

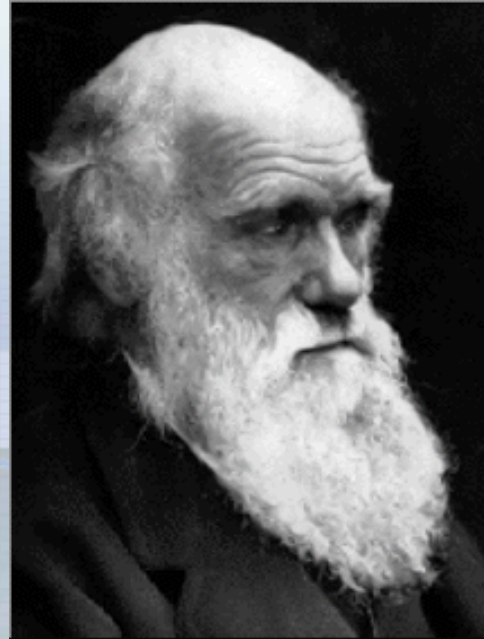
Innovation in the Aerospace & Defence Industry

-

A European Perspective

Daniel DEVILLER
EADS Chief Technology Officer

About Innovation



***“It is not the strongest of the species who survives,
not the most intelligent,
but the one **most responsive to change**”***

Charles Darwin

Innovation is a key process

Innovation is not just about technology



The Company

Date of foundation: July 10, 2000

Foundation companies: **Aerospatiale Matra SA**
CASA (Construcciones Aeronáuticas SA)
DaimlerChrysler Aerospace AG

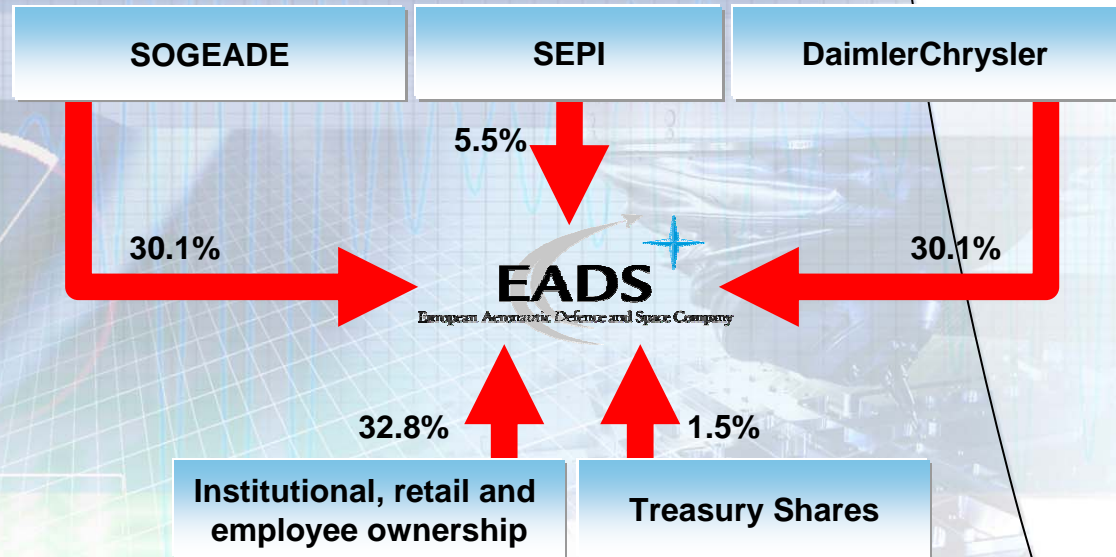
EADS Capital Structure as of December 2003



Philippe Camus

Rainer Hertrich

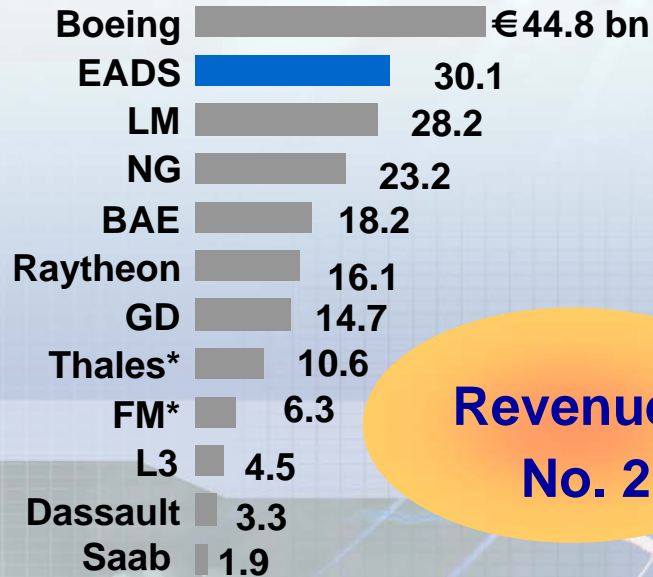
Chief Executive Officers



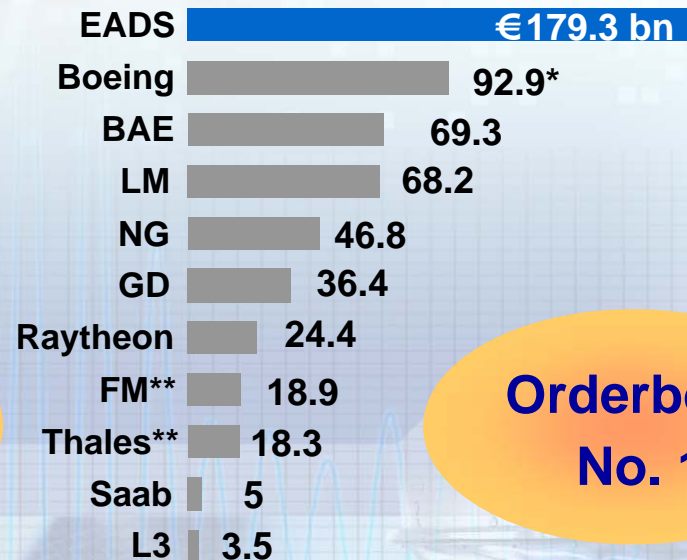
➔ **EADS today is the second-largest group in the global aerospace and defence industry, with a unique range of products and services**

EADS: A Global Leader

2003 figures for Aerospace & Defence activities



**Revenues
No. 2**



**Orderbook
No. 1**

*Reported backlog of firm contractual orders
**Thales & FM backlogs are estimated

... with leadership in all segments

Commercial Aircraft (*Airbus*)

Helicopters (*Eurocopter*)

MTA

Military Aircraft

Satellites (*Astrium*)

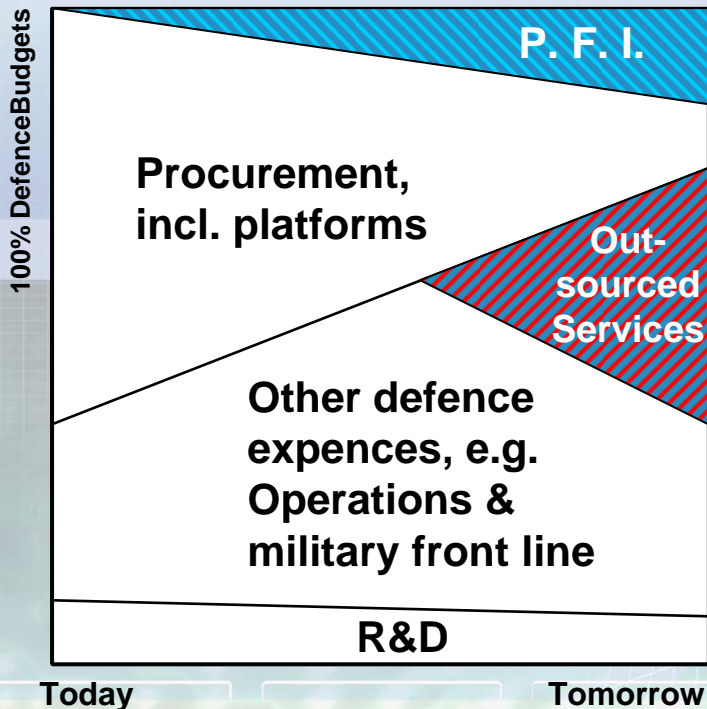
Missiles (*MBDA, LFK*)

Commercial Launchers (*Ariane*)



Growing Market Potential

For outsourced military services and increasing governmental demand for PPP/PFIs (Public – Private Partnerships/Private Finance Initiatives,)



Market Size for Outsourced Services and PFI

New Market Opportunities ...

Defence companies must adapt to **new service opportunities**

Traditional **Defence Business Model** must be aligned to the new form of customer demand

Higher competition, as market is open to other non-defence companies

... and growing demand for providing new financing options



Military Services with Paradigm



Future Strategic Tanker Aircraft

EADS Group Research & Technology

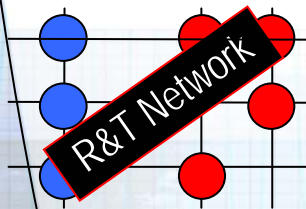
Innovation in EADS through Research & Technology:

One core of the company's sustainable growth of value is the innovation potential in our Business Units and the Corporate Research Center

Supported by a balanced system of decentralized and centralized R&T and R&D resources, **coordinated by the EADS R&T Network**

Based on a high degree of cooperation and integration **with public and private research organizations and institutions**

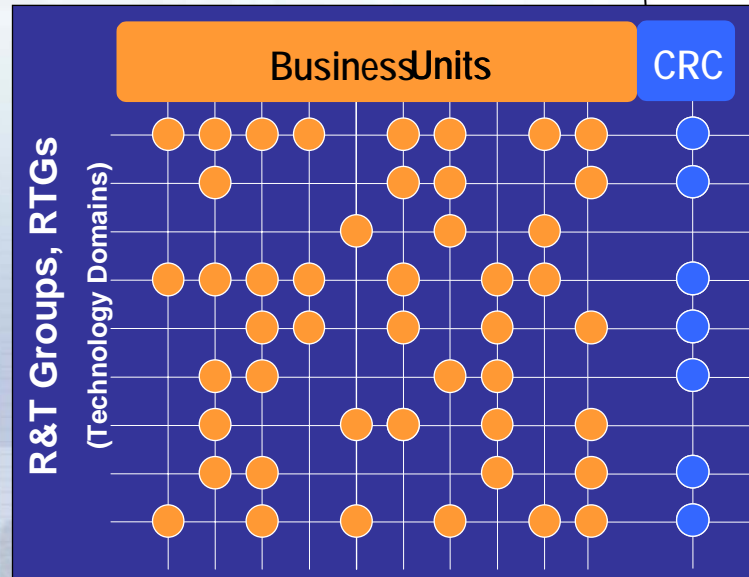
Proven by numerous first-time technology breakthroughs and international awards **given to EADS researchers**



EADS
R&T

EADS Group Research & Technology

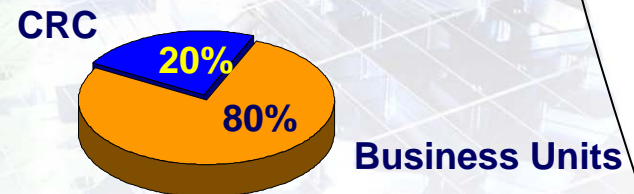
Two Main Pillars and Innovation Drivers



Corporate Research Centre
Main Sites: Suresnes & Ottobrunn
Sharing expertise, facilities, skills, experience, best practices

Research & Technology Network
Maximizing synergy between EADS entities through a shared Research & Technology Program

EADS R&T : 450 M€(2003)



Core Competencies

Materials & Processes
and Advanced Manufacturing



Composite
Technology

Friction Stir
Welding

Smart
Structures

Structures Engineering
and Acoustics



Adv. Structural
Modeling

Advanced
Concepts

EMC
Simulation

Microsystems, Electronics
and Image Processing



Microsystems

Systems Engineering
and Systems Environment
Science

Processes for Engineering
and Information Management
Techniques



Micro Aerial Vehicle
Demonstrator

Virtual Product
Engineering

Standardization, Patents,
Intellectual Property Strategy
and Knowledge Management

EADS Top Technology Nominations



„Virtual Product Engineering“

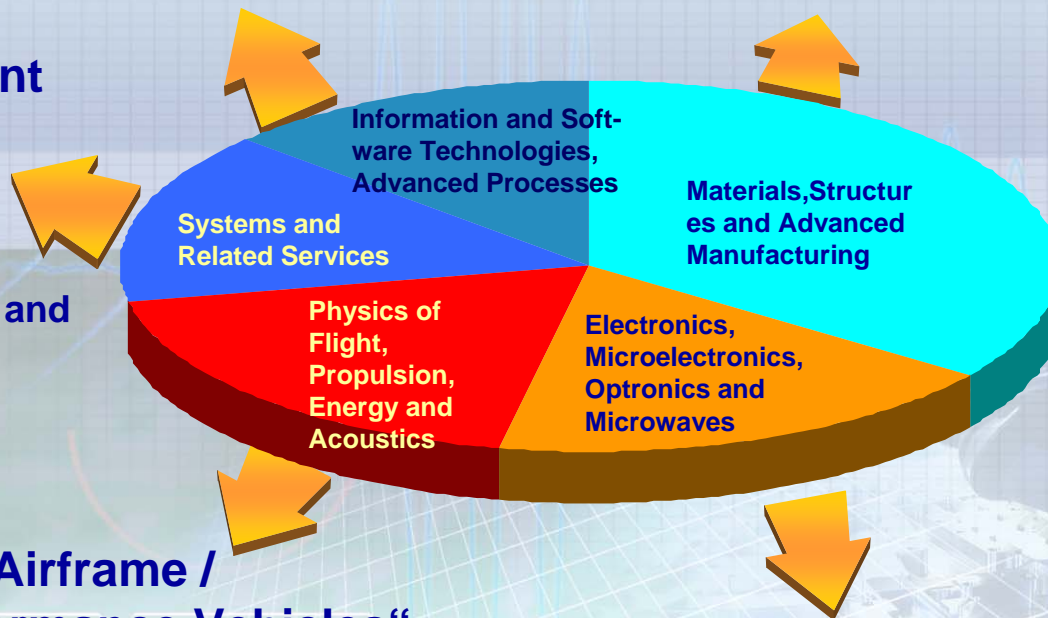
Simulation / Modelling
Configuration engineering
Concurrent engineering
PDM and KBE

„Advanced Materials, Structures Engineering and Manufacturing“

Advanced Manufacturing and Processes
CFRP / New alloys
Smart Structures

„Robust Intelligent Systems“

Integrated Modular Avionics
Guidance, Navigation and Control
Image processing
Onboard systems engineering



„Friendly Airframe / High Performance Vehicles“

Aerodynamics and acoustics
Stealth and signature control
Environment, Propulsion

„Integrated Smart Product“

Microwave technologies / Radar
Optics / Optronics
Microelectronics /-systems

Innovation in Technology: Airbus Examples

1974

A300



Innovation in Technology: Airbus Examples

1988 A320



Innovation in Technology: Airbus Examples

2006

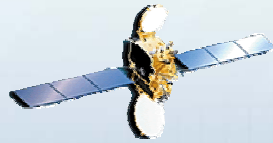
A380



Increasing Demand for Integrated Systems and Solutions in the Military Market



Netcentric Warfare



Navigation/Communication Systems



HALE



NATO Airborne Early Warning (AWACS)



MALE



Reconnaissance Aircraft



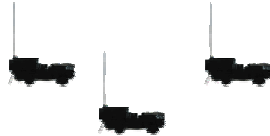
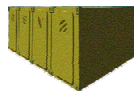
Fast Tactical UAV



Alliance Ground Surveillance (AGS) / SOSTAR



Maritime Patrol (MPA)



Information

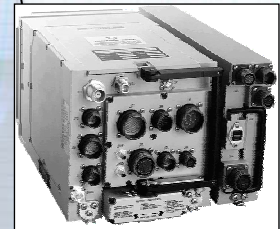
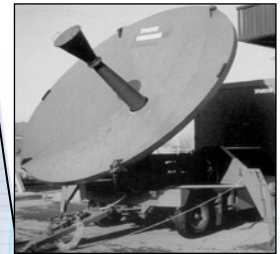
Available to the right people

Speed

Real-time connectivity to ensure flexible planning & navigation technologies

Precision

Affordable through new sensor & navigation technologies



Defence markets are changing their focus from platforms to integrated netcentric warfare capabilities - requiring innovative features

- 
- The European Union flag, featuring twelve yellow stars arranged in a circle on a blue background, is centered behind the text.
- ❑ **Innovation : cornerstone of the EU 'Lisbon Strategy »**
 - ❑ **Objective : R&D effort up to 3% of EU's GDP by 2010**
 - ❑ **Increased budget for EC Framework Programme (FP7)**
 - ❑ **A coherent framework to foster competitiveness and contribute to Europe's economy growth**
 - ❑ **Action plan for innovation between EU Commission and Members States**

European Initiatives : Political/Organisational Set-up Serving Innovation

Air Transport System

ACARE / SRA * main recommendations
in Vision 2020

Space

Galileo / GMES

Defence

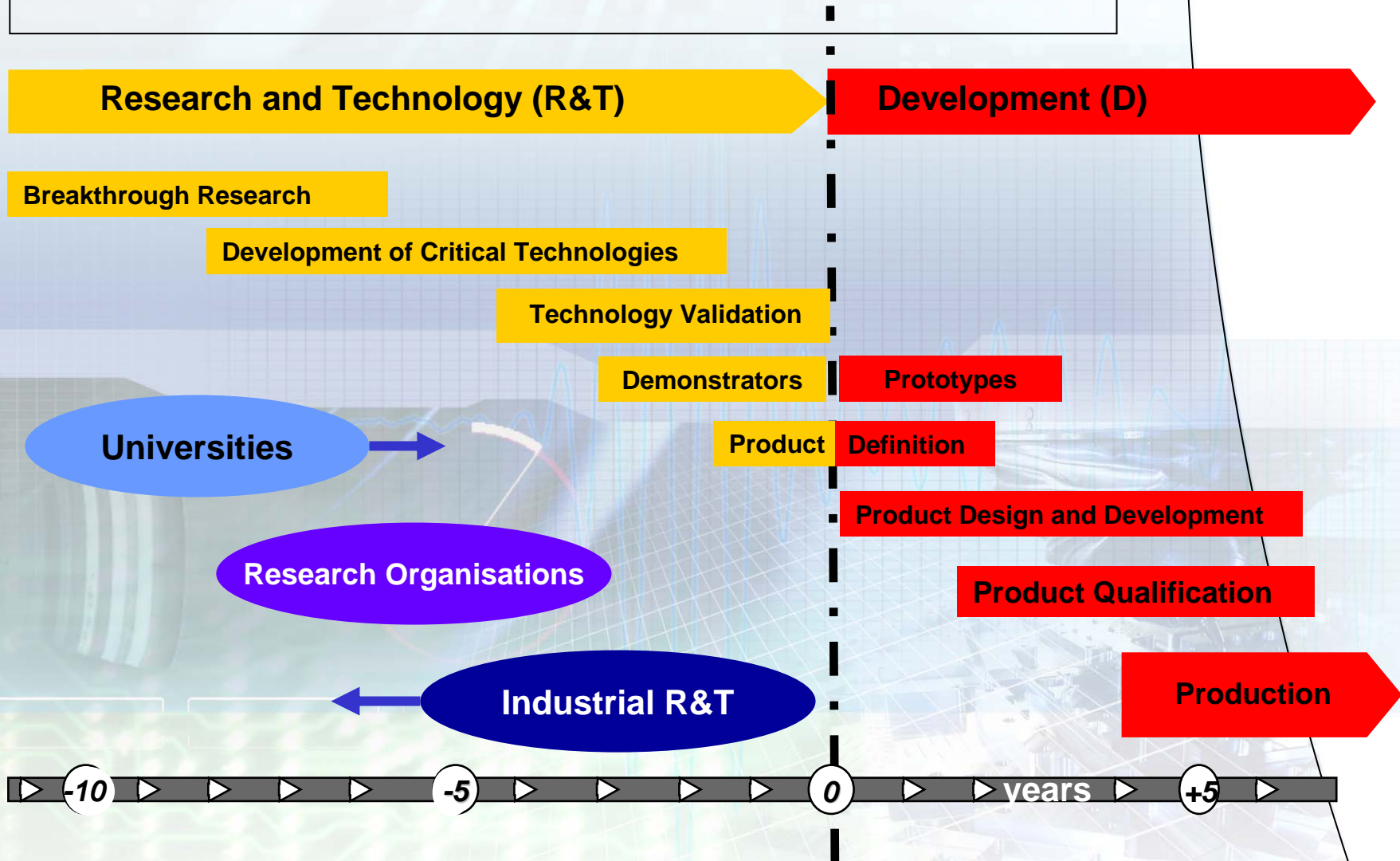
European Defence Agency

Security

Action plan on security research

* ACARE : Advisory Council for Aeronautical Research in Europe - SRA : Strategic Research Agenda

Research – Innovation - Market



Innovation & Partnership Policy



EADS Corporate Research Centre

« A Global Research Partner »



Partnering with leading-edge universities, public/private laboratories enables superior return on innovation investment

Conclusion



- ❑ **Innovation is key**
- ❑ **Involvement of governments is essential**
- ❑ **Cooperation with scientific community is vital**

THANK YOU