

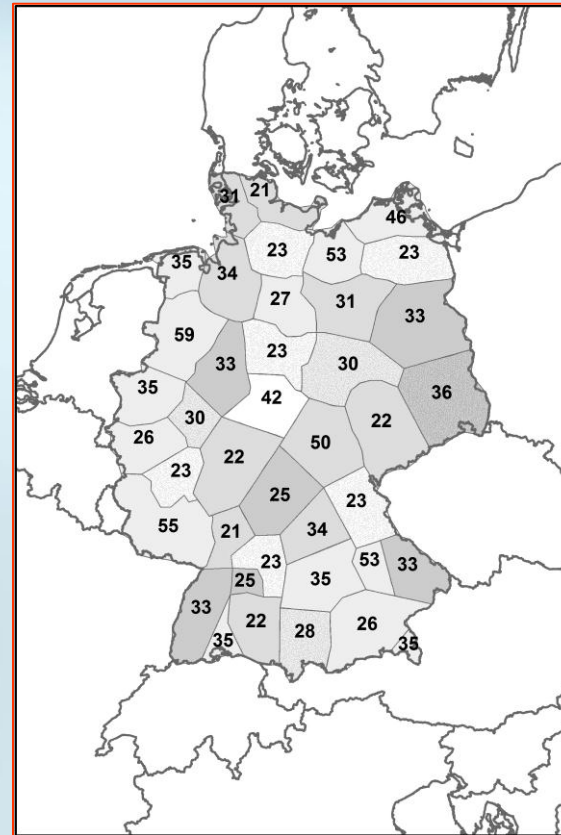
# Introduction of WSD in the UHF Band in Europe from a Broadcaster's Perspective

# Terrestrial Broadcasting in Europe

- **PSB have strong position in Europe (30% of audience)**
- **free-to-air content (PSB/comm.) & pay-TV**
- **PSB obligations**
  - full area coverage
  - 100% population
  - national, regional, local and community content

# ITU-R GE06 Agreement and Plan

- frequency plan and regulatory framework in VHF and UHF for DVB-T and T-DAB
- allotment planning



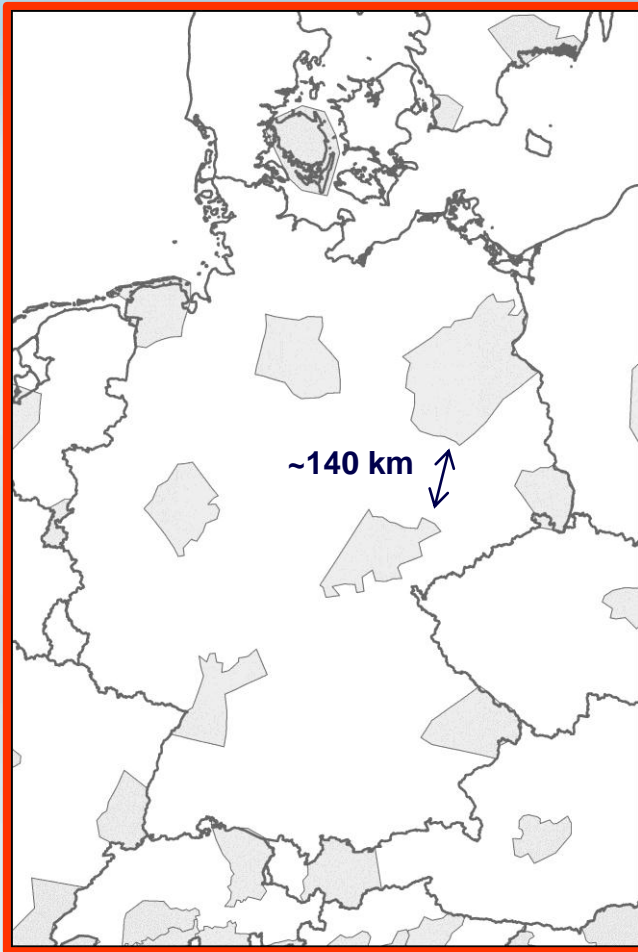
# ITU-R GE06 Agreement and Plan

- frequency plan and regulatory framework for DVB-T and T-DAB (→ programme multiplexes)
- allotment planning
- planning parameters for fixed, portable (indoor/outdoor) and mobile
- high-power / high-tower networks
- SFN implementation



**Reuse distance of ~140 km between coverage areas**

# ITU-R GE06 Agreement and Plan



**UHF channel 27 allotments  
for Germany**

# Sharing Spectrum

- Amount of white spaces for WSD ?
- Sharing conditions ?
- Data base and/or sensing ?



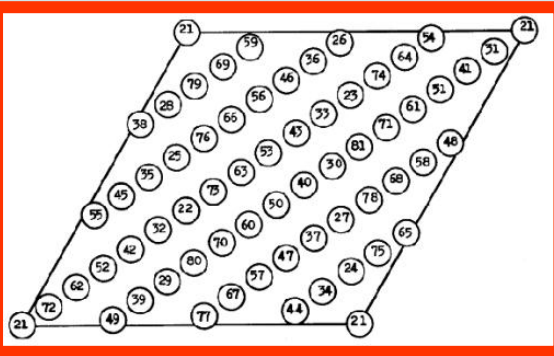
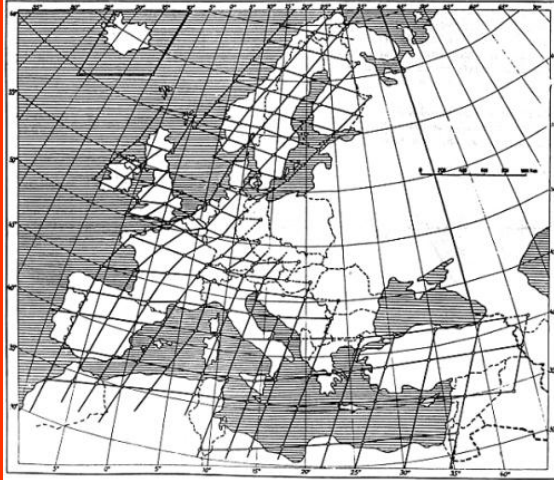
# ST61

## White Spaces

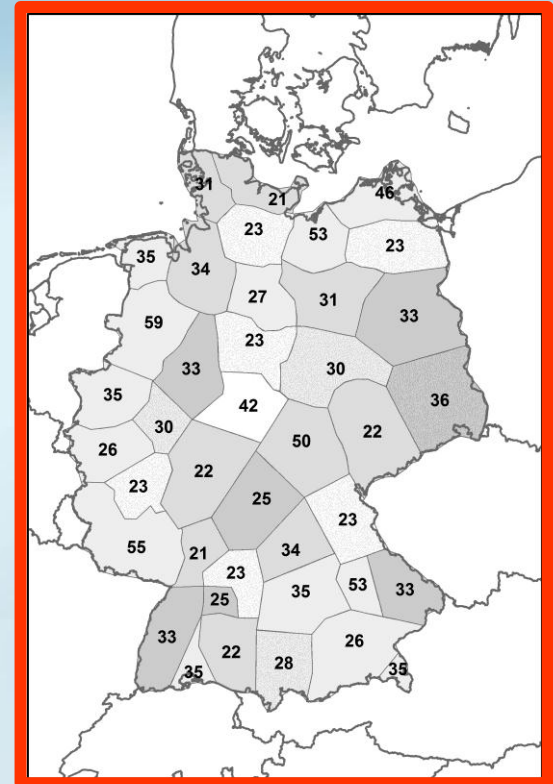
# GE06

Planning Principle:

Equitable Access  
to the  
Spectrum



3 Coverages across Europe  
(3 analogue TV programmes)



7 Layers across Europe  
(~30 digital programmes)

# ST61      White Spaces      GE06

~20 programmes in Berlin

11+2 mux in France

~25 programmes in Paris

12 mux in Italy as a start

~10 programmes in London

...

>35 programmes in Rome

...

→ White Spaces used for BC Services

→ WS always snap shot in time

→ Not to forget PMSE!

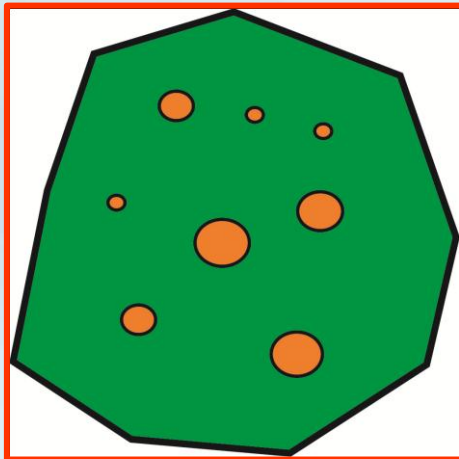


# Sharing Conditions

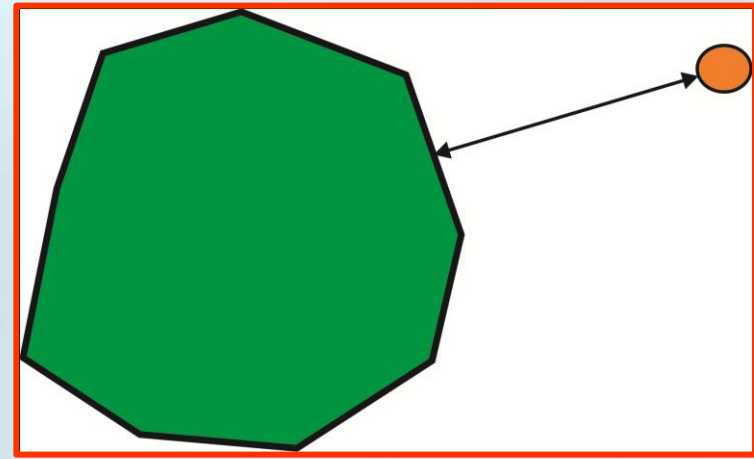


Adjacent Channel

Co-Channel



Hole Punching



Geographical Separation

# Sharing Conditions

- **Determine protection ratios for co- and adjacent channel usage:**
  - **definition of technical characteristics of WSD?**  
(multi carrier, single carrier, different bandwidth, ...)

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- **Determine protection ratios for co- and adjacent channel usage:**
  - definition of technical characteristics of WSD?  
(multi carrier, single carrier, different bandwidth, ...)
- **Define methodology for interference assessment:**
  - protection requirements of broadcasting?
  - treatment of fixed and portable/mobile WSD?  
(relevance of reference geometries)
  - aggregation of several interfering sources?
  - wave propagation model?

# Sensing and Geo-Location Data Base

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  - How to determine detection threshold?

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  - Control of data base?
  - Maintenance of data base?

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- **License Scheme for Channel Allocation to WSD:**
  - How to maintain access to WS for incumbent service?



# Future Opportunities

- **New Broadcasting Paradigm:**
  - linear and non-linear content
  - selection of appropriate distribution technologies

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- **New Broadcasting Paradigm:**
  - linear and non-linear content
  - selection of appropriate distribution technologies
- **Prospects for Broadcasting and WSD**
  - innovative solutions for indoor coverage (pick up and re-distribute)
  - WSD and CR for distribution of non-linear content
  - Broadband functionality and return channel

**Thank you for  
your attention !**