

# Civil/Military spectrum sharing

*Czech experience of the last 20 years*

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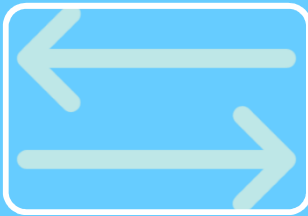
**Czech Telecommunication Office (CTU)**

*WGFM Civil/Military  
Amsterdam, 30. – 31. 05. 2022*

# How do I know?

- In military service for 35 years, since 1974:
  - *Signal platoon commander, 1976–1977*
  - *Military Academy, 1977–1981*
  - *Air Defence Forces (posts ranging from a technician up to Deputy Chief of Staff, Radiotechnical Brigade) 1981–1999*
  - *Czech General Staff, Central Communication Agency – Chief of NARFA CZE, 1999–2009*
  - *Force Planning Division at SHAPE and ATC, 2003–2006*
  
- Joined civil spectrum administration at the Czech Telecommunication Office in 2009:
  - *Head of International Cooperation Unit, 2009–2016*
  - *Senior Specialist, Strategy and Policy Unit, 2016–present*

# What's radio spectrum management like in practice?



C2



Dynamic



Common sense may be better than a hundred definitions

# The effects of NATO membership on spectrum administration

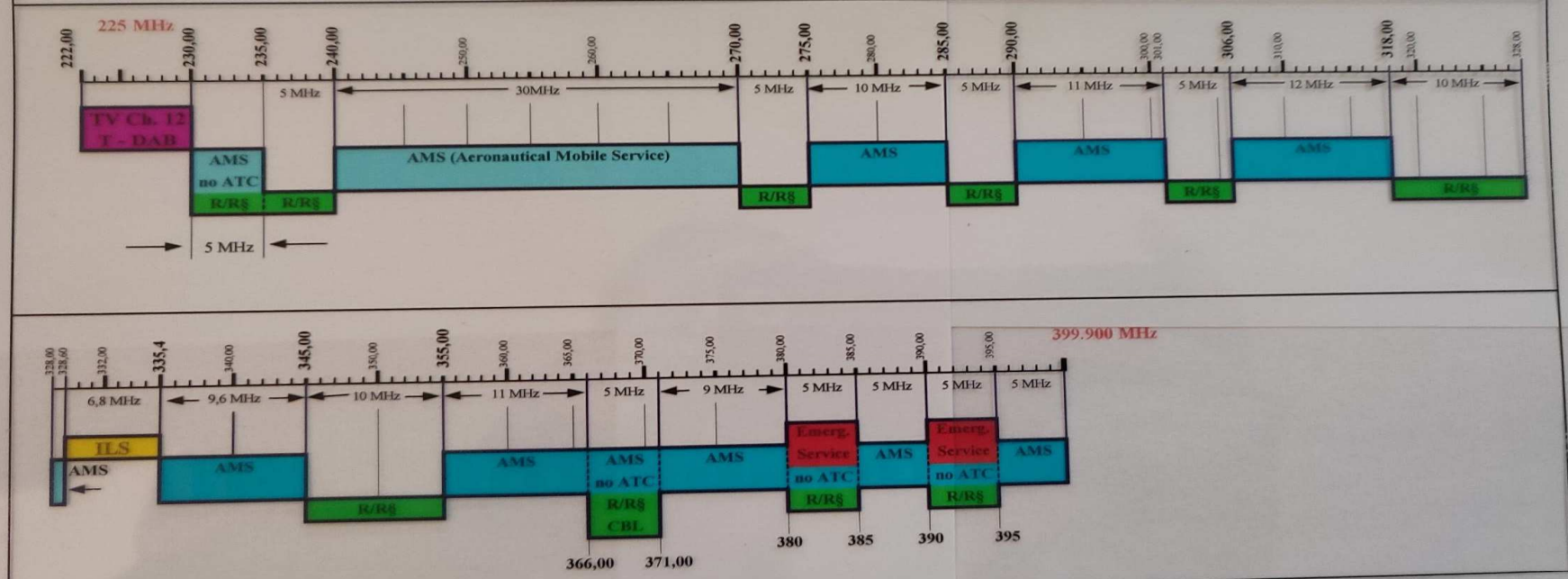
- Partnership for Peace member since 1994
  - *knowledge of NATO procedures (RoP)*
  - *knowledge of the ToR of NATO spectrum management (FMSC), incl. comprehensive understanding of NATO NJFA*
- NATO member since 1999
- First engagement with NJFA in 2002
  - *very strong requirement for restructuring NTA*
  - *new Military spectrum management unit established (NARFA CZE)*
  - *frequency bands to be assigned to MoD for exclusive usage recognized*
  - *those bands had to be made free for military usage*
  - *possible other bands identified to move existing users*
  - *principles of interoperability implemented*
  - **cost of the transition from pre-NATO to NATO membership reimbursed by the government**

# Requirement of NJFAA for band 225 – 400 MHz in 1999

3rd Civil - Military HC  
 CZE, D, POL, SVK  
 Berlin, 29 - 30 June 1999  
 Origin : Czech Republic - MOD

Con (99)

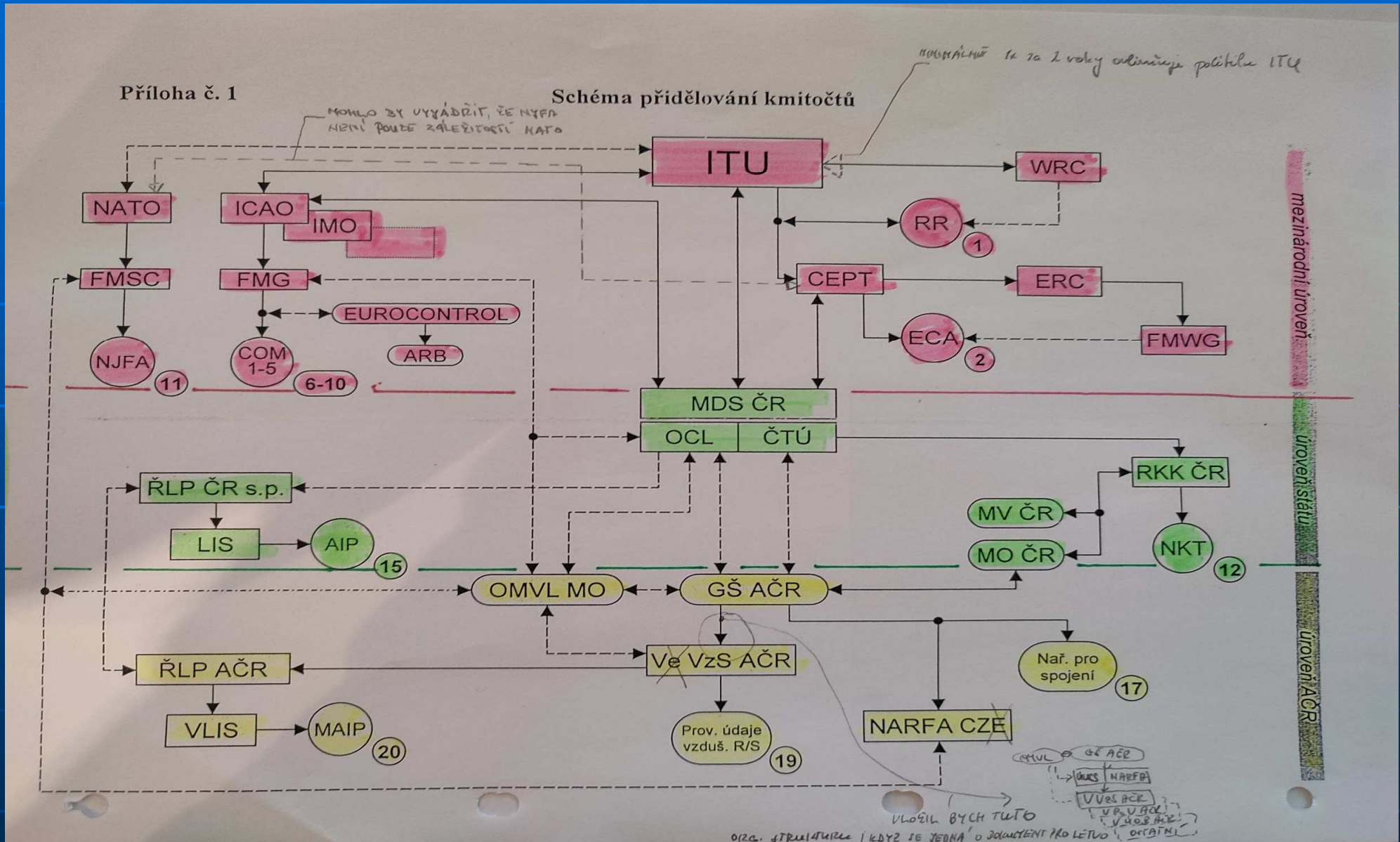
Frequency allocation on Czech territory  
 in the harmonised NATO band 225-400 MHz



AMS = Aeronautical Mobile Service  
 \*\*\*§ = Frequency Management on a national basis  
 ILS = Instrumental Landing System  
 R/R = tactical Radio Relay

ATC = Air Traffic Control  
 CBL = Cross Border Links (tactical Radio Relay CZE,GE)  
 no A/A below 245 MHz  
 A/G/A starts with 231,350 MHz

# Procedure of spectrum management in 2002



# Bodies involved in spectrum management in the Czech Republic



The  
Regulator



Ministry  
of Defense



Ministry  
of Transport



Other  
stakeholders



# What is necessary for successful spectrum planning towards C/M spectrum sharing?

- Telecommunication law
- Telecommunication strategies
- RR
- Harmonization at different levels
- Justified spectrum requirements
- Technical parameters of telecom services and devices
- Knowledge of telecommunication markets
- Knowledge of technological development

# Planning processes towards C/M spectrum sharing



## Short term planning/solution

- *mostly based on daily requirements (which may be quite unpredictable)*



## Long term planning

- *WRC*
- *EU (RSC, RSPG, CEPT, ECC, CPG)*
- *Other international organizations*
- *(NATO-NJFA, ICAO, IMO, CRAF)*
- *National Table of Allocations (CZE)*
- *Radio Spectrum Utilisation Plan (CZE)*

# C/M spectrum sharing is based on NTA and NJFA



# C/M spectrum usage options

- Exclusive usage (of a band) by military applications
  - ✓ **Advantages:** less work for the regulator, full responsibility for spectrum management in military bands rests with military authorities (NARFA)
  - !! **Disadvantages:** limitations set by law (e.g., for international coordinations), low chance to get additional spectrum if needed in the future
- Exclusive usage (of a band) by civil applications
  - results from exclusive spectrum awards to civil users
  - will have consequences for military spectrum usage (cf. L band, 2.5 GHz band)

→ **C/M Sharing**

# Examples from NAT 2021

## 174 – 230 MHz band

174–223	BROADCASTING	BROADCASTING [1] LAND MOBILE[1]	[1] C
223–230	BROADCASTING Fixed Mobile	BROADCASTING [1] LAND MOBILE [1]	[1] C

## 960 – 1164 MHz band

960–1164	AERONAUTICAL RADIONAVIGATION 5.328 AERONAUTICAL MOBILE (R) 5.327A 5.328AA	AERONAUTICAL RADIONAVIGATION 5.328 [1] [2] AERONAUTICAL MOBILE 5.327A [1] [2] 5.328AA	[1] C [2] NC
1164–1215	AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space to Earth) (space to space) 5.328B 5.328A	AERONAUTICAL RADIONAVIGATION 5.328 [1] [2] RADIONAVIGATION-SATELLITE (space to Earth) ( space to space) 5.328B [1] [2] 5.328A	[1] C [2] NC

# Examples from NAT 2021 (cont.)

## 14.5 – 15.5 GHz band

14,5–14,62	<b>FIXED</b> <b>FIXED-SATELLITE (Earth to space</b> <b>5.509B 5.509C 5.509D 5.509E</b> <b>5.509F 5.510</b> <b>MOBILE</b>	<b>FIXED [1]</b> <b>MOBILE [1]</b> <b>Space research 5.509G [1]</b> <b>Radio astronomy [1]</b>	[1] C
14,62–14,8	<b>MOBILE</b> <b>Space research 5.509G</b>	<b>FIXED [2]</b> <b>MOBILE [2]</b>	[2] NC
14,8–15,23	<b>FIXED</b> <b>MOBILE</b> <b>Space research</b> <b>Earth Exploration-Satellite</b> <b>(passive)</b>	<b>FIXED [2]</b> <b>MOBILE [2]</b> <b>Earth exploration-Satellite (passive)</b> <b>5.339 [1]</b> <b>Radio astronomy [1]</b> <b>Space research (passive) 5.339 [1]</b>	[2] NC [1] c
15,23–15,35	<b>5.339</b>	<b>FIXED [1]</b> <b>MOBILE [1]</b> <b>Earth exploration-satellite (passive)</b> <b>5.339 [1]</b> <b>Radio astronomy [1]</b> <b>Space research (passive) 5.339 [1]</b>	[1] C

# Summary of the Czech experience and new challenge

- Preparing for becoming a NATO member
- Transition period with regard to military forces
- NJFA implementation
- Growing requirements for spectrum
- Effective and efficient use of spectrum
- Global and regional harmonization
- Spectrum sharing as a method available for satisfying spect



Requirement for a modification of NJFA  
(through an evolution process)  
No details mentioned. It will be subject of NATO SPA CaT

# C/M Spectrum sharing

- Questions ?