

RRC-06 results

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Driving Mobile Television Seminar
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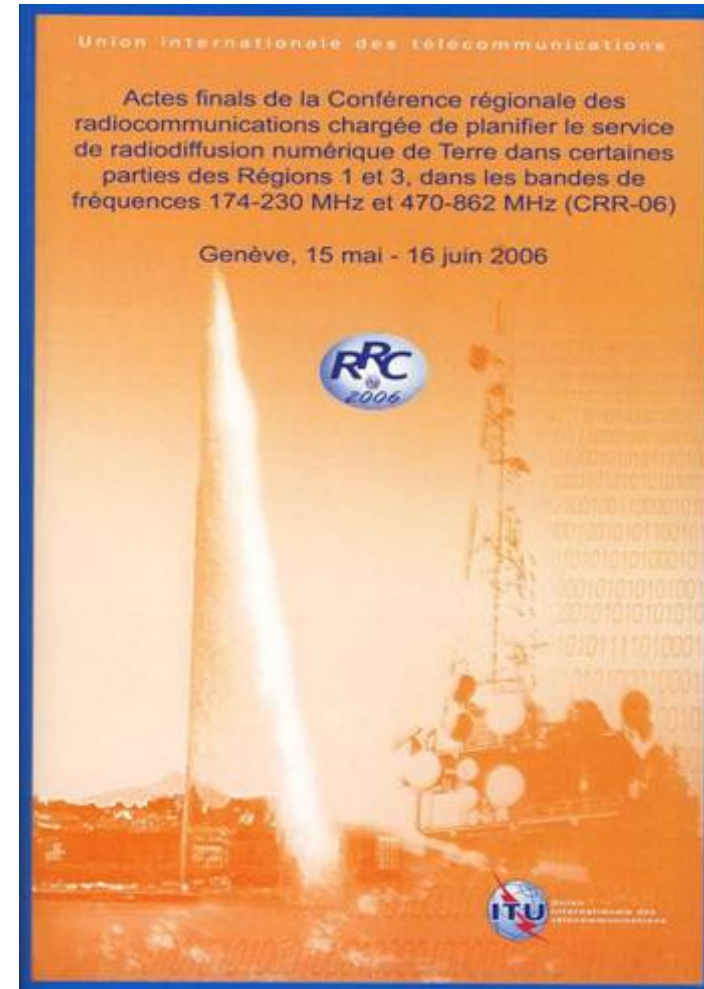
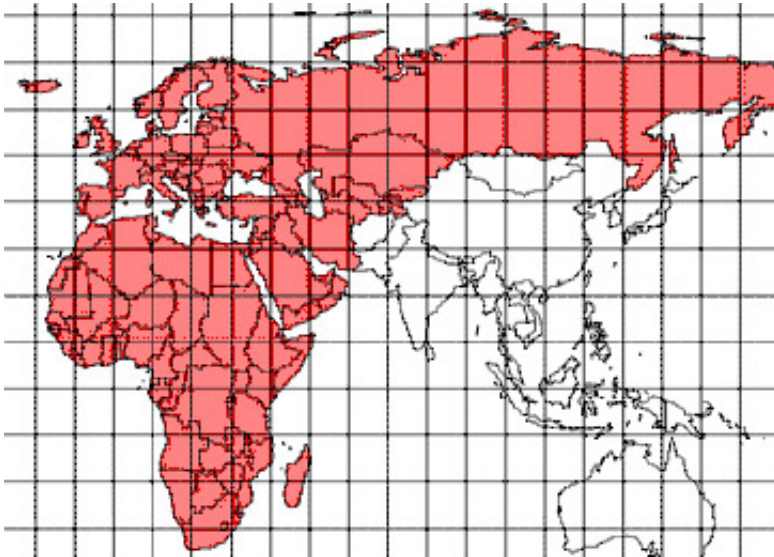
Presentation overview

1. RRC-06 results
2. RRC-06 provides flexibility
3. Yes, mobile TV will find room...but more work is needed!
4. Conclusion: Yes, mobile TV will find room...but don't underestimate some difficulties!

RRC-06 results

June 16th 2006, ITU, Geneva

- *104 countries signed the Final Acts of RRC-06 and adopted a treaty agreement replacing the analogue broadcasting frequency plans (ST61 / Europe and GE89 / Africa) with a new all digital frequency plan in bands III, IV & V*



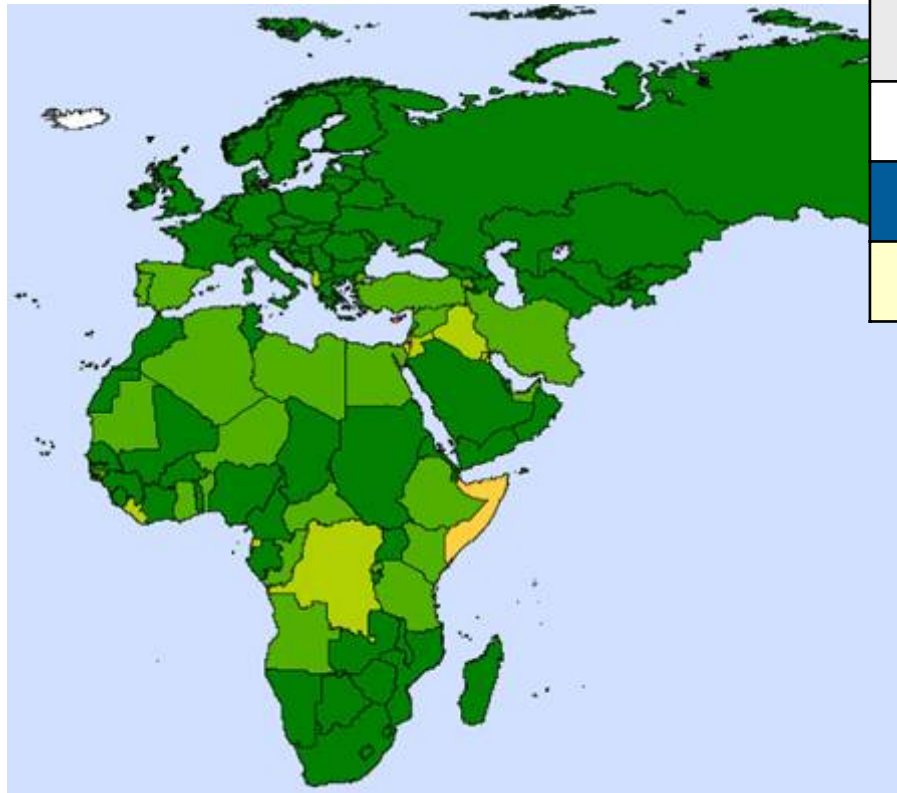
The Plan

**1.800
pages!**

**More than
70.000
satisfied
requirements**



16 June 2006: full success



| Average results in planning area | | |
|----------------------------------|-------|-----------|
| Band III | | Band IV/V |
| T-DAB | DVB-T | DVB-T |
| 95 % | 90 % | 98 % |

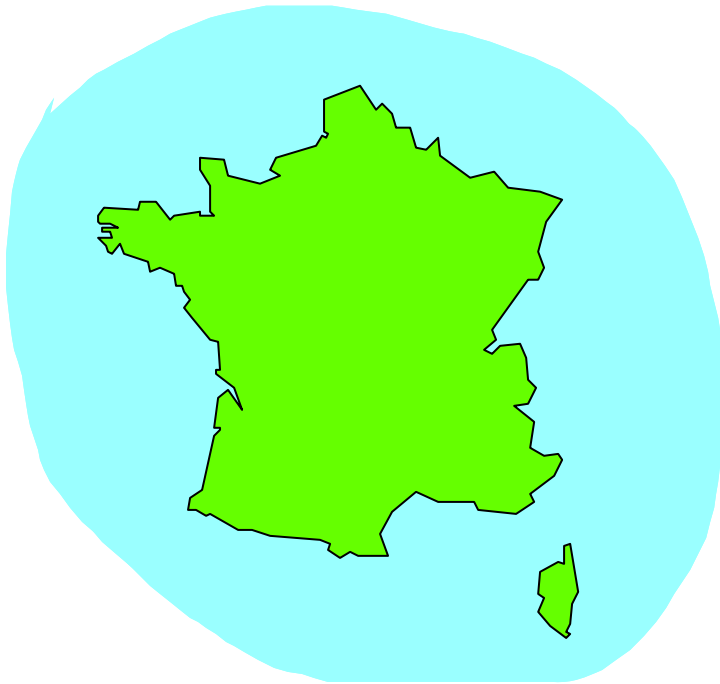
In Europe results even better; only 4 European countries did not achieve 100%

But, before deeper analysis, let's ask a question:

What is the theoretical UHF capacity?

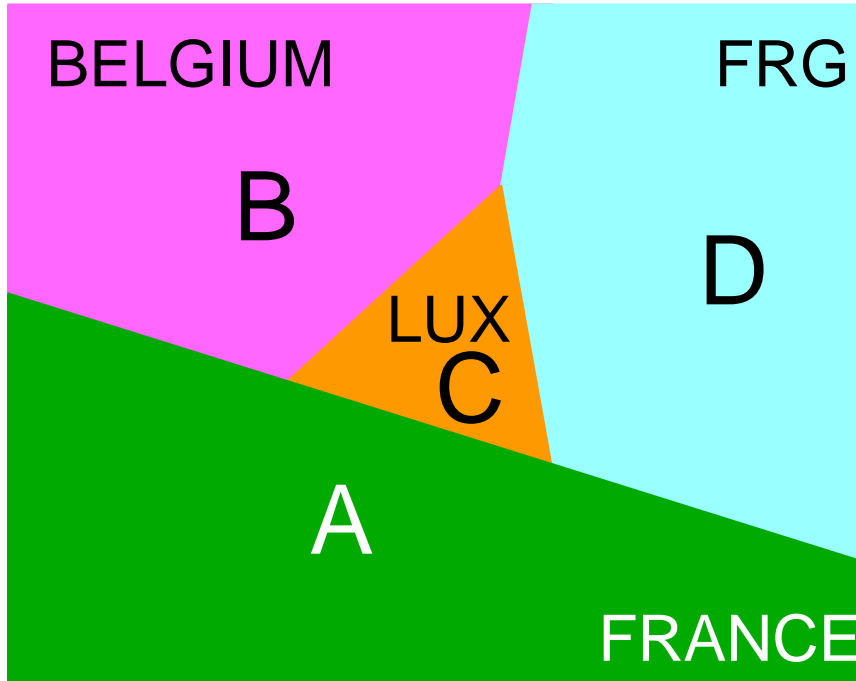
Two answers depending on your frequency coverage scenario

- Scenario 1: complete geographical coverage
- Scenario 2: limited separated coverages



What is the theoretical UHF capacity?

Scenario 1 answer: you need to share with your neighbours



In UHF channel range 21 to 60 (40 channels) each neighbouring country can get 7 to 8 complete coverages

In this very difficult area A, B, C & D represents sets of 7 channels

What is the theoretical UHF capacity?

Scenario 2 answer: no need to take care of your neighbours



No need to take into account interference to other areas.

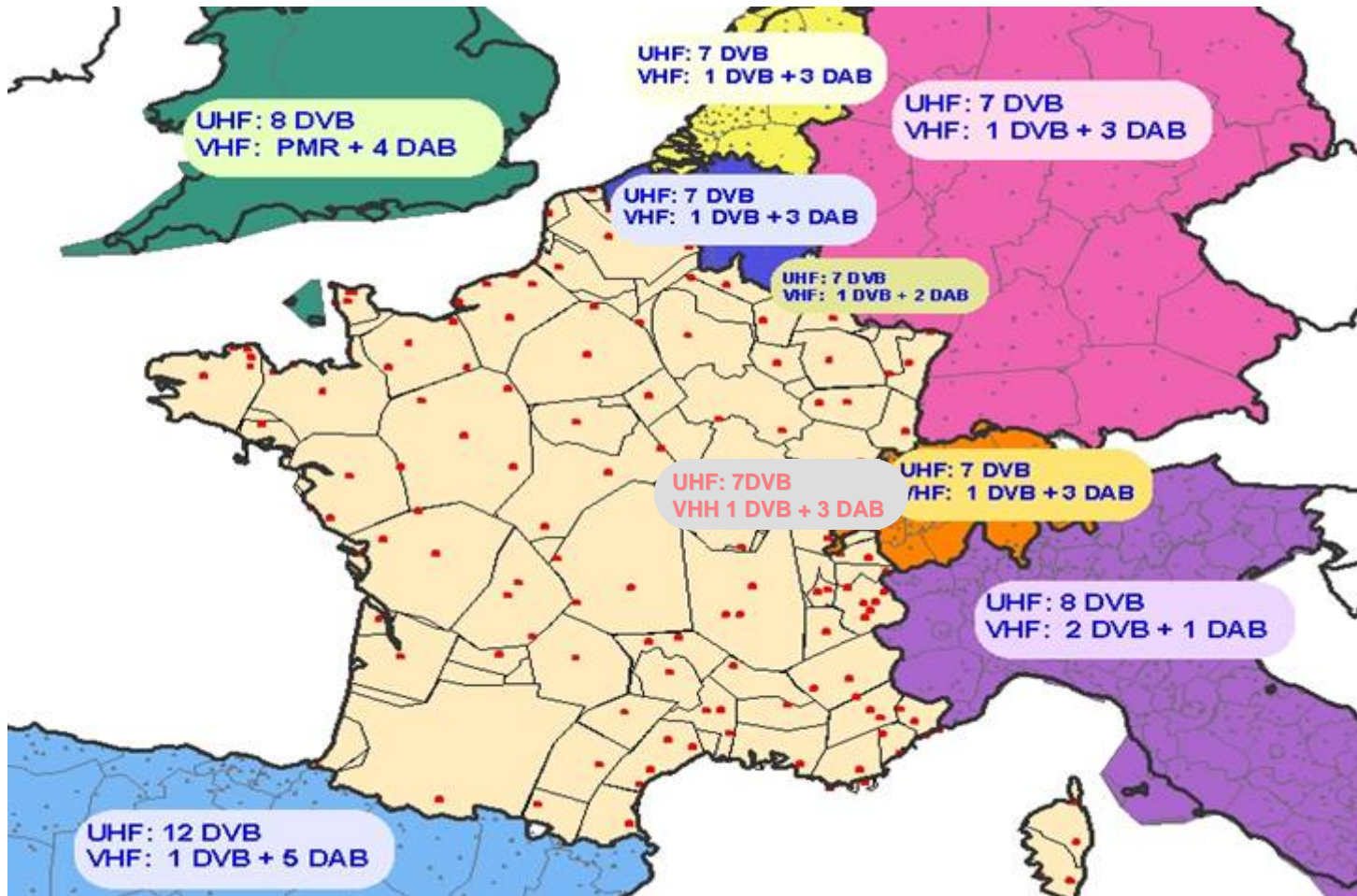
Conclusion:

In UHF channel range 21 to 60 (40 channels) each area can get up to 40 complete coverages

And now, back to RRC-06...!

At first glance

RRC-06 is a scenario 1 case

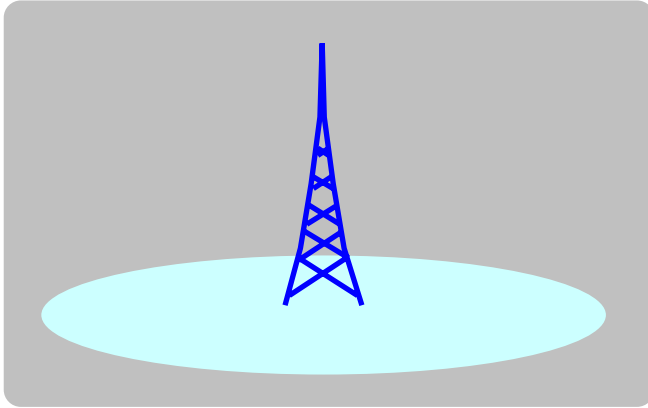


But it's only first glance: much more can be done...

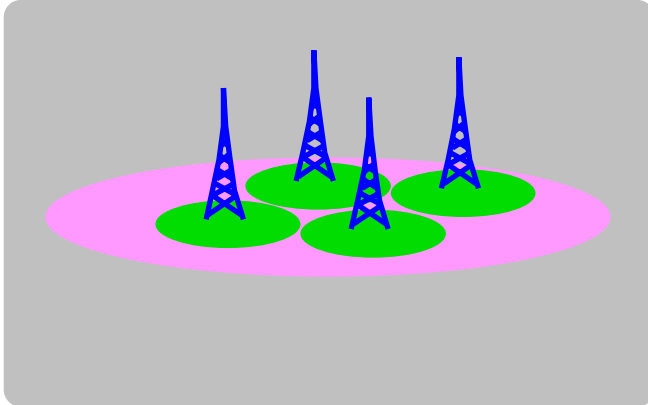
RRC-06 provides flexibility

Flexibility is a built-in RRC-06 feature!

Allotments versus assignments



In an Assignment, all technical characteristics are fully defined in the plan, including site, high power...



In an Allotment, the plan specifies only the service area and the frequency. Actual network design is left open.

Allotments ease more cellular approaches for mobile TV

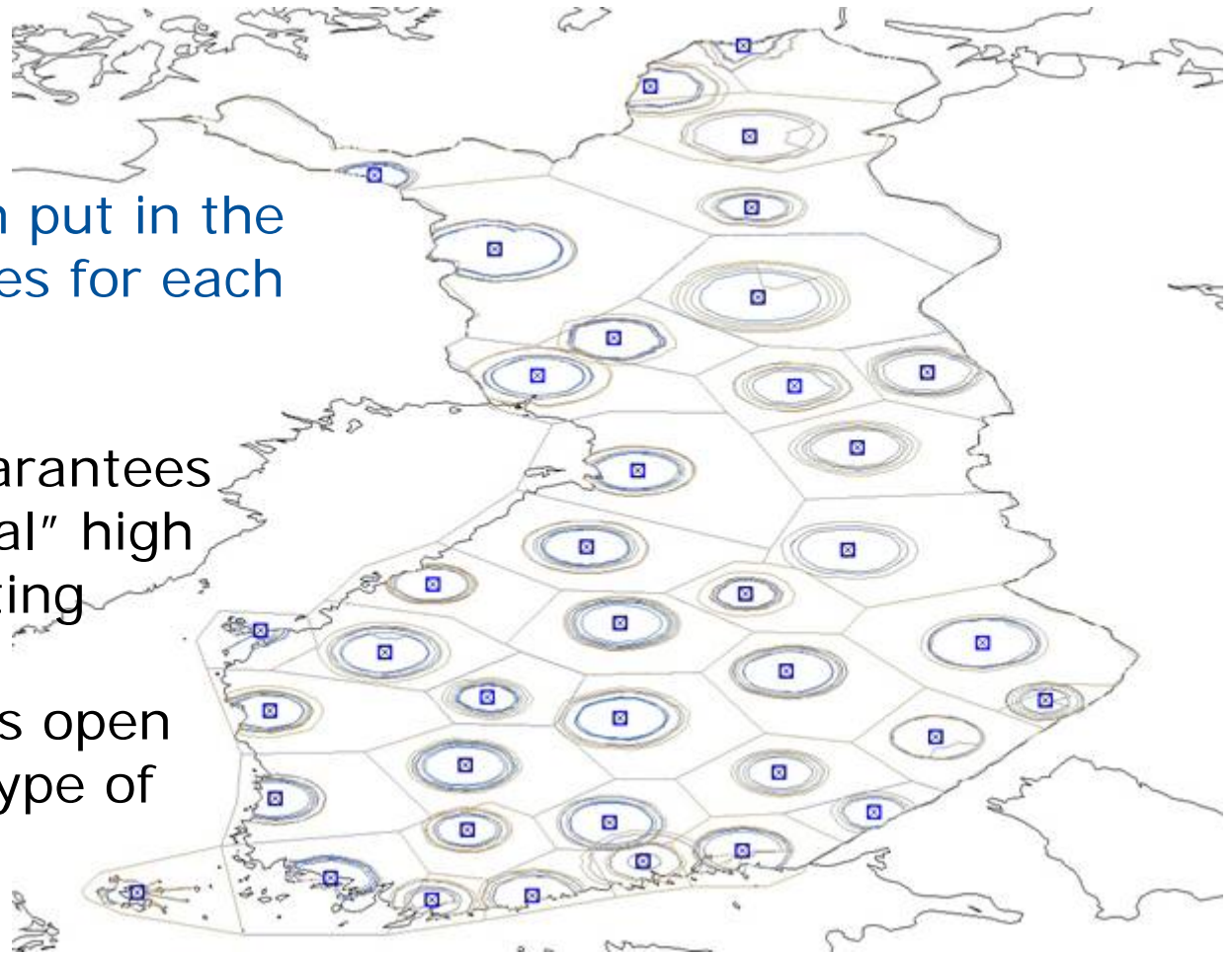
Flexibility is a built in RRC-06 feature!

Allotments versus assignments

Most countries even put in the plan both possibilities for each area!

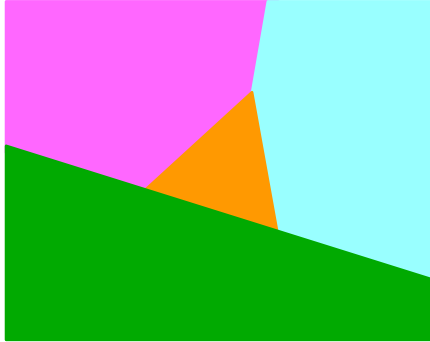
The assignment guarantees possibility of "normal" high power TV broadcasting

While the allotments open door to mobile TV type of networks



Flexibility is a built in RRC-06 feature!

Less planning constraints inland



Scenario 1 constraints (equal treatment across borders) vanish as soon as you move away from the border

As a consequence, scenario 2 may be applied and give opportunity to find new channels, for example in dense populated areas, **except along difficult border areas.**



Example of application in the Plan...

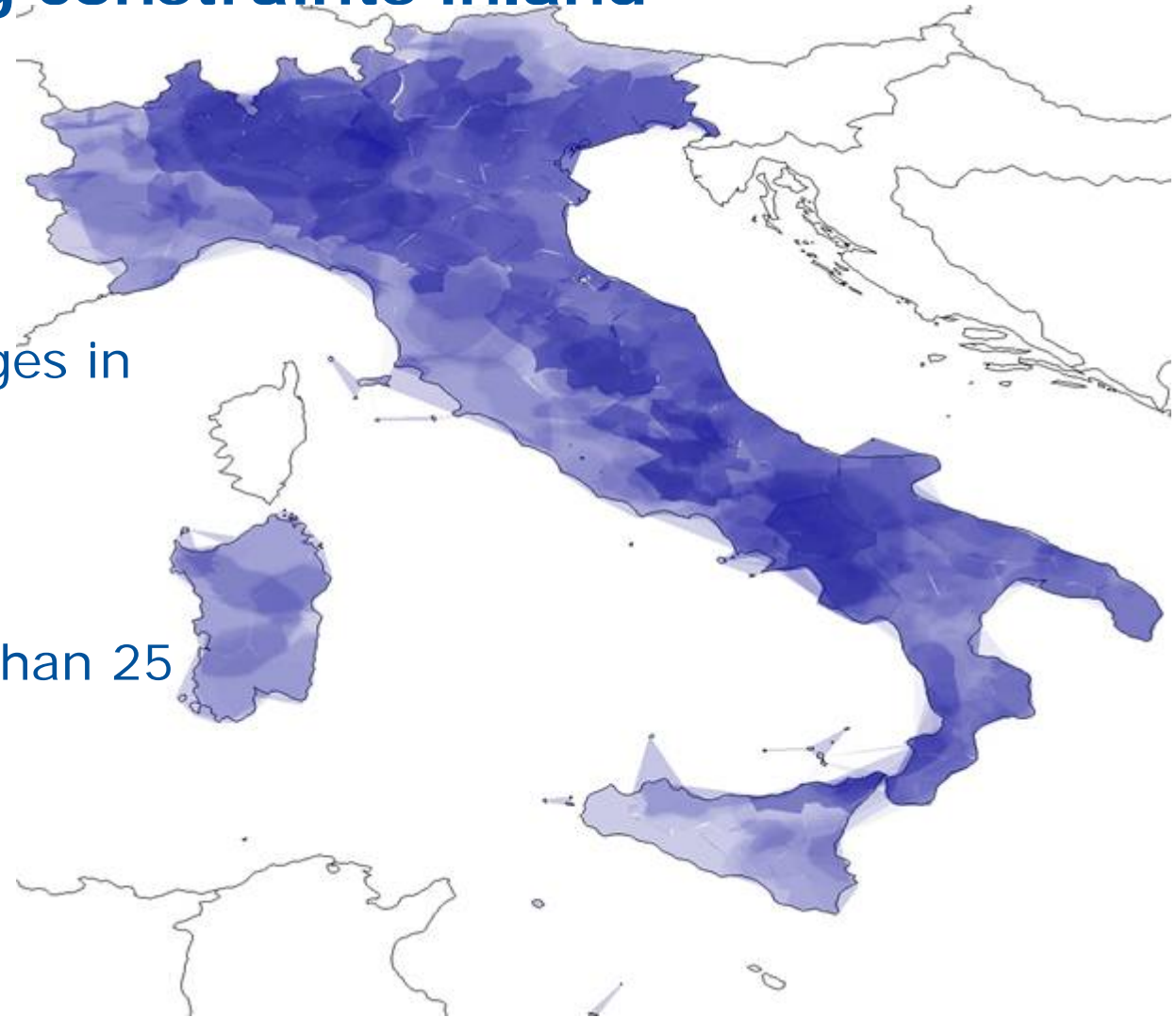
Flexibility is a built in RRC-06 feature!

Less planning constraints inland

Number of coverages in
any point:

Clear blue : 7
to

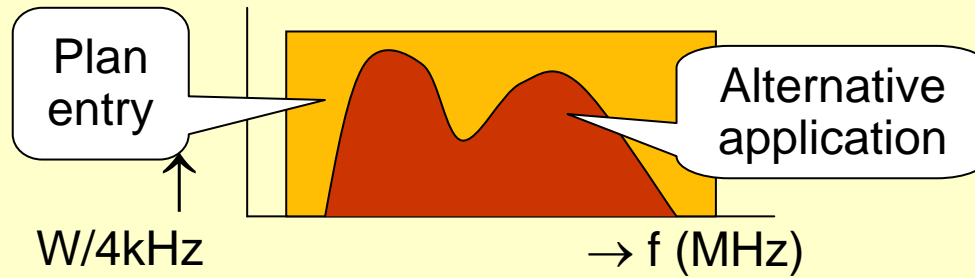
Dark blue : more than 25



Flexibility is a built in RRC-06 feature!

Other services allowed

- 1) Not exceeding spectral power density of associated plan entry



- 2) Not claim more protection than afforded to associated Plan entry

Yes,
mobile TV will find room...
...but more work is needed!

Some know exactly what they want:

UK

Ofcom
OFFICE OF COMMUNICATIONS

UK digital dividend = 14 UHF channels

**31, 32, 33, 34, 35, 37, 39, 40
63, 64, 65, 66, 67, 68**

UHF Bands IV/V

(Channels 21-68 (470-854 MHz) in the UK – RRC also covered CH 69)

470MHz

| | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 |
| 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 |
| 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 |
| 69 | | | | | | | | | | | |

862MHz



Spectrum available from digital switchover



Currently unavailable spectrum –
36 is radar, 38 is radio astronomy



Spectrum assigned to six DTT multiplexes post-DSO, and resulting "interleaved" spectrum

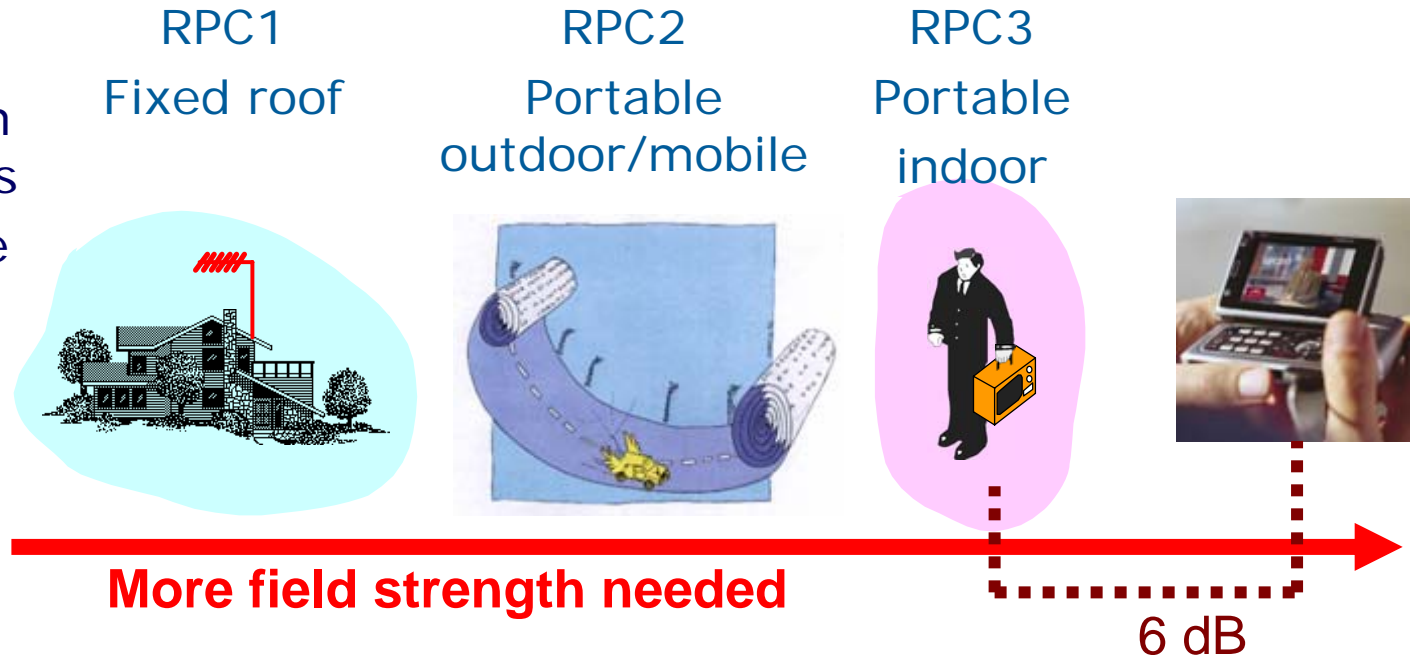


Spectrum currently used by PMSE

Some prepared mobile TV:

But not quite!

Reception conditions
Had to be specified
for each entry in
the Plan



“Not quite”, because first:

Even RPC3, with the most stringent conditions, do not provide enough field strength for handheld devices

and also because...

No one adopted RPC3!

Some prepared mobile TV:

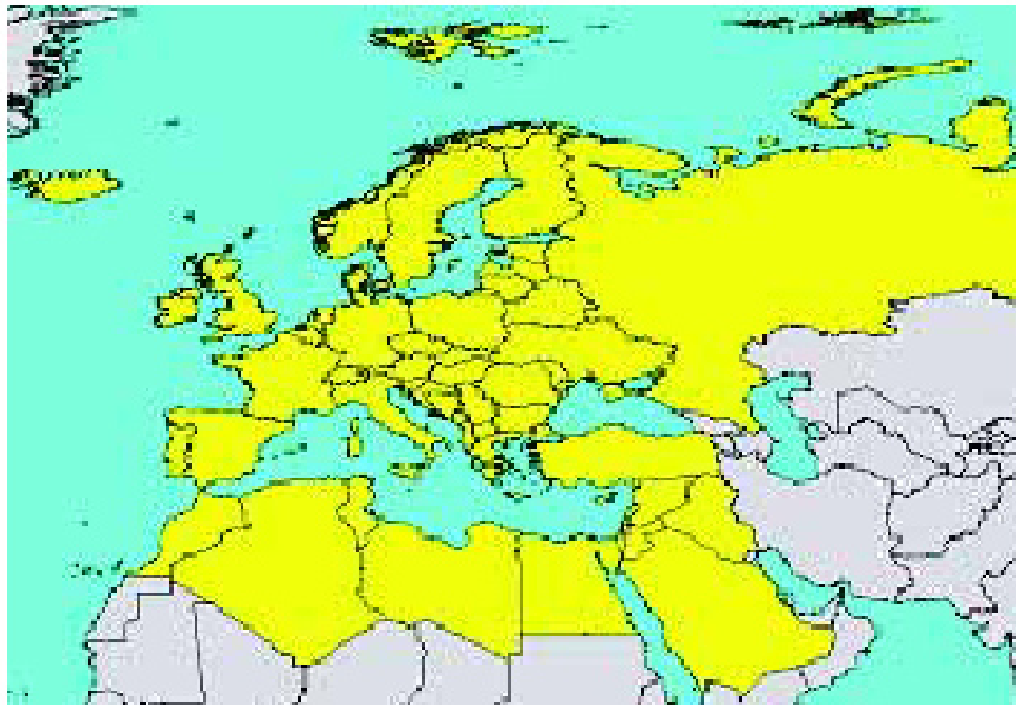
But not quite!

| | RPC1 | RPC2 | RPC3 |
|-------------|------|------|------|
| UK | 94% | 6% | |
| France | 59% | 37% | 4% |
| Spain | 90% | 10% | |
| Italy | 100% | | |
| Germany | 1% | 99% | |
| Netherlands | | 100% | |
| Finland | 1% | 99% | |
| Sweden | | 100% | |
| Poland | | 100% | |
| Russia | 66% | 34% | |

Some are very optimistic!

ST61 permitted much more than expected

- 38 Countries
- 5 300 stations
- More than 80 000 transmitters today...
- ... added to the Plan without major difficulty, under ST61 coordination rules.



Why not expect the same for GE 06?

Some are very optimistic!

Look at France!



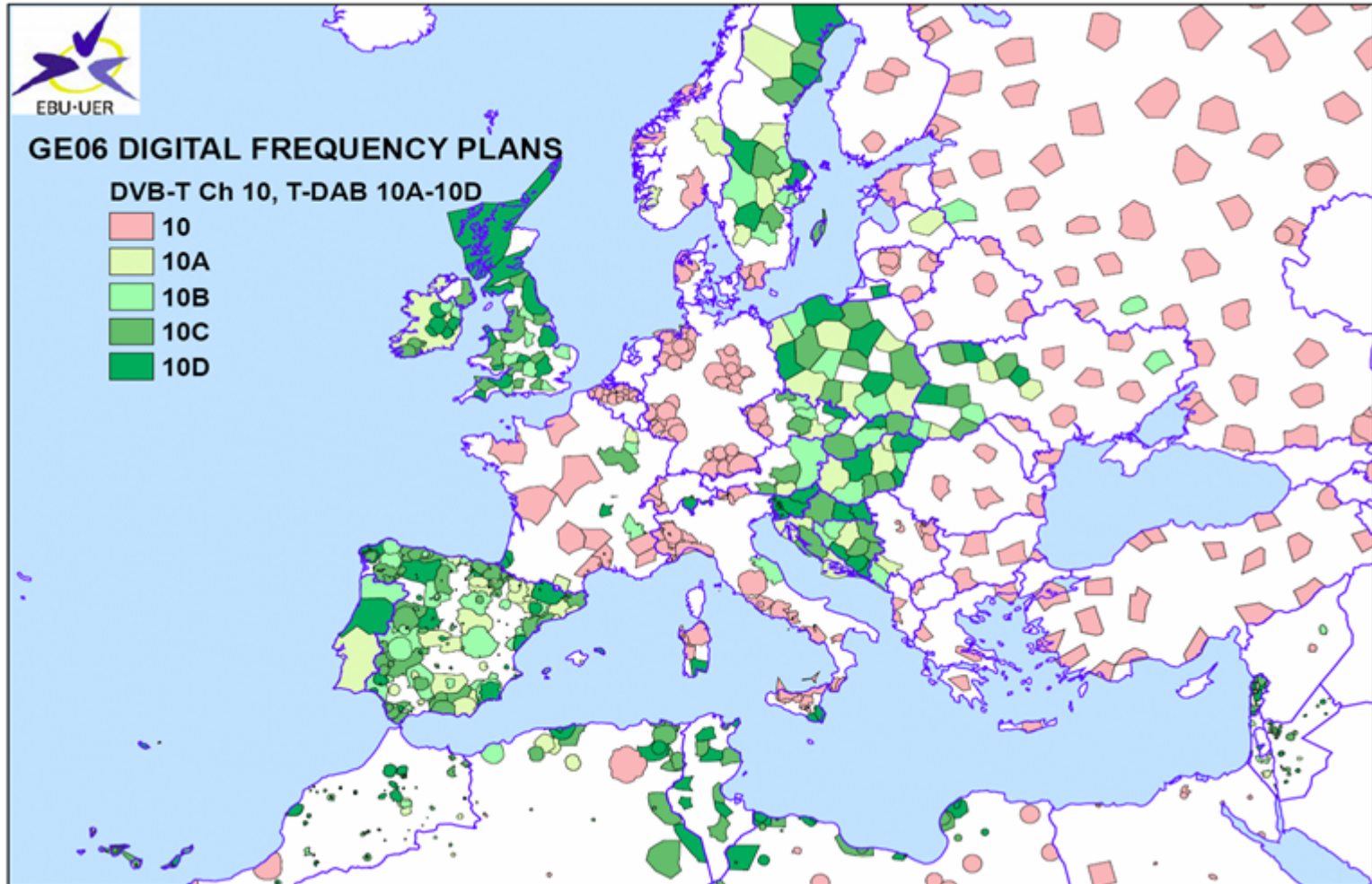
Two questions being presently studied by some interested actors in France:

In how many of the 110 main transmitter sites can we put 6 more wide coverage in addition to RRC06 channels?

Can we get 20 full coverage of Paris area?

Don't forget band III possibilities!

Example of DVB-T & T-DAB in channel 10!



Yes,
mobile TV will find room...
...but don't underestimate some
difficulties!

ASO timeline in Europe

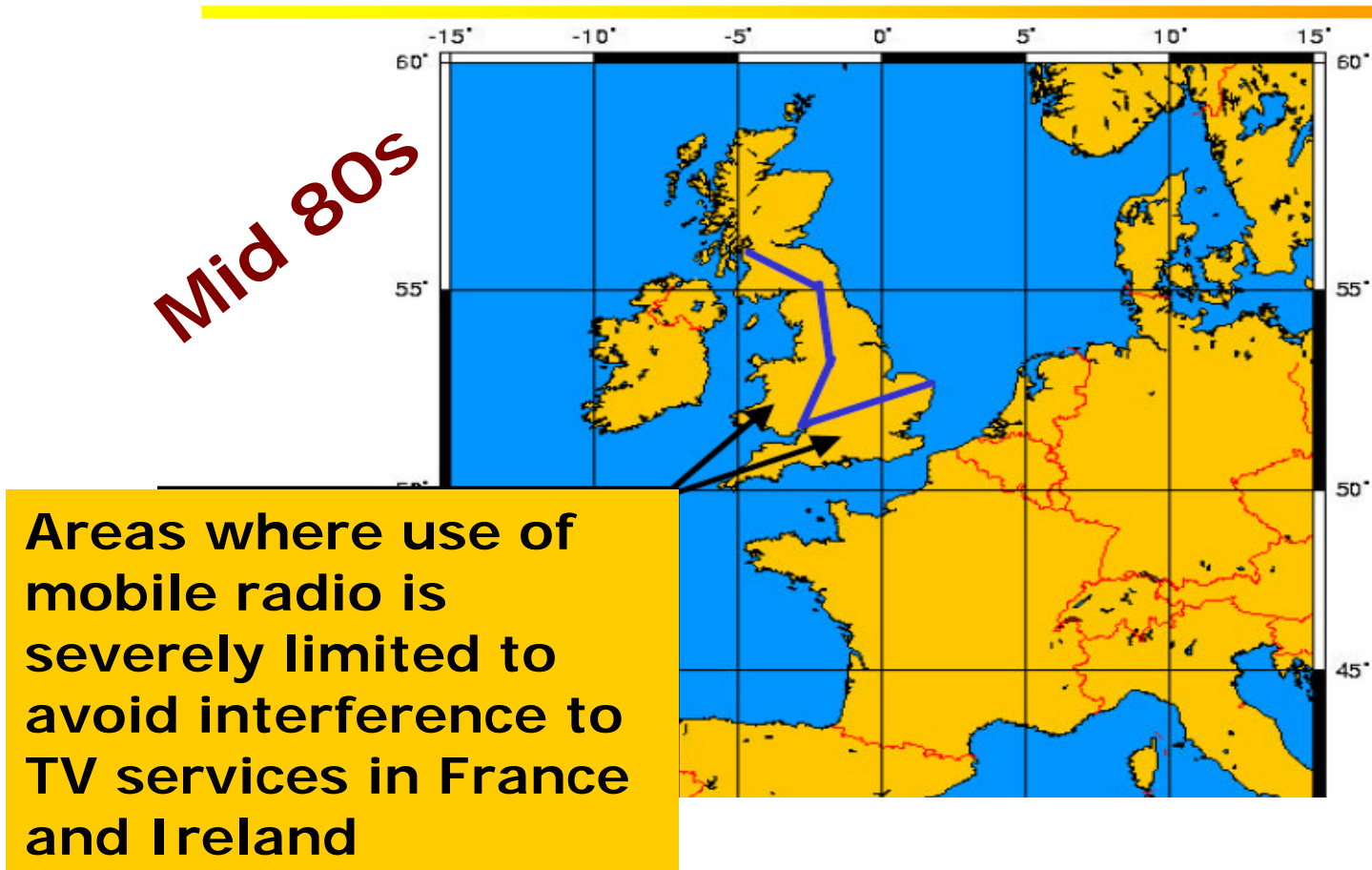
| | ASO Date (official or estimated) | Expected range |
|--------------------|----------------------------------|----------------|
| Fast Track | | |
| Finland | 2007 | 2006 to 2008 |
| Sweden | 2008 | |
| Netherlands | 2007 | |
| Germany | 2010 | |
| Middle Term | | |
| Belgium | 2010 | 2009 to 2012 |
| Norway | 2009 | |
| Denmark | 2011 | |
| Switzerland | 2009 | |
| Austria | 2010 | |
| Ireland | 2012 | |
| Last | | |
| Italy | 2006 | 2012 to 2015 |
| UK | 2012 | |
| France | 2011 | |
| Spain | 2010 | |
| Portugal | 2012 | |
| Greece | 2015 | |

Is mobile TV easy before?

Do not forget the past!

Sharing between non homogeneous services!

UK AVAILABILITY OF BAND III FOR PMR



So what?

On the move

RRC-06 Plan is only a starting point for evolution

- Appropriate type of networks for cooperative **services to mobiles and handhels** do not fit **yet** quite well in the Plan
- An **harmonised** European “dividend” band, if any, has still to be found
- The Plan could have to become very soon **evolutionary**: need for frequency agile transmitters & receivers to move step by step and implement new services

Et merci de votre attention...

