it is tightly controlled by the state and open to co-operation with other partners. This attitude inspired the 12-nation EUCLID project to collaborate on military research to establish standards of excellence. The countries involved in the project were awarded pilot projects in priority sectors (the U.K. is working on electromagnetic weapons) in the hope of better using government research funds. EUCLID relies on various government funds and does not have EC funding as the French had hoped. Consequently, the industry must bear part of the burden. This program, therefore, differs from the EUREKA program, which provides support to companies that present projects to this end.

1.3 Urban and Inter-city Transport Industry

a) Canadian Urban and Inter-City Transport Industry

Canadian Mass Transit Industry

Two manufacturers of passenger railway rolling stock dominate the Canadian industry: Bombardier Inc. (Quebec) and Urban Transportation Development Corporation (UTDC) (Ontario), a subsidiary of Lavalin Inc. Both companies produce mass transit and commuter cars and can design complete systems. Some 250 other Canadian manufacturers specialize in the assembly and sub-assembly of vehicles and propulsion systems, and supply other components of electrical and mechanical equipment. Although the Canadian mass transit industry suffers from having a small market in comparison to its European competitors, this problem is partially resolved by proximity to the U.S. market.