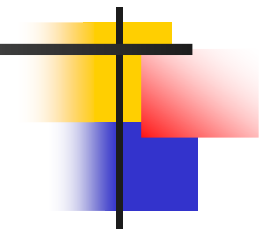# VDE / ITG FG. 5.2.4
Hamburg-Harburg / Germany
Meeting 31, October 7th, 2009

Cognitive Radio -
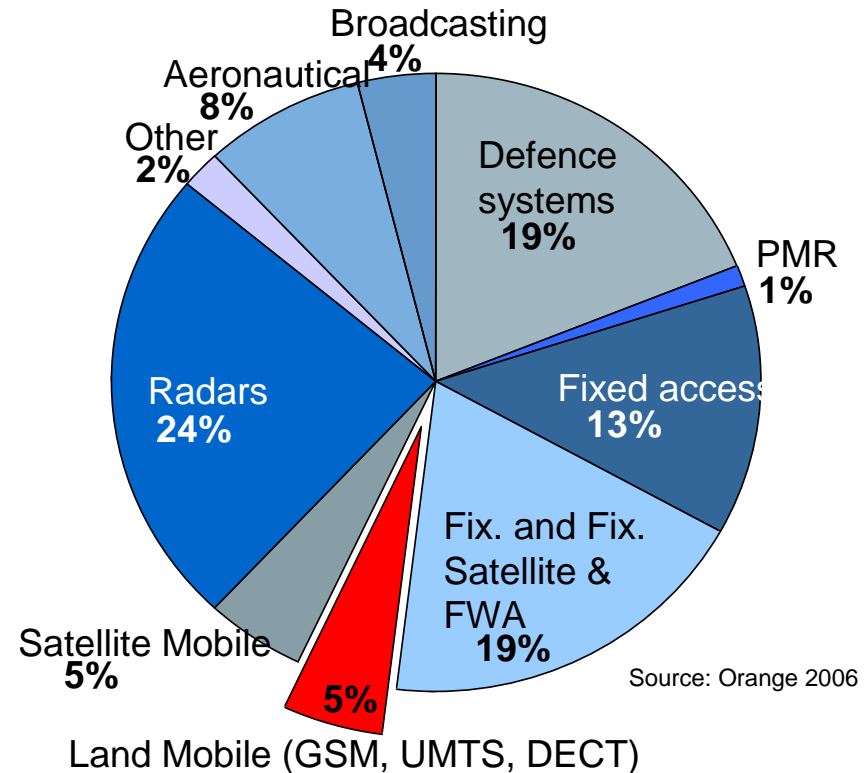## hype or (soon) reality ?

Dr. Klaus-D. Kohrt

Cognitive Radio – who needs it ?
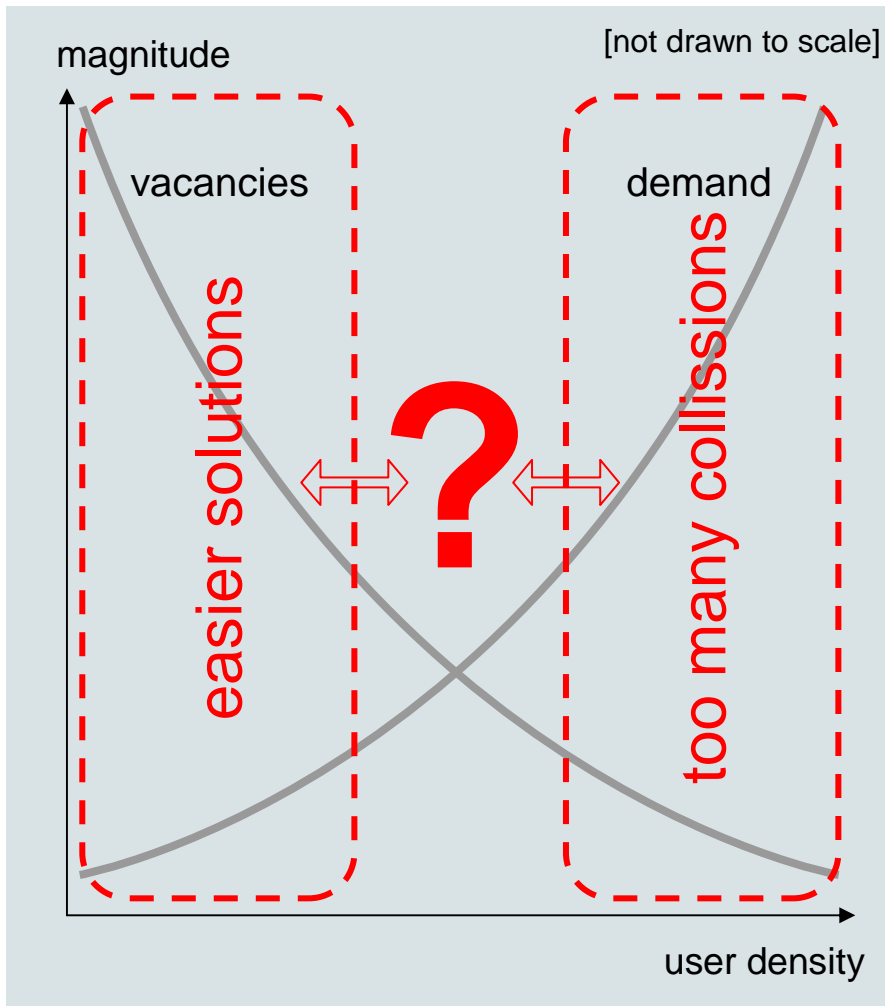
„… plenty of unused spectrum at any place at any time …"

Issues:

Licensed or unlicensed bands ?

Sporadic or prevalent use ?

Opportunistic or systematic ?

Infrastructure- or peer-based ?

Nature of primary user ?

Nature of secondary user ?

Amount of bandwidth needed ?

Conflict resolution mechanisms ?

Reaction times ?

Complexity of implementation ?

Cost of terminal / infrastructure ?

Usage fees or free of charge ?

…

Broadcasting 4%

Aeronautical 8%

Other 2%

Defence systems 19%

PMR 1%

Fixed access 13%

Radars 24%

Fix. and Fix. Satellite & FWA 19%

Satellite Mobile 5%

5%

Land Mobile (GSM, UMTS, DECT)

Source: Orange 2006

Spectrum use between 30 MHz and 10 GHz

Secondary Use (in licensed bands)

magnitude

[not drawn to scale]

vacancies   demand

easier solutions

?

too many collissions

user density

Technically, it can be done

Commercially, not viable
for mass market deployment

(EU-) Research is necessary
to understand the trade-offs
and business implications

Generally, easier solutions
can be found (e.g. roaming)

**Cognitive Re-Use works best,
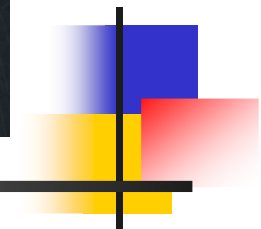where we don't really need it**

Observations

on Cognitive Radio:

- Motivation is primarily political
- Technology is able to offer solutions in due time
- Challenges are in the business domain

i.e. feasibility: YES, but viability: NO

Avoid complexity penalties for mass-market users

Thank you very much
for your attention

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