

Civil-Military Cooperation in Germany

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DFS Deutsche Flugsicherung

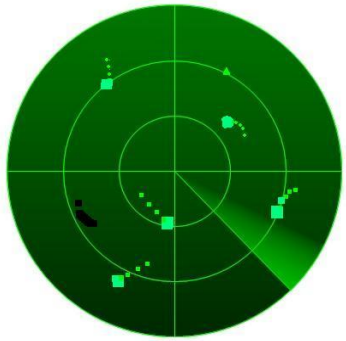
Agenda

- ⇒ 50 Years of Development in ATM
- ⇒ Evolution of Cooperation in Surveillance and Identification
- ⇒ Coordination Concerning International Affairs
- ⇒ Obstacles for Civil/Military Coordination
- ⇒ Chances for Civil/Military Coordination
- ⇒ Conclusions

50 Years of Development in ATM



50 Years of Development in ATM



FAB Europe Central

Eagle Award: DFS world's best ANSP

DFS corporatization

Agreement MOT / MOD on Integration

First Flexible Use of Airspace trial

Mil. ATC to civil centers

1st Civ-mil coordination cell

1st Civ-mil agreement

2012

2000

1993

1991

1983

1973

1963

1959

INTEGRATED

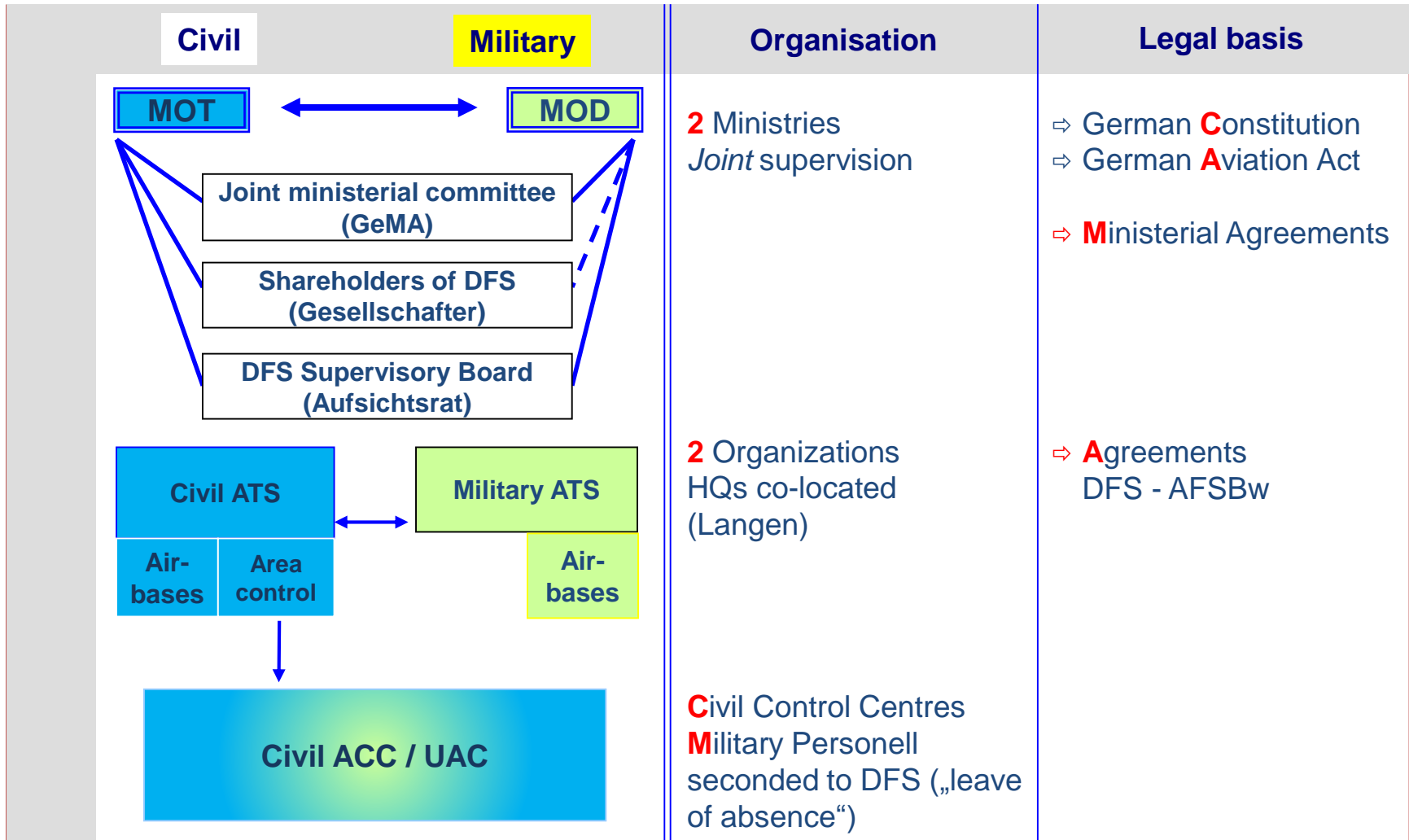
CO-LOCATED

SEPARATED

50 Years of Development in ATM

*Situation
since 1993*

Integrated



Strategic Civil-Military ANS-Management

- Establishment of civil-military Steering Groups (SG) mandated by MoD, MoT or the relevant management level
 - **Airspace Coordination**
 - **Aeronautical Data Management**
 - **CNS & ATM Systems**



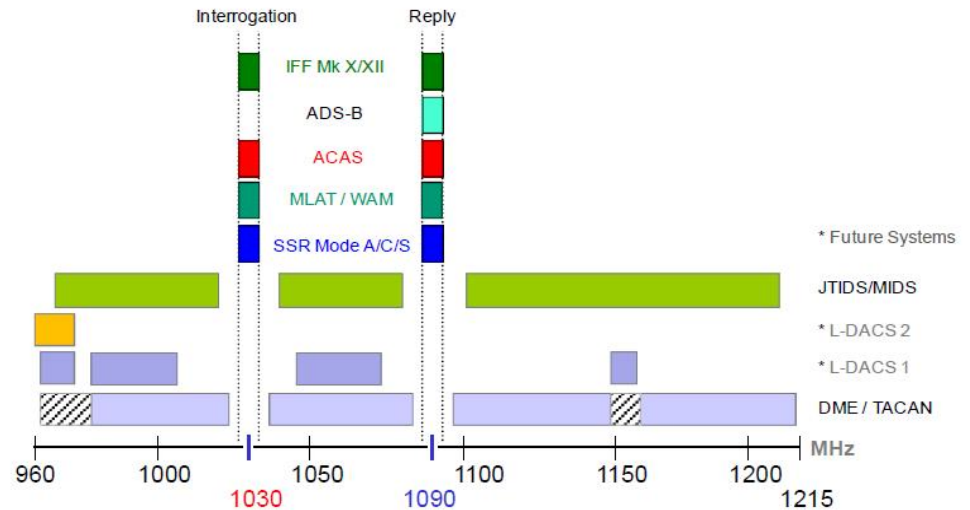
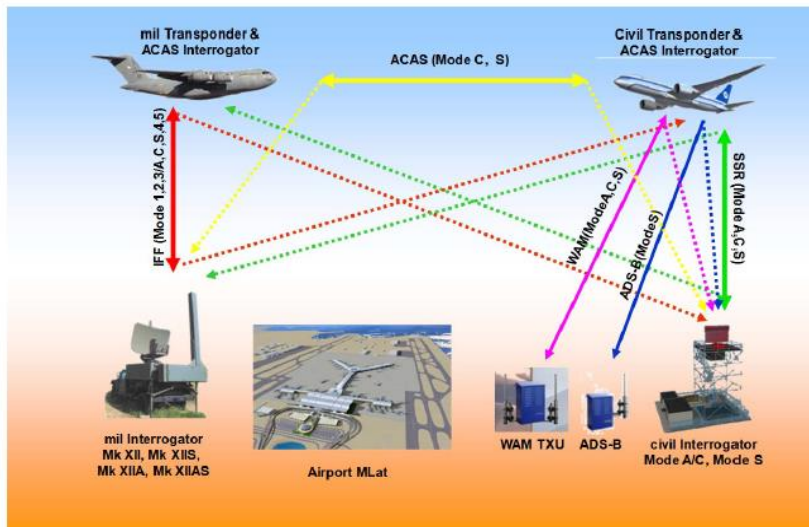
PURPOSE:

Strategic, civil-military, decisions, coordinated positions and proposals for representation at national and international levels

Evolution of Cooperation in Surveillance and Identification



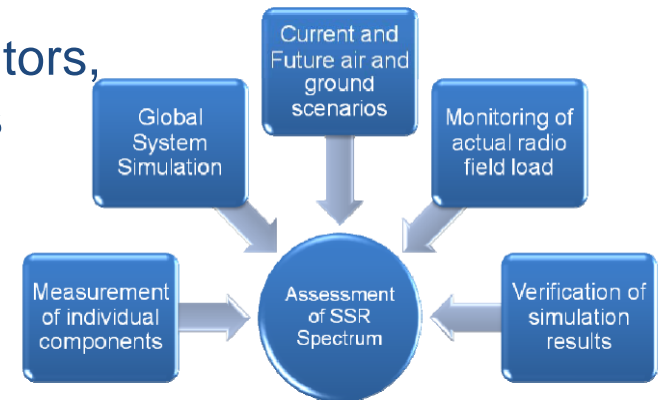
Channel Assignment 960 MHz to 1215 MHz



- In the ATC environment SSR, ADS-B, ACAS and military IFF systems use the same frequencies (1 030 MHz and 1 090 MHz). Technical or operational changes in one of the aforementioned systems have impact on the system itself, within the systems concerned, and on the other systems operated on the same frequencies
- In the early 80s in Western Germany stationary radars were operated by German civil ATC, German military and permanently based guest forces. Mobile platforms were operated by all military forces including a number of temporarily based guest forces.

Cooperation to avoid Saturation (since 1980s)

- Jointly supported development of measuring equipment for 1030/1090 MHz radio load
- Jointly supported development of a nationwide model for civil and military 1030/1090 MHz RF environment covering civil and military ground based (stationary, mobile) and airborne platforms and their activities
- Consultation with national and foreign contributors, including „contributions“ from neighbour states
- Verify the model and its operation
- Validate the model using comparisons with measured data and other models (UK, US)



⇒ Publication of the first version of the „Electronic Order for Identification“ in the end of 1990s placing limitations on military operations, exercises and training activities in peace time in order to ensure the integrity of air navigation systems.

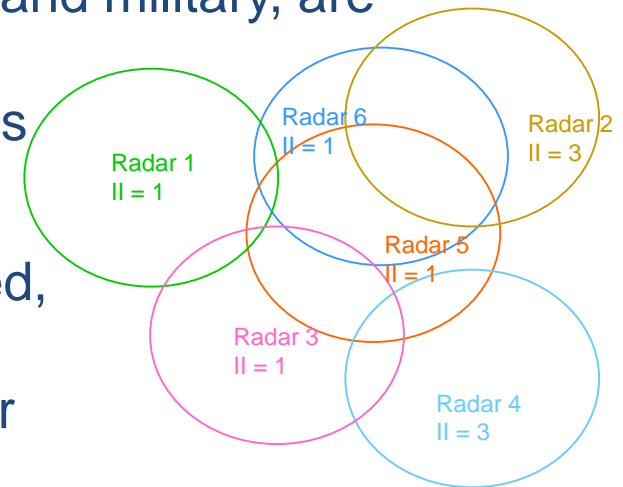
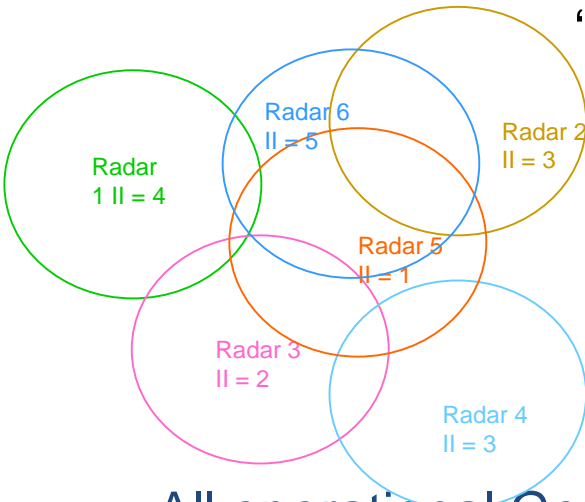
Means of RF Load Reduction

“FRUIT can be significantly reduced by:

- a) clustering of Mode S radar;
- b) regional ground system coordination;
- c) improved cooperation between civil and military authorities;

(ICAO Doc 9924, Aeronautical Surveillance Manual)

- All operational German Mode S Radars, civil and military, are operated in clusters, coordinated within the European interrogator code allocation process
- Specific rules for the use of IFF equipment and military exercises have been implemented, including PoCs to stop harmful interference immediately according to the Electronic Order



Sharing of Radar Data

A formal agreement on the exchange and use of radar data is established between DFS and German Military Forces (Air Defence and Military Air Traffic Services)

- The objective of this agreement is to improve surveillance coverage and the availability of surveillance data
- Military surveillance data are being fed into the civil radar data network out of the military network via two specific network nodes, which were developed to strip off all military specific data
- Unavailability due to maintenance or specific military exercises is being coordinated, changes within the maintenance schedule or with regard to radar specific parameters are communicated between the partners in advance
- Discussion on regular use of radar data

Sharing of (Radar) Data

- All basic radar data (location, stagger, protocol,...) are coordinated and exchanged
- DFS provides not only radar data, but surveillance data delivered by all surveillance systems operated by DFS
- Cooperation is becoming even closer under specific circumstances, such as G7 or NATO leadership meetings, visits of foreign Head of State or other big events (Olympic Games, World Championship, *etc.*)
- Preparation of coverage analyses and integration of new or changed data into the simulation environment
- Organisation of an annual User Forum

Coordination concerning International Affairs



Coordinated Contribution to International Fora

Eurocontrol

- Coordinated contribution to Mode S Interrogator Code Allocation (MICA),
German Focal Point: DFS, Substitute: Air Defence
- Joint participation in Surveillance Ground Equipment Group
- Information Exchange on other (surveillance) matters

ICAO

- First military advisor at ICAO Surveillance Panel
- Joint contribution to ICAO Annex 10 and certain manuals (ACAS, Aeronautical Surveillance Manual, Manual on Intercept)

Support for the development of military systems and applications

- Audit and type approval for the first Mode S Radar for German forces
- Support, data recording and analysis for military ATC radar flight measurement

- Examples for the support of German and foreign military forces:
 - agreement on conditions for frequency clearances
 - development of new applications using known technologies
 - development of a set of rules and conditions for the use of military TCAS-derivatives and their application in German airspace

Obstacles for civil/military coordination



Obstacles for civil/military cooperation and rationalisation of Infrastructure

SES Implementing rule IR 550/2004 hinders the civil use of data provided by military equipment

- **Article 10, Relations between service providers** allows air navigation service providers to avail services from other service providers that have been certified ...
Military authorities may follow the same rules, but will not go through the certification process.
- **Article 11, Relations with military authorities**, Member States ... to ensure that written agreements between the competent civil and military authorities or equivalent legal arrangements are established ... in respect of the management of specific airspace blocks.
Why is this limited to the management of airspace blocks?
- **Article 13, Access to and protection of data** 1. In so far as general air traffic is concerned, relevant operational data shall be exchanged in real-time between all air navigation service providers, airspace users and airports.... 3. Certified service providers, airspace users and airports shall establish standard conditions of access to their relevant operational data....

Military entities will neither certify themselves as a service provider nor their equipment for service provision!

Chances



Chances

Good Civil-Military Cooperation offers synergies for both partners:

⇒ For Surveillance and Identification:

- Common understanding of potential issues
- Joint management of the limited resource Radio Frequency
- Reduction of safety issues due to Interference
- Avoid costly development of incompatible technologies and applications

⇒ and in general:

- working together jointly in all aspects of ATC, airspace design and usage means working together effectively - and efficiently
- Manage the airspace safely
- Manage airspace usage flexible and efficient
- Increase capacity with a high quality of service

Conclusion



Conclusion

The Civil-Military Integration offers synergies for both partners:

- ⇒ German MoT and MoD work together jointly and effectively in all aspects of ATC, airspace design and usage
- ⇒ The “German model” of civil-military integration is a “flagship model” and is internationally well-recognised
- ⇒ It stands for evolutionary, future-oriented development of ATS services
 - ✓ **High degree of Safety** due to common execution of tasks
 - ✓ **Flexible and efficient / economical airspace usage**
 - ✓ **Increase of capacity** due to an integrated operating concept
 - ✓ **High quality of service**
 - ✓ **Increased productivity** due to efficient personnel management
 - ✓ **Cost advantage** due to common operations support and **process optimization**
 - ✓ **Cost advantage** due to **common usage of infrastructure** and **common procurement**

Thank you very much for your attention!



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