

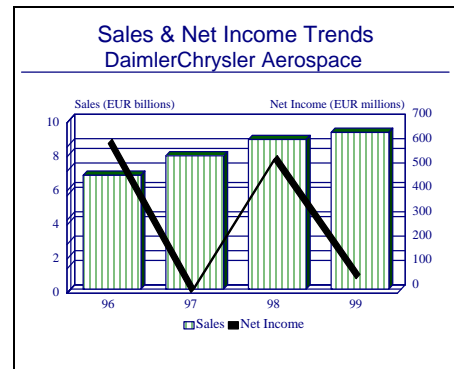
# ARCHIVED REPORT

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## DaimlerChrysler Aerospace - Archived 3/2002

### Outlook

- DASA, Aerospatiale Matra, and CASA have merged together to form the European Aeronautic Defence and Space Company (EADS)
- EADS creation has rejuvenated ties between France and Germany
- EADS is moving to assuage "Fortress Europe" fears by initiating trans-Atlantic partnerships with US companies



### Headquarters

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DaimlerChrysler Aerospace, 94 percent owned by DaimlerChrysler AG, and 6 percent owned by the Free and Hanseatic City of Hamburg, was founded in Munich on May 19, 1989. At the time of the signing of the corporate charter, then-Deutsche Aerospace assumed a 57.5 percent stake of Dornier GmbH shares, as well as 100 percent of Motoren- und Turbinen-Union GmbH (MTU). Telefunken Systemtechnik (TST), the electronics branch of DASA, was formed from two divisions of DaimlerChrysler subsidiary, AEG AG.

In December 1999, DaimlerChrysler, the French Lagardère Group, the French State, and Spanish aerospace company CASA agreed to merge their respective aerospace and defense activities into a new company. The new corporation, called the European Aeronautic Defence and Space Company (EADS), is the world's third largest aerospace company. EADS was officially launched following its listing on the Madrid, Munich, and Paris stock exchanges on July 10, 2000.

All of the former DASA programs and operations now fall under the auspices of the new EADS, with the exception of engine manufacturer MTU München. MTU is not a part of the new company and continues as a DaimlerChrysler business unit.

DASA employed an estimated 46,100 as of early 2000.

### Structure and Personnel

Prior to EADS.

Rainer Hertrich  
President & CEO  
Werner Heinzmann  
Defense and Civil Systems  
Gustav Humbert  
Commercial Aircraft

Hartwig Knitter  
Personnel  
Klaus Ensslin  
Satellites  
Josef Kind  
Space Infrastructures  
Karl Heinz Hartmann  
Military Aircraft

## Product Area

DaimlerChrysler Aerospace is responsible for all of DaimlerChrysler's aerospace/defense-related activities, engaging in the production of a comprehensive array of systems marketed worldwide in both the civil and military sectors. Prior to the formation of EADS, the company managed its operations as follows:

1. Commercial Aircraft
  - 1.1 DaimlerChrysler Aerospace Airbus GmbH
2. Military Aircraft
  - 2.1 Combat Aircraft
  - 2.2 Transport and Mission Aircraft
  - 2.3 Flight Control Systems
3. Satellites
4. Space Systems Infrastructure
  - 4.1 Orbital Systems & Operations
  - 4.2 Propulsion and Transportation Systems
5. Defense and Civil Systems
  - 5.1 Command Control Communications Intelligence
  - 5.2 Ground and Naval Systems
  - 5.3 Airborne Systems
  - 5.4 Missile and Air Defense Systems
  - 5.5 Nortel DASA Network Systems
6. Aeroengines (MTU München)

**Commercial Aircraft.** DASA is a principal partner in Airbus Industrie, holding a 37.9 percent share through DaimlerChrysler Aerospace Airbus GmbH (Hamburg). The other partners are Aerospatiale (37.9 percent), British Aerospace (20 percent) and CASA (4.2 percent).

In January 2001, official and regulatory approval was received to establish the Airbus Company. This "new" operation is 80 percent owned by EADS and 20 percent by BAE Systems and is designed to function as an independent corporate entity rather than as a consortium.

**Military Aircraft.** This unit is focused on the development and initial production of the Eurofighter. DASA is producing the center fuselage sections for all 620 Eurofighter aircraft currently on order and carrying out final assembly of the 180 aircraft destined for the Luftwaffe. In the fall of 1998, the go-ahead was given for the first batch of 148 production aircraft.

**Space Systems Infrastructure.** This unit focuses on the development, construction, integration, and operation of manned and unmanned space stations and transporters as well as on propulsion and transportation systems. Current major programs include the manned Columbus space lab which will be docked onto the International Space Station (ISS) as well as the station's Automated

Transfer Vehicle. The Propulsion and Transport Systems segment is responsible for the development and construction of stages for Ariane launchers and new transport systems.

**Defense and Civil Systems.** This unit specializes in defense electronics, guided missile systems, and telecommunications equipment.

Command Control Communications Intelligence. This segment provides products and services including complete systems in the fields of control, communications (fixed networks, tactical networks, radio communication and SATCOM), signal reconnaissance/intelligence, and training and simulation.

Ground and Naval Systems. This unit develops, integrates, markets and provides support for technical and electronic systems in the areas of reconnaissance, radar, radar EW, mission management, mobility, and security.

Airborne Systems. The Airborne Systems unit is composed of five program units: Airborne Reconnaissance, Airborne Radar, Airborne Electronic Warfare, Avionics and Identification and Aerial Target Presentation. Key programs include the ECR90 radar, the identification friend or foe (IFF) system, and the defensive aids subsystem (DASS) for the Eurofighter.

Missile and Air Defense. This operation is made up of LFK-Lenkflugkörpersysteme GmbH, TDW Gesellschaft für verteidigungstechnische Wirksysteme mbH, Bayern-Chemie GmbH, parts of the former Siemens Defense electronics arm SI Sicherungstechnik (air defense) and parts of the former Ulm-based missile electronics division. LFK, TDW and Bayern-Chemie (a joint venture of DASA and Thomson-CSF) continue to exist as companies with independent legal identities. The operating unit acts as both system leader and prime contractor in the areas of guided missile systems, combat drones, air defense systems and the associated subsystems. The operating unit consists of six program units: Ground to Air Systems, Aircraft and Ship Armament, Anti-tank Systems/Fire Support, Missile Subsystems, Warheads, and Propulsion Systems.

**Nortel DASA Network Systems.** This is a joint venture of Nortel Networks (Northern Telecom), Dornier and DaimlerChrysler Aerospace. This venture concentrates on the development, design, and marketing of telecommunications networks.

## Facilities

DASA's major facilities are detailed below.

DaimlerChrysler Aerospace Airbus GmbH, Postfach 950109, 21111 Hamburg, Germany. Telephone: (49 40) 7437-0. DaimlerChrysler Aerospace Airbus is a 37.9 percent shareholder in the European Airbus Industrie consortium, a commercial aircraft manufacturer. Hamburg is the site of A320 series final assembly.

DaimlerChrysler Aerospace AG, Military Aircraft, Rechliner Straße, 85077 Manching.

LFK-Lenkflugkörpersysteme GmbH, PO Box 16 61 85705 Unterschleißheim. Telephone: (49 89) 3179-0. LFK handles the development of guided missile systems and key components.

Dornier GmbH, PO Box 1420, An der Bundesstrasse 31 88309 Friedrichshafen.

Space Infrastructure Division, PO Box 286156, 28361 Bremen. This operation provides integration services, environmental test services, and various end-to-end services for the aerospace industry.

Eurocopter SA, 72 boulevard de Courcelles, 75017 Paris, France.

Eurocopter Deutschland GmbH, PO Box 1353 86603 Donauwörth.

Bayern-Chemie, Gesellschaft für flugchemische Antriebe mbH, Postfach 11 31, 84544 Aschau/Inn. This is a joint venture between Thomson-CSF and DASA focusing on missile propulsion. The operation combines DASA's Bayern-Chemie units and Thomson's Protac subsidiary.

## Corporate Overview

DaimlerChrysler Aerospace is Germany's largest defense contractor. The company segments its businesses into six major sectors: Civil Aircraft and Helicopters, Military Aircraft, Space Systems Infrastructure, Satellites, Defense & Civil Systems, and Aeroengines.

Civil Aircraft for DASA includes the company's participation in the Airbus and Eurocopter consortiums. Within these categories for 1999, the Civil Aircraft business generated 35 percent of the company's revenues, Helicopters 7 percent, Military Aircraft 11 percent, Space Systems Infrastructure 6 percent, Satellites 5 percent, Defense & Civil Systems 18 percent, and Aeroengines 18 percent of sales.

### New Products and Services

**TAURUS.** DASA is offering a new family of stand-off weapon systems under the designation TAURUS. Germany had originally intended to fulfill its standoff attack missile requirement with the APACHE-MAW but abandoned this program in favor of the TAURUS. The TAURUS family will provide both medium- and long-range missiles and is based on three formerly separate programs: MW-3 (Mehrzweckwaffe-3), KEPD, and TADS. Germany is expected to conduct further validation work on the TAURUS, now called MAW 2.1 TAURUS Concept. The MAW 2.1 concept calls for a weapon against hardened, high-value infrastructure targets. The Germans plan to have a MAW 2.1 system in service by 2001 or 2002. Germany

could procure some 600 standoff missiles to arm its Tornado and EF Typhoon fighters.

### Plant Expansion/Organization Update

DASA Japan. In April 1999, DaimlerChrysler Aerospace set up DaimlerChrysler Aerospace Japan Co, in a bid to better serve the Asian civil and military aerospace and space market. The new DASA subsidiary will be based in Tokyo. It is slated to raise DASA's annual sales in Japan from the 1998 level of \$130 million to around \$1 billion over the next 10 years. DASA will also be increasing its sourcing in Japan as part of an overall reorganization of its sales and purchasing operations in the Far East country and strengthening its ties with existing local partners.

### Mergers/Acquisitions/Divestitures

European Aeronautic Defence and Space Company. In October 1999, DaimlerChrysler, the French Lagardère Group and the French State agreed to merge the respective aerospace and defense activities into a new company which will be the world's third largest aerospace company. The new corporation, to be called European Aeronautic Defence and Space Company (EADS), will be created through the combination of Aerospatiale Matra SA and DaimlerChrysler Aerospace AG (DASA) and will be Europe's largest aerospace company. In December 1999, the Spanish aerospace company CASA joined EADS as a founding member (Note: Spain's state holding company SEPI [Sociedad

Estatal de Participaciones Industriales] currently holds the majority stake in CASA).

EADS was officially launched following its listing on the Madrid, Munich, and Paris stock exchanges on July 10, 2000.

DASA CEO Dr. Manfred Bischoff and Lagardère chairman Jean-Luc Lagardère head the board of EADS. The operative business is headed by two CEOs: Phillippe Camus of France and Rainer Hertrich of Germany. EADS is an N.V. according to Dutch company law in Amsterdam. EADS has dual headquarters in Munich and Paris.

As would be expected, EADS' ownership breakdown forms a complex structure that is designed to assuage the concerns of DASA over French state ownership and of the French government and union officials over workforce security. The primary shareholder of EADS is the Dutch Holding Partnership with a 65.57 percent stake. This partnership is composed as follows:

1. French pooling company (45.75 percent) - This is composed of the French government (50 percent), Lagardère (37 percent), and private institutions (13 percent)
2. DaimlerChrysler (45.75 percent)
3. SEPI (8.5 percent)

The remaining 34.43 percent of EADS was floated as a Dutch company on the Madrid, Paris, and Munich stock exchanges.

CASA Acquisition Dies Quietly. DaimlerChrysler Aerospace AG stole the 43rd Paris Air Show in Le Bourget with the announcement of a link-up between DASA and the Spanish CASA. The day before the air show opened, the Spanish state holding company SEPI and DaimlerChrysler had announced in Madrid that negotiations were to begin immediately on the first full cross-border merger of two European aerospace companies.

Under the terms of the Memorandum of Understanding, DASA will hold up to an 86.5 percent stake in CASA, with the Spanish state holding company SEPI retaining 11.5 to 13.5 percent. Although CASA is currently state-owned, this deal was expected to further accelerate its privatization process, which had been slowly moving ahead over the past year.

However, by year end negotiations were undercut by multiple difficulties, and a deal failed to materialize. The merger plan was then replaced by a last minute proposal to have CASA join EADS as a founding member.

Space Sector Merger. In January 1999, DaimlerChrysler Aerospace, GEC plc of Britain, and Lagardère of France finalized an agreement to merge their space divisions. The units included in the merger are DASA Space Systems Infrastructure, Dornier Satellite Systems, and Matra Marconi Space. In addition, the operation will integrate Finmeccanica's Alenia Aerospazio satellite unit. The new company will have \$3.6 billion in sales and rank fifth in the world's space industry behind Lockheed Martin, Boeing, Hughes Electronics, and TRW (see "Astrium" entry in Teaming section).

DaimlerChrysler Aerospace. In October 1998, following the merger of Daimler-Benz AG with the Chrysler Corporation, Daimler-Benz Aerospace AG changed its name to DaimlerChrysler Aerospace AG. The company will continue to use its abbreviation of DASA, however. (For more details on this merger, please refer to the report on DaimlerChrysler located in this binder.)

DASA/Bae Grab Siemens Defense Units. In November 1997, DASA and British Aerospace (BAe) purchased the Defense Electronics Group (SI) of Siemens AG. Under the joint bid, BAe offered to pay roughly \$530 million in cash for the Siemens-Plessey Systems business in the UK and the Siemens-Plessey Electronics Systems Australia subsidiary. DASA will take over the remaining activities located in Munich-Unterschleissheim. DASA did not disclose the value of its portion of the purchase. When the deal is completed, the Defense and Civil Systems Business Unit of DASA will have Unterschleissheim as its third location, along with Friedrichshafen and Ulm. Despite the joint purchase, BAe and DASA will not jointly run the businesses; they will run two separate defense electronics companies.

Stake in LFK Sold. In October 1997, DASA completed the sale of a 30 percent stake in its LFK-Lenkflugköpersysteme GmbH missile unit to Matra BAe Dynamics. According to company officials, this move "marks a further important step towards creating European structures urgently needed to boost global competitiveness." The new alliance employs 7,500 and is expected to be the second largest missile producer in the world just behind Raytheon-Hughes. The first project for the two companies will be planning a joint strategy which includes developing a new medium-range air-to-air missile. This sale follows the formation of strategic alliance between the space operations of DASA and Matra Marconi in May 1997.

Stake in Dornier Sold. In June 1996, Fairchild Aircraft acquired an 80 percent stake in Dornier Luftfahrt through the formation of Fairchild Dornier Luftfahrt, a

joint venture company in which DASA retains 20 percent. Under terms of the deal, Fairchild Aircraft acquired nearly all of Dornier's operations, including the Do 228/328 regional aircraft and Airbus components manufacturing business. DASA retained the unit's Airborne Warning and Control Systems maintenance unit. DaimlerChrysler initiated the move out of the regional aircraft because of the massive over-capacity in that industry of which both Fokker and Dornier were a part.

### **Teaming/Competition/Joint Ventures**

**Northrop Grumman.** In June 2000, Northrop Grumman's Integrated Systems and Aerostructures (ISA) sector and DaimlerChrysler Aerospace AG announced the next steps in their previously announced evaluation of potential business alliances in the areas of surveillance and reconnaissance. DASA is acting on behalf of the European Aeronautic Defence and Space Company (EADS), to be formed by the merger of DASA, Aerospatiale Matra and CASA. The first indication of the success of this effort, undertaken under a Memorandum of Understanding (MoU) signed on April 19, 2000, was the announcement by the two companies of their intention to collaborate on the APN-241 weather and navigation radar for the European A400M military transport aircraft.

Based on the ongoing evaluation of potential business alliances, additional areas of potential collaboration have been added to the MoU. Space equipment, interoperability technology, aerial targets, scenario analysis, towed devices, airborne electronic attack, and fire control radar applications are the additional opportunities to be jointly evaluated by the future EADS and Northrop Grumman. The two companies will assess these areas in addition to the opportunities announced in April 2000. The previously included programs are ground surveillance systems; high-altitude, long-endurance unmanned aerial vehicle (UAV) technology; maritime UAV technology, including real-time signal processing; airborne radar for military transport; naval radars; and wide bandwidth datalink technology for reconnaissance.

DASA and Northrop Grumman have so far established joint working groups and are engaged in evaluating each individual program area.

Prior to this, in May 1996, Northrop Grumman and DASA formed a team to produce the E-8 JSTARS systems should it be selected by NATO for Airborne Ground Surveillance (AGS) program.

**TAC ONE.** In August 1999, British Aerospace, DaimlerChrysler Aerospace, ITT Industries, GEC-Marconi, and Thomson-CSF formed a new joint

venture, TAC ONE, to bid on NATO's TACOMS post-2000 requirement to develop new NATO Standardization Agreements for tactical communications in 2005 and beyond.

**MAPO-MiG.** In August 1999, DASA, the Moscow Aircraft Production Organization (MAPO) and the Russian arms export agency Rozvoorouzhenie signed an MoU on Mikoyan MiG-29 upgrades. Earlier in 1993, the companies formed a joint venture, MiG Aircraft Product Support, to support the fleet of MiG-29s inherited by the German Air Force following reunification. The new venture will extend this company's activities into MiG-29 support and upgrade markets around the world.

**Reutech Radar.** In August 1999, DASA acquired a 33 percent stake in a South Africa-based joint venture Reutech Radar Systems for an undisclosed sum. The company is being formed with South Africa's Reunert Electronic Group and Kgorong Investment holdings, which own 37 percent and 30 percent of Reutech, respectively. The investment is expected to give DASA better access to South African markets.

**Astrium.** Announced in mid-1999, Astrium is a new organization that will include the space assets of Matra Marconi Space of France, DaimlerChrysler Aerospace of Germany, and later on, Alenia Aerospazio of Italy. Initially, DASA will own half of Astrium and its Franco-British partners the remaining half. Italy's Alenia Spazio, a Finmeccanica subsidiary, is poised to widen the company's base even further by joining Astrium within a number of months following its creation. If Alenia Spazio joins the group, Astrium's ownership would be split three ways with DASA, Matra Marconi Space and Alenia Spazio each holding a third of the company, according to a DASA spokesman. Astrium is to have its joint headquarters in Paris and Munich and the corporation will be registered in the Netherlands. According to DASA, the tri-national company will generate annual sales of EUR2.25 billion (US\$2.45 billion) and will employ more than 8,000 workers.

**Taurus GmbH.** In August 1998, LFK and Bofors formed the Taurus Systems GmbH joint venture to develop, produce and market the Taurus missile. LFK holds 67 percent of the venture and Bofors the remaining 33 percent.

**Matra Marconi/DASA-Dornier.** In May 1997, DASA and Matra Marconi formed a strategic space alliance called Matra Marconi/DASA-Dornier (MMDD). Each company will be an equal partner in the new joint space subsidiary which has combined sales estimated at \$2.7 billion. The new entity will be composed of Matra

Marconi Space and DASA's space operations. As part of the deal, Matra BAe Dynamics will acquire a 30 percent stake in DASA's missiles unit, LFK-Lenkflugköpersysteme GmbH.

**Elbit.** In March 1997, DASA, in cooperation with Elbit, submitted a revised bid for the Greek Air Force's F-4 Phantom upgrade program. DASA will handle systems integration and software development while Elbit will act as a subcontractor providing the mission computer and displays. DASA won the \$317 million contract to upgrade 39 aircraft in August 1997.

**GEC Thomson DASA Airborne Radar.** In January 1996, the joint venture of GEC Thomson Airborne Radar was expanded to include DASA. Cooperation among the three airborne radar companies became possible following the German government's signing of an Anglo-French-German MoU in September 1995.

**Alenia.** In September 1995, DASA and Finmeccanica's Alenia signed a cooperation agreement covering all fields of civil and military interest. DASA, which has suffered continuing losses due to the low value of the dollar, may begin shifting work to Italy where it would benefit from lower labor costs and a weak lire.

**GATR.** In June 1995, DASA announced plans to join the GATR (GEC Thomson Airborne Radar) consortium. GATR was originally formed in 1991 by Thomson-CSF and GEC to develop new airborne radars for military aircraft. It is currently conducting studies on an active antenna for a new radar which could be needed for midlife updates of the Rafale and Eurofighter.

**Denel.** In June 1995, DASA and Denel teamed to support the C.160 Transall military transport in response to the South African Air Force's decision not to sell the aircraft, but to use them for humanitarian missions. The C.160 support package has been identified as the first project between the two companies, which have signed a general collaborative agreement.

**Korean Commercial Aircraft Development Consortium.** This consortium includes Samsung Aerospace, Daewoo Heavy Industries, Korean Air, and Hyundai. In March 1995, DaimlerChrysler Aerospace signed a Memorandum of Understanding with the consortium to pursue feasibility studies that could give birth to an all-new regional twin-jet.

**Northern Telecom.** In March 1995, DASA and Northern Telecom Limited of Canada announced the formation of a joint venture company, Nortel DASA Network Systems, to address the market for telecommunications products in Germany and markets in Eastern Europe.

**Davia.** In February 1995, Aviaprobort of Russia and DASA formed an avionics joint-venture called Davia. The company is focused on navigation and flight control systems for aircraft.

**Bofors.** In January 1995, DASA and Bofors of Sweden agreed to the joint development and production of the Taurus family of medium- and long-range air-to-ground standoff missiles which they intend to market as a European system family. In April 1996, these two companies jointly established an office in England in support of their joint bid for the UK's CASOM requirement.

**HAI.** In November 1994, DASA and Hellenic Aerospace industry signed an agreement covering potential cooperation in the fields of civil and military aircraft, helicopters, defense technology, and satellite communication. The new marketing company is called DaimlerChrysler Aerospace Hellas.

In 1999, HAI and DASA expanded their cooperation to cover the upgrade of Greek F-4 Phantoms. HAI will also manufacture fuel tanks for the Eurofighter and satellite components for the space division. In addition, HAI will produce aeroengine components for MTU.

**Khrunichev.** In September 1994, DASA and Khrunichev of Russia teamed to re-equip the 120 ton Rockot booster to carry communications satellites. The Rockot was originally designed as a military booster. The two companies subsequently formed a joint venture Eurokot Launch Services GmbH to market the Rocket vehicle worldwide.

**EurasSpace.** In July 1994, DASA and China Aerospace formed a 50/50 joint venture satellite company called EurasSpace. EurasSpace is aimed at developing, producing and marketing communications and Earth-observation satellites and related ground equipment. The company's first project will be the Sinosat-1 communications satellite, to be deployed on Chinese Long March rocket.

**Siemens.** In May 1994, DASA and Siemens announced that they were holding discussions on closer cooperation between their defense electronics businesses. The talks involve potential closer links between Siemens and DASA's Radar and Radio Systems unit. The companies said that the talks were aimed at keeping a core defense capability in Germany and avoiding dependence on foreign suppliers.

**Rockwell.** In January 1995, DASA and Rockwell formed a joint venture to market satellite-based navigation and landing systems. The joint venture will be based in Ulm, Germany. Earlier, at the Paris Air Show in 1993, DASA and Rockwell Collins agreed to

jointly develop projects linking avionics and other aircraft systems as well as air traffic control networks. The current MoA expresses interest in combining the capabilities of Rockwell's Collins Commercial Avionics Units and DASA's Radar and Radio Systems division. The new company will develop and market products such as satellite-navigation and automatic landing systems. The new venture is called Collins DASA Avionics GmbH.

**Panavia.** Panavia Aircraft GmbH, Munich, Germany, consists of British Aerospace plc (42.5 percent), DaimlerChrysler Aerospace (DASA) (42.5 percent), and Alenia (into which Aeritalia was merged in 1991) (15 percent). British production takes place at Preston, Lancashire; German production at Munich; Italian production at Turin.

**TEMIC Telefunken.** In 1992, DASA transferred its microsystems and vehicle safety activities to TEMIC Telefunken microelectronic GmbH. TEMIC is a joint venture in which DASA and DaimlerChrysler subsidiary AEG each maintain a 50 percent interest. This new company represents the consolidating of all of DaimlerChrysler's activities in the fields of semiconductors, microsystems, and vehicle equipment.

**Tupolev.** After the MosAero Show in September 1993, DASA announced that it had signed some key Memorandums of Understanding with a variety of companies in the former Soviet Union. DASA is now teamed with the Tupolev design bureau of the former Soviet Union in a joint study on hydrogen propulsion systems for aircraft. Also, DASA signed agreements with the following companies: VIAM and VILS for studies for improved aluminum-lithium alloys for aircraft fuselage structures, DaimlerChrysler Aerospace Airbus and the Russian TsAGI concerning the aerodynamics of subsonic and supersonic passenger aircraft, and NPO Energia for space technology research.

**DaimlerChrysler Aerospace Airbus.** In October 1992, DaimlerChrysler AG renamed DaimlerChrysler Airbus DaimlerChrysler Aerospace Airbus and listed the operation under the Aircraft Group of DASA. DaimlerChrysler Aerospace Airbus is a 37.9 percent shareholder in the **Airbus Industrie** consortium. Created in late 1970, Airbus Industrie (GIE) is located in Paris, France. This consortium consists of Aerospatiale (37.9 percent), DaimlerChrysler Aerospace Airbus (37.9 percent), British Aerospace (20 percent), and CASA (4.2 percent). Fokker of the Netherlands, Belairbus of Belgium, and Alenia of Italy are associate members of the consortium. Additional risk-sharing partners may

be added for development purposes. The present production aircraft are the A300 and A310 widebody transports and the A320 twin-engine narrow-body aircraft.

In December 2000, Airbus officially launched the new A380 passenger aircraft. The A380 is to be offered in five passenger versions with capacities ranging from 481 to 656 seats and a freighter version with a 150 ton payload capability.

In January 2001, EADS and BAE Systems reached agreement on the formation of a new Airbus Company. The new company will be 80 percent owned by EADS and 20 percent by BAE Systems.

**Eurocopter.** In January 1992, Aerospatiale and the former MBB, now wholly absorbed into DASA, consolidated their helicopter divisions. Share capital is held on two levels: Eurocopter Holding SA's primary share owner is Aerospatiale with 60 percent and 40 percent held by DASA; in turn, Eurocopter SA is held 75 percent by Eurocopter Holdings and 25 percent by Aerospatiale. With the formation of Eurocopter, all national and international subsidiaries and partially owned companies formerly belonging to DASA/MMB and Aerospatiale are now under the management of Eurocopter SA. Eurocopter is structured as follows:

1. Eurocopter Holding SA
  - 1.1 Eurocopter SA
    - 1.1.1 Eurocopter France
    - 1.1.2 Eurocopter Deutschland
    - 1.1.3 Eurocopter International
    - 1.1.4 Eurocopter Participation

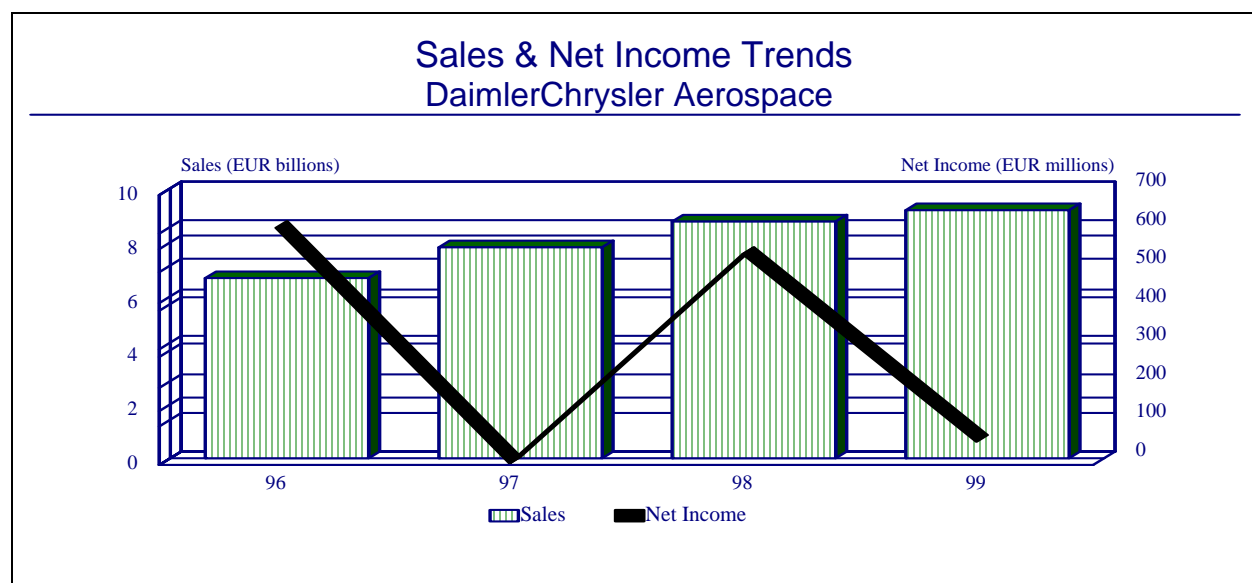
**Euromissile GIE.** This is an industrial consortium for the production and sale of Milan, HOT, Roland, and TRIGAT missile systems. Euromissile was formed in 1972 by Aerospatiale and MBB (now absorbed by DASA), each holding 50 percent. An offshoot of this consortium, the Euromissile Dynamics Group, was recently formed to study the design of third-generation anti-tank guided weapons. Member companies include Aerospatiale, British Aerospace Dynamics, and DASA.

**Eurosatellite.** Eurosatellite GmbH, founded in 1978, is a European company with headquarters in Munich, forming a permanent association of five large parent companies for the promotion, development and production of telecommunications satellites and direct broadcasting satellites in particular. Shareholders with a 24 percent stake in the company include Alcatel-Espace (France), Aerospatiale (France), and DaimlerChrysler Aerospace (Germany). ETCA (Belgium) holds the remaining 4 percent.

## Financial Results/Corporate Statistics

DaimlerChrysler Aerospace posted 1999 sales of EUR9.2 billion compared with 1998 sales of EUR8.8 billion. The company posted gain of EUR60 million for 1999 compared with EUR547 million in 1998. The latest statistics are provided below.

| Y/E December 31  | 1996 | 1997 | 1998 | 1999 | 1999 |
|------------------|------|------|------|------|------|
| (EUR millions)   |      |      |      |      | US\$ |
| Net Sales        | 6674 | 7816 | 8770 | 9191 | 9255 |
| Net Income       | 615  | 4    | 547  | 60   | 60   |
| R&D Expenditures | 1882 | 2233 | 2047 | 2005 | 2019 |

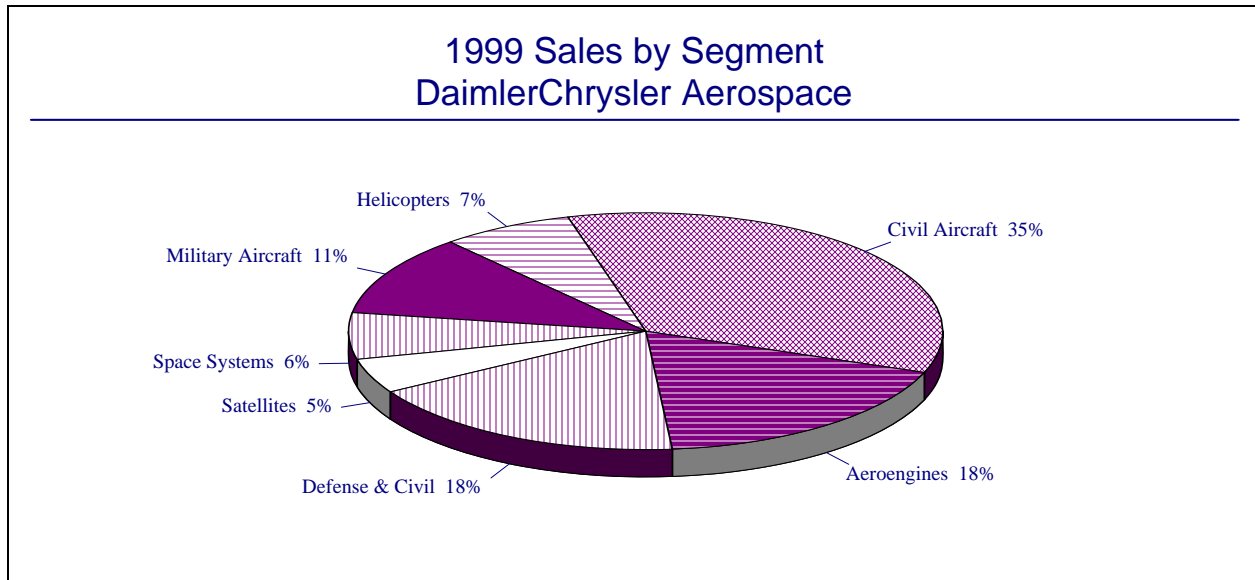


### Industry Segments

A breakdown of DaimlerChrysler Aerospace's sales by major market segment for the past three years is given below.

| SALES BY SEGMENT             | 1997        | 1998        | 1999        |
|------------------------------|-------------|-------------|-------------|
| (EUR millions)               |             |             |             |
| Civil Aircraft               | 2433        | 2962        | 3340        |
| Helicopters                  | 620         | 680         | 705         |
| Military Aircraft            | 846         | 957         | 1077        |
| Space Systems Infrastructure | 565         | 582         | 592         |
| Satellites                   | 741         | 645         | 458         |
| Defense & Civil Systems      | 1453        | 1729        | 1724        |
| Aeroengines                  | 1515        | 1660        | 1742        |
| Intersegment                 | -357        | -445        | -447        |
| <b>TOTAL</b>                 | <b>7816</b> | <b>8770</b> | <b>9191</b> |





### Strategic Outlook

Following the Franco- German-Spanish accord that ultimately led to the formation of the new European Aeronautic Defence and Space Company, DASA along with partners Aerospatiale Matra and CASA, has altered the aerospace industry in Europe forever.

However, as the initial flush of success begins to wear off, the three companies are faced with the reality of their titanic task in combining operations. The new EADS will have more than 96,000 employees working in three languages. In addition, the company's managers must overcome France's ingrained dogma concerning employment at almost any cost.

In the US, the merger has led to much transatlantic trepidation as industry and government officials fear the formation of a "Fortress Europe" mentality that would seek to exclude competition from American industry in order to protect jobs. In addition, officials fear this more protectionist Europe would potentially undermine NATO as the capability gap between the US and its allies widens, creating problems with interoperability and alliance cohesion.

Further exacerbating this situation in the US are stringent export controls. The Pentagon has deep reservations about industrial linkages between US and French companies – especially over technology transfers to the French. This attitude has made it

extremely difficult if not impossible for transatlantic industrial relationships to occur.

A result of this situation could be an industrial cold war between the US and Europe. In this situation, the US companies would sell to the US market, while European companies would sell to Europe. But as the two players moved to the world markets competition would heat up, possibly leading to unwanted and unnecessary weapons proliferation.

To its credit, EADS is moving to assuage such fears by initiating trans-Atlantic partnerships with US companies. Already the company has signed an MoU with Northrop Grumman to evaluate business partnerships in surveillance and reconnaissance. Further such efforts are expected as EADS seeks to establish its place as one of the world's largest aerospace and defense companies.

Despite the potential problems facing the new EADS, its creation has rejuvenated ties between France and Germany. The relationship had been under increasing strain in the past few years due to a series of misunderstandings and broken promises. Now, in one decisive action, the two countries have reformed their ties and in the process advanced the process of unifying Europe.

### Prime Award Summary

Unavailable

### Program Activity

Some important aerospace and government programs currently under way at DaimlerChrysler Aerospace are

listed below. The briefs are intended to provide a listing of programs that are of major importance to the

company. For detailed information or analysis of specific aerospace and defense programs or equipment, please refer to the appropriate FORECAST INTERNATIONAL binder (for example, AIRCRAFT, MILITARY VEHICLES, WARSHIPS, MISSILES, ELECTRONICS, and GAS TURBINES). The following is an outline of the company's business interests:

- Aircraft
- Civil and Military Fixed-Wing Aircraft
- Civil and Military Helicopters
- Defense Electronics
- Gas Turbines
- Missiles
- Space Systems

*The following programs are run by EADS.*

### **Aircraft Programs**

#### **Airbus A300/A310/A320/A330/A340/A380**

EADS is the majority owner (80 percent) of The Airbus Company. BAE Systems owns the remaining 20 percent. Prior to the formation of EADS, Airbus was a consortium that consisted of Aerospatiale (37.9 percent), Deutsche Airbus (37.9 percent), British Aerospace (20 percent), and CASA (4.2 percent). Belairbus of Belgium is an Associate Member of the consortium. Additional risk-sharing partners may be added for this particular aircraft's development. Please see the AIRBUS report located in this binder for more details.

#### **A300/A310/A320/A330/A340/A350**

DaimlerChrysler Aerospace is an integral part of Airbus Industrie (GIE). This consortium consists of Aerospatiale (37.9 percent), DaimlerChrysler Airbus (37.9 percent), British Aerospace (20 percent), and CASA (4.2 percent). Belairbus of Belgium is an Associate Member of the consortium.

#### **AT-2000**

In November 1996, Denel and DASA proposed constructing a new military aircraft trainer that could double as a light fighter. Dubbed the AT-2000, the aircraft would be built by DASA with avionics supplied by Denel Aviation. Then, in March 1997, DASA brought Hyundai in on the project. According to DASA, Hyundai would construct the center and rear fuselage, and the empennage. The companies hope to offer the AT-2000 as an alternative to the Samsung/Lockheed Martin KTX-II trainer.

#### **Eurocopter**

Please refer to the **EADS** report for details on Eurocopter programs.

#### **Eurofighter Typhoon**

This is an advanced technology, twin-engine, air superiority combat fighter aircraft. Eurofighter Jagdflugzeug GmbH, Munich, Federal Republic of Germany, is a consortium formed in 1986 to manage the EFA program. The initial EFA project definition was carried out in Munich. Under the currently structured EFA, Britain is responsible for 36.33 percent of development costs, Germany for 30 percent, Italy for 20 percent, and Spain the remaining 13.67 percent. Design teams from BAe, DaimlerChrysler Aerospace, Alenia, and CASA represented their respective countries in the development of the EFA. Each of the four manufacturers was to maintain a final assembly line, with production shared without duplication of tooling. In December 1997, the go-ahead for production was signed by the partner countries.

#### **European Future Large Aircraft (FLA)**

This is an advanced technology, multi-engine military tactical transport aircraft. The FLA was originally designed as a replacement for Lockheed C-130 and Transall C-160 tactical transports. Additional applications include aerial refueling, reconnaissance, airborne early warning, and maritime patrol. Airbus Industrie, Airbus Military Company (AMC) is the leading contractor. The partners in AMC are Aerospatiale of France, Alenia of Italy, British Aerospace of the UK, CASA of Spain, DaimlerChrysler Aerospace of Germany, and TUSAS of Turkey. Associate members include Flabel of Belgium and OGMA of Portugal. FLA program management was transferred to AMC in 1995 from the EUROFLAG consortium. In the present defense budgetary environment in Western Europe, development and production costs could prove to be a formidable (and politically insurmountable) obstacle to the program. Thus, production of the FLA is not forecast.

#### **High Speed Commercial Transport (HSCT)**

This is a government- and industry-supported study of the next-generation commercial supersonic passenger transport aircraft. The US High Speed Commercial Transport (HSCT) is sponsored by the National Aeronautics and Space Administration (NASA) and industry. The European Supersonic Research Program (ESRP) is sponsored by French, British, and German industry. Japanese HSCT efforts are sponsored by industry and the Ministry of International Trade and Industry (MITI). The Russian Tu-244 is sponsored by industry and the Russian government. ESRP involves Aerospatiale, British Aerospace, and DaimlerChrysler Aerospace (DASA). Other Western European firms that have been involved in HSCT efforts include Alenia, Rolls-Royce, FiatAvio, MTU, SNECMA, and ONERA. In April 1994, a Memorandum of Understanding was

signed by British Aerospace, Aerospatiale, and DASA regarding a future supersonic transport project. The firms' individual conceptual studies were merged into the ESRP. Design goals include a take-off weight of not more than 325,000 kilograms, the ability to cruise at Mach 2+ for six hours, and cabin space for 250-300 passengers in a three-class configuration.

### **Panavia Tornado**

This is a twin-engine, two-seat, high-performance, all-weather multirole strike and air combat fighter. Production has halted until work begins on 48 additional aircraft purchased by the Saudis. On January 28, 1993, the British government announced that an agreement had been reached with Saudi Arabia covering the purchase by the Middle Eastern nation of a further 48 Tornado IDS aircraft. British Aerospace is the prime contractor on the deal.

### **Electronic Programs**

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#### **APY-2 (AWACS)**

This is an airborne early-warning surveillance and control radar (AWACS). DASA is responsible for co-production of NATO radars.

#### **NATO ACCS**

This is an automated airspace command and control system designed to provide an automated command and control system for Western European airspace in support of European air operations. NATO ACCS will also have a battle management function, directing both offensive and defensive air operations in NATO airspace. DASA is part of the ASM consortia. The program is in early development. The full system will include ten regional command centers interlinking with other NATO command and control elements.

### **Gas Turbine Programs**

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See report on **MTU Motoren- und Turbinen-Union** located elsewhere in this binder for details on DaimlerChrysler's engine activities.

### **Missile Programs**

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#### **ALARM**

ALARM is an anti-radiation missile developed and produced by British Aerospace. Major subcontractors include Bayern Chemie, Irvin GB, Lucas Aerospace, Marconi Defence Systems Ltd, DaimlerChrysler Aerospace (DASA)/Messerschmitt-Bolkow-Blohm, ML Aviation, MSA Britain (thermal batteries), Portsmouth Aviation (containers) and Thorn-EMI, among many others. Bayern Chemie, a subsidiary of DASA, is providing the ALARM's Bayard dual-thrust solid-fuel rocket motor.

#### **APACHE**

This is a modular air-to-surface weapon system developed by Matra-Hachette, France. DaimlerChrysler Aerospace SA (DASA) was participating in the production of APACHE via the APACHE-MAW (Modular Abstands Waffe) consortium. This consortium was formed after Germany's selection of the APACHE for the Luftwaffe. However, the APACHE-MAW program was canceled in 1996.

#### **ASRAAM**

This is a next-generation short-range air-to-air missile system. The ASRAAM will use a high-explosive warhead provided by DaimlerChrysler Aerospace. DASA will also provide the warhead's sensors. Thorn-EMI will supply the active (infrared) laser proximity fuze from its facility in Bradford.

#### **EuroMEADS**

This is a medium-range land-based air defense missile system. MEADS has experienced some delays, but a contractor team (led by Lockheed Martin) was selected in 1999 as the program's prime contractor. In addition to Lockheed Martin, EuroMEADS is made up of DaimlerChrysler Aerospace's LFK-Lenkflugkörper-systeme GmbH and Alenia Marconi Systems. Work share on the MEADS will be split 55-45 between the US and European partners. Full-scale development could commence in 2003.

#### **HOT/HOT 2/HOT 2T**

This is a high-subsonic, optically guided, tube-launched anti-tank surface-to-surface and air-to-surface missile developed and produced by Euromissile. Additional HOT 2 missile models are in production, although orders have yet to be placed for the new HOT 2MP which is available. HOT 2T (previously called HOT 3) is now in service with the French Armed Forces. Euromissile has also introduced the HOT 3, which will have the same characteristics of the HOT 2T but will be outfitted with an anti-jamming device. Production of the original HOT, which commenced in 1978, and the HOT 2, which started in 1985, has been concluded.

#### **Kormoran (AS.34)**

The Kormoran is an air-launch anti-ship missile. DASA is the prime contractor on this program. Serial production of the Kormoran 1 ceased in 1987. Serial production of the Kormoran 2 was delayed into the early 1990s. Germany is said to have a requirement for some 175 improved missiles, although other sources put this total as high as 262.

#### **MILAN**

This is a man-portable medium-range anti-tank missile system developed and produced by Euromissile.

### MIM-104 Patriot

The Patriot is a land mobile, medium- to high-altitude, surface-to-air guided missile system. The Patriot is being adapted for the anti-tactical missile role. It is designed and produced by Raytheon and Lockheed Martin. Lockheed Martin supports production of the Patriot missile at Raytheon's Andover (Massachusetts) facility and performs final assembly. Raytheon has established a new joint venture company with DaimlerChrysler Aerospace (DASA) to pursue missile requirement contracts involving the United States and Germany. Two new firms have been formed: Systems for Defense, Bedford, Massachusetts, and Gesellschaft für Verteidigungssysteme GmbH, Munich, Germany.

### PARS-3/TRIGAT

This is a third-generation, anti-tank missile system for medium- and long-range applications on helicopters and land vehicles. The two missiles are designated TRIGAT-MR (Medium-Range) and TRIGAT-LR (Long-Range). The system is also known in Germany as the PARS-3 (Panzerabwehr Raketensystem 3 or anti-tank rocket weapon system - third generation), as the ATGW3 in the United Kingdom, and as the AC3G in France. The missiles are being developed by the Euromissile Dynamics Group (EMDG), composed of Aerospatiale, British Aerospace, and DaimlerChrysler Aerospace. France is responsible for the development of the medium-range system, while the United Kingdom and the Federal Republic are working on the long-range variant.

### Polypheme

This is an air-, sea- (surface and submarine), and ground-launched fiber-optics guided missile for multiple applications. Aerospatiale Matra and DaimlerChrysler Aerospace are cooperating in the development of Polypheme. DASA will work on the missile's imager, while Aerospatiale will concentrate on its fire/command unit and the rear portion of the missile. Italy joined the program in 1993. Italy will work on the system's ground station and launcher (developing and testing experimental tubes). Once the Polypheme reaches its full-scale development phase, Euromissile will take over direct management.

### R.440/R.460/VT-1

These are all-weather, short-range surface-to-air missiles. The R.440/R.460 missiles were developed and produced by Matra SA. Thomson-CSF Missile Systems Group has responsibility for the various weapon systems that use the missiles. Aerospatiale of France and DaimlerChrysler Aerospace manufacture the VT-1 in Europe under the Euromissile consortium. Production of the VT-1 missile continues.

## Space Programs

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### AMOS

AMOS (Affordable Modular Optimized Satellite) is a family of small communications satellites for deployment in geosynchronous orbit. Israel Aircraft Industries Ltd, MBT Systems & Space Technology Electronics Division, Yehud, Israel, is the program's prime contractor. Additional contractors include Alcatel Espace (communications payload), DASA (propulsion, attitude control and power system), Barnes Engineering (Earth sensors), and Space Systems/Loral (batteries).

### Ariane Boosters

Dornier provides the propellant tanks for the second stage of the Ariane 4 expendable launch vehicle currently in production, and it is providing the tank bulkheads for the larger Ariane 5, which was expected to debut in the mid-1990s. Arianespace intends to manufacture eight Ariane 5 vehicles per year, which correspond to 24 tank bulkheads. The company is also responsible for the Ariane 5's Speltra, an external support structure for double or triple payloads.

### Arabsat

Arabsat is a geostationary commercial telecommunications satellite system. Aerospatiale is the prime contractor for Arabsat 1 and Arabsat 2, with Space Systems/Loral supplying the payload and ASCO components for the Arabsat 1 series. Other major contractors include AEG (electrical power generation subsystems), DASA (liquid propulsion systems), Alcatel (payload), and Alenia (antenna and telemetry equipment). Arabsat 1A, 1B, and 1C are in orbit, although only 1C is operational. Arabsat bought the former Anik D2 satellite in March 1993 and renamed it Arabsat 1D; it began operations in August 1993.

### Cassini

Cassini is a science spacecraft to explore Saturn and its moon Titan. The National Aeronautics and Space Administration, Jet Propulsion Laboratory (JPL), Pasadena, California, produced the Cassini spacecraft, while Aerospatiale Matra (with partners DaimlerChrysler and Alenia), Les Mureaux Cedex, France, developed the Huygens Titan moon probe. Cassini was launched aboard a Titan IV launch vehicle in October 1997. Following a six-and-one-half-year voyage, the spacecraft will orbit Saturn for four years.

### Columbus Orbital Facility

The Columbus Orbital Facility (COF) is a European science laboratory to be attached to the International Space Station. DaimlerChrysler Aerospace, Space Infrastructure Division is developing and producing and will support the Columbus Orbital Facility under a \$838

million fixed-price contract. Alenia Aerospazio is responsible for definition, development and pre-integration of the complete thermo-mechanical part of the COF system, called the PICA. Alenia Aerospazio has selected Aerospaziale to build the meteoroid-debris protection subsystem for the COF. The laboratory is scheduled for launch on a Space Shuttle orbiter in late 2002 or early 2003.

### DFH-3

The DFH-3 (Dong Fang Hong) is a Chinese communications satellite. China Aerospace Corp, Chinese Academy of Space Technology, Beijing, is the prime contractor for the DFH-3 satellites. DFH-3 subcontractors include DaimlerChrysler Aerospace (system definition, antennas and attitude control), Teldix GmbH, Heidelberg, Germany (solar array drive assemblies), and Officine Galileo SpA, Florence, Italy (IRES IR Earth sensor). DFH-3 upgrade and DFH-4 satellites will be produced by a 50/50 joint venture between China Aerospace Corp and DASA headquartered in Munich. The first of two DFH-3 satellites was launched in November 1994 on a Chinese CZ-3A (Long March 3A) expendable launch vehicle but was declared a total loss in January 1995 after the satellite depleted its attitude control propellant. Its replacement was launched in May 1997 on a CZ-3A rocket.

### DFS-Kopernikus

DFS-Kopernikus is a German domestic communications satellite system. Siemens AG, Munich, Germany, is head of Gesat GmbH, formed to market Kopernikus, and is overall prime contractor. Additional contractors include DASA-ERNO, Bremen, Germany (flight segment), ANT Nachrichtentechnik GmbH (ANT) (payload), Standard Elektrik Lorenz (SEL) (TTCM equipment), and Dornier System GmbH (also part of DaimlerChrysler Aerospace) (ground-based control systems). Three satellites are in orbit.

### ERS

The European Remote Sensing (ERS) satellite is an ice-, coastal-, and ocean-monitoring spacecraft. DaimlerChrysler Aerospace is the prime contractor for the ERS. Matra Marconi Space is prime contractor for the payload platform and related activity, and Fokker Space Systems for the assembly, integration, and testing of the spacecraft structural model and the payload systems. The ERS is designed to perform meteorology, oceanography, and climatology studies as well as providing ship routing, iceberg, pollution and fishing monitoring. ERS-2 was launched in April 1995 and remains operational. ERS-1 was placed in a stand-by mode in May 1996.

### ESA Polar Platform

The European Space Agency (ESA) Polar Platform program is developing a series of Earth resources satellites. Dornier is the MERIS' (medium resolution imaging spectrometer) prime contractor under this program. MERIS, used for ocean color monitoring, is one of several instruments on board the first Envisat satellite. These satellites are in development; Envisat was scheduled for launch in 2000, while Metop-1 will be deployed into low-Earth orbit in 2003.

### Eutelsat

Eutelsat is a European commercial communications satellite system. Prime contractor for the Eutelsat II satellite (Spacebus 2000 bus) is Aerospaziale. Additional contractors include Alenia (Italy), Alcatel-Espace (France), CASA (Spain), Ericsson Radio Systems (Sweden), ETCA (Belgium), Marconi Space Systems (UK), DASA (Germany), and Crouzet (France). The Eutelsat system provides regional telecommunications in Europe: full-time transponder leases, telephony, occasional TV, VSAT, and land-mobile communications by way of the Euteltracs system.

### Globalstar

Globalstar is a satellite-based mobile communications system. Space Systems/Loral, Palo Alto, California, is responsible for development of the Globalstar satellite bus. TESAM, a joint venture between France Telecom and Alcatel, will be an owner and exclusive franchise operator for Globalstar in France. In addition, Alcatel will build the communications payloads. Alenia Spazio, also an investor in the project, is providing the Globalstar active antennas and integrating the satellite's payload and skeletal structure. DaimlerChrysler Aerospace is also helping in the design and construction of the satellites (solar arrays and propulsion and attitude systems). AirTouch of San Francisco, California, is the exclusive Globalstar service provider in the United States. Qualcomm is designing the Globalstar handsets and ground control stations.

### Helios

Helios is a military imaging reconnaissance satellite. Matra Marconi Space is the Helios 2 prime contractor, with Aerospaziale Matra supplying the spacecraft's optical instrument and DaimlerChrysler Aerospace developing a night infrared sensor.

### Horus

Horus is a proposed military reconnaissance satellite designed to provide all-weather, 24-hour-a-day remote sensing applications. DaimlerChrysler Aerospace will be the Horus prime contractor, providing system engineering and the spacecraft's synthetic aperture radar (SAR). This program is expected to be replaced by the

SAR Lupe (Synthetic Aperture Radar Magnifier), a proposed military reconnaissance satellite. DaimlerChrysler Aerospace's Dornier Satellitensysteme GmbH subsidiary, Munich, and OHB-System GmbH, Bremen, Germany, are each working on one-year design studies.

### **International Space Station**

The International Space Station is an orbiting crewed research and work center. Boeing Defense and Space Group, Missiles and Space Division is the International Space Station's prime contractor. DaimlerChrysler Aerospace is one of numerous subcontractors to Boeing for components or services.

### **Italsat**

Italsat is a three-axis stabilized domestic telecommunications satellite that forms the space-based portion of the Italian Space Agency's Advanced Satellite Communications System. Alenia Spazio, Rome, Italy, is prime contractor for the satellite and related ground stations. DaimlerChrysler Aerospace is a subcontractor on the propulsion system. Italsat F1 was launched on an Ariane 44L booster in January 1991. Italsat F2 followed on a 44L in August 1996.

### **Meteosat**

This is a family of geosynchronous meteorological satellites. Aerospaziale is the Meteosat prime contractor, responsible for system AIT and development of mutation dampers (with Onera) and head of the COSMOS industrial consortium, which comprises DASA (structure, thermal controls, and solar array), ETCA (power supply and conditioning), Marconi Space Systems Ltd (AOCS, EGSE, radiometers and amplifier equipment), SAT (telemetry equipment and solar cells), Alenia (data transmission equipment), and Siemens (S/UHF transponders). GE American Communications, Princeton, New Jersey, provides Meteosat communications between Wallops Island, Virginia, and National Oceanographics and Atmospheric Administration (NOAA) facilities in Suitland, Maryland. Seven Meteosats have been produced.

### **Radarsat**

Radarsat is a synthetic aperture radar remote sensing satellite. Dornier is supplying high-power amplifiers for the spacecraft, which was launched in January 1995. Radarsat will provide remote sensing in the areas of ice

reconnaissance, coastal surveillance, land use mapping, and agricultural and forestry monitoring. The Radarsat program is in advanced development. The first satellite was launched aboard a Delta expendable launch vehicle in September 1995.

### **Rocket**

Rocket is a medium-size expendable launch vehicle. Khrunichev Enterprises, Moscow, produced the SS-19 ICBM (designed by KB Salyut), from which the Rocket is derived. The Rocket expendable launcher is being marketed by Eurokot Launch Services GmbH, a joint venture between Khrunichev Enterprises, Moscow, and DaimlerChrysler Aerospace. Suborbital test launches took place in November 1990 and December 1991. The rocket's first orbital mission occurred in December 1994.

### **Rosetta**

Rosetta is a mission to rendezvous with Comet Wirtanen. Dornier Satellitensysteme, a unit of DaimlerChrysler Aerospace, is the prime manufacturer for the Rosetta spacecraft. Rosetta is slated for launch on an Ariane 5 expendable launch vehicle in January 2003. Rendezvous with Comet Wirtanen is planned for August 2011.

### **SAR Lupe**

SAR Lupe (Synthetic Aperture Radar Magnifier) is a proposed military reconnaissance satellite. The SAR platform would provide all-weather, day/night surveillance. The program would replace Horus. If developed, SAR Lupe satellites would probably be deployed in the middle part of the next decade. DaimlerChrysler Aerospace's Dornier Satellitensysteme GmbH subsidiary, Munich, and OHB-System GmbH, Bremen, Germany, are each working on one-year design studies.

### **Spacebus Series**

Spacebus is a family of communications satellite models produced by Eurosatellite GmbH, Munich, Germany. Shareholders in the company include Alcatel-Espace (France), Aerospaziale (France), DASA (Germany), and ETCA (Belgium). The Spacebus satellite series is intended for use in telephone/data communications and direct broadcast television. Nearly 40 satellites have been produced.

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