



# LEXNET

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Intensive use of wireless communication  
But Important EMF risk perception

## LA GAZETTE DE BRUXELLES

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MONDE SANS FIL

### Mobilisation contre une antenne relais à Etterbeek

mardi 10 septembre 2013, par La rédaction



N°

### ASSEMBLÉE NATIONALE

CONSTITUTION DU 4 OCTOBRE 1958  
QUATORZIÈME LÉGISLATURE

Enregistré à la Présidence de l'Assemblée nationale le

### PROPOSITION DE LOI

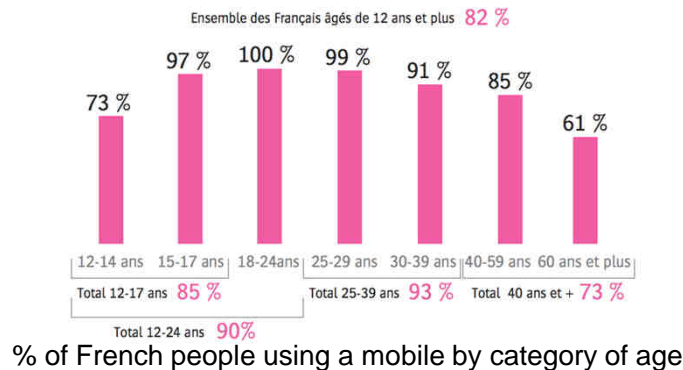
relative à la *sobriété*, à la *transparence* et à la *concertation* en matière d'*exposition aux ondes électromagnétiques*



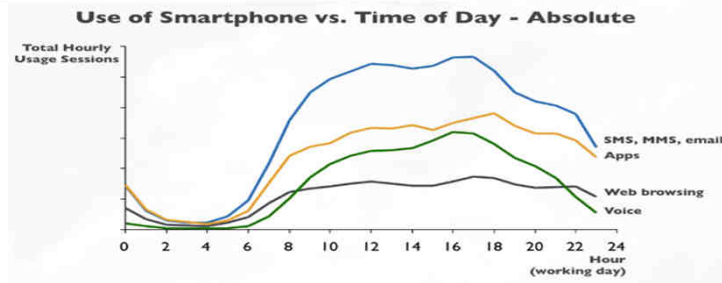
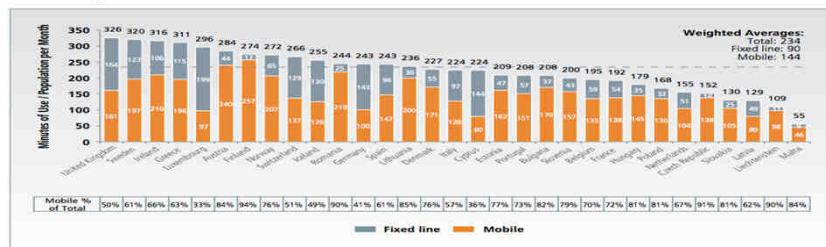


# Intensive use of wireless communication

- Large numbers of users

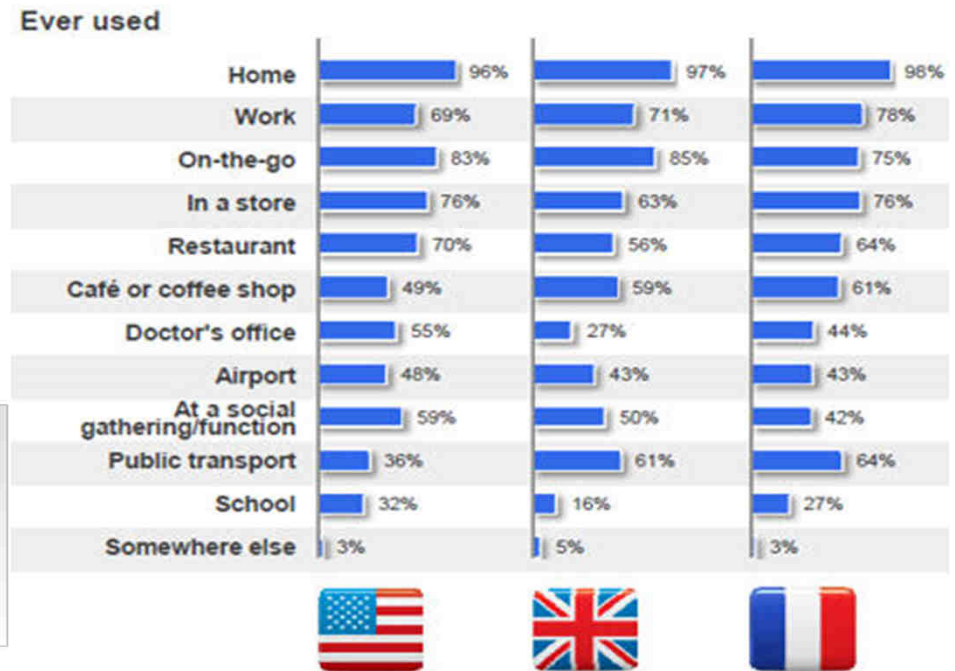


- Larger and larger duration of use



- versatile use

- IPSOS pooling in 2012



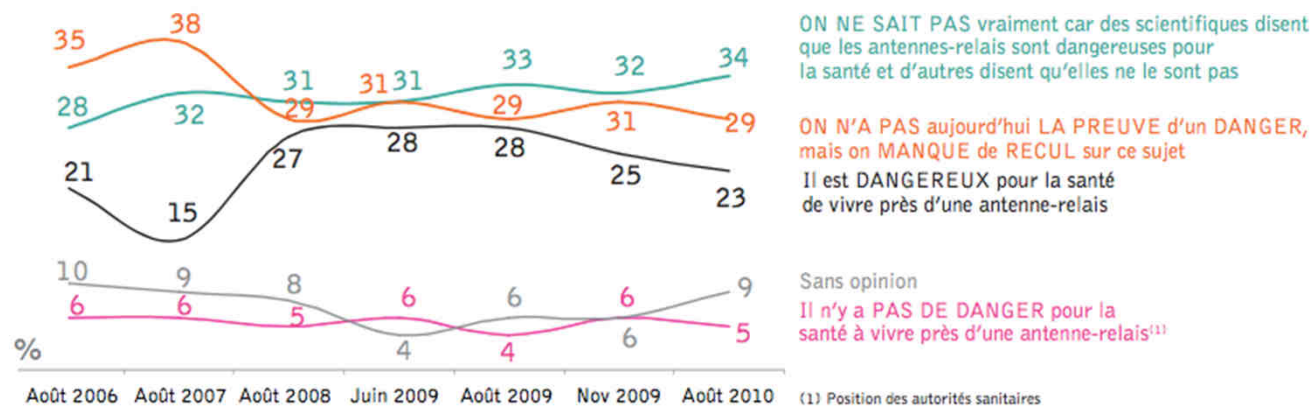
internet mobile:  
2011: 189 Mo per month.  
2012 342 Mo per month

# But Important EMF risk perception

## Important general public concerns

- In Europe
  - 70% say that mobile phone masts have some effects on health.
  - 67 % think that mobile telephones have some effects on their health.

## Stable concerns over the time



# General public Concern focus mainly on base station

- In many countries constraints have been put on base station:

- Base station antenna installation
- EMF induced by antennas

- Actions Led by perception
- Ignoring the mobile



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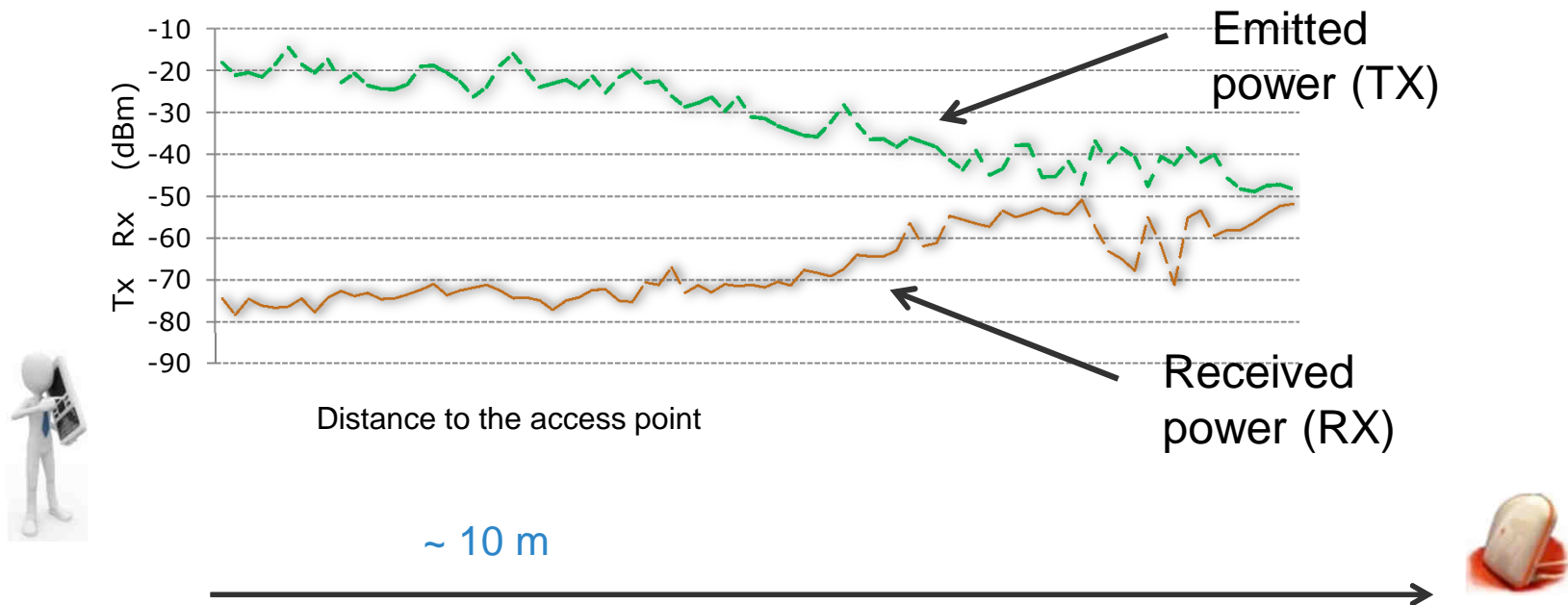
# RF exposure is not only induced by base stations



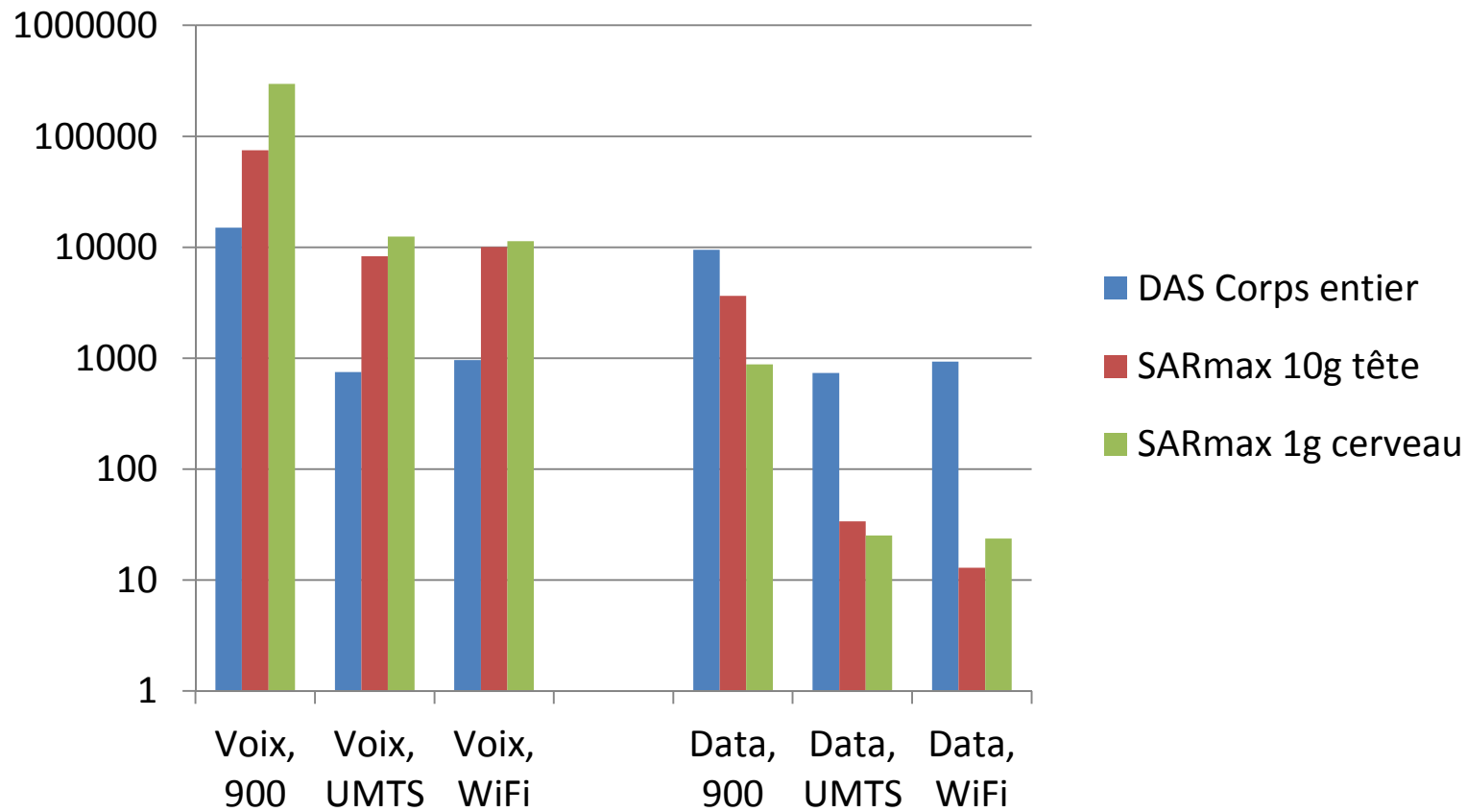
# Mobile Emitted power depends on architectures and technologies

e.g.

- closer is the base station antenna, lower is the power emitted by the phone
- Higher is the gain of the base station antenna, lower is the power emitted by the phone



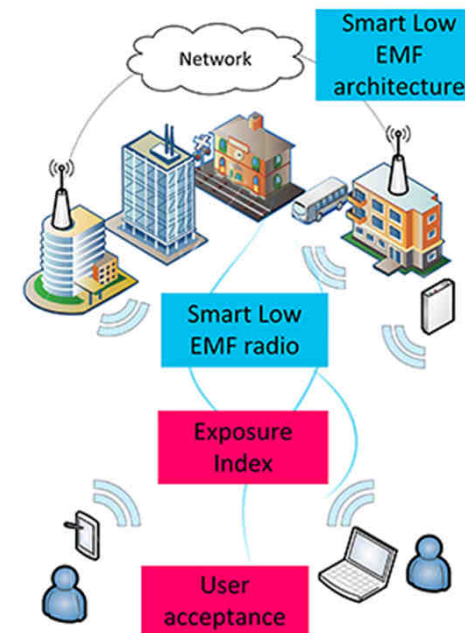
# The Instantaneous Base stations exposure is lower than the mobile phones exposure





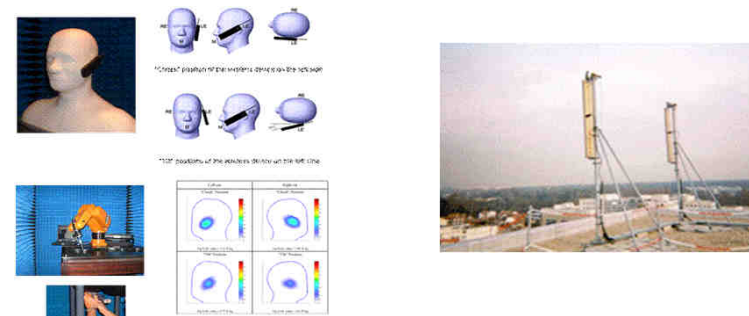
# Minimising the day to day exposure must deal with the network

- Exposure must not be reduced to minimize the exposure induced by base station
- RF exposure involves the day to day activity
- Minimise the RF exposure requests to investigate **methods**, **technologies** and **architecture** able to support network inducing reduced exposure without compromising quality of services.



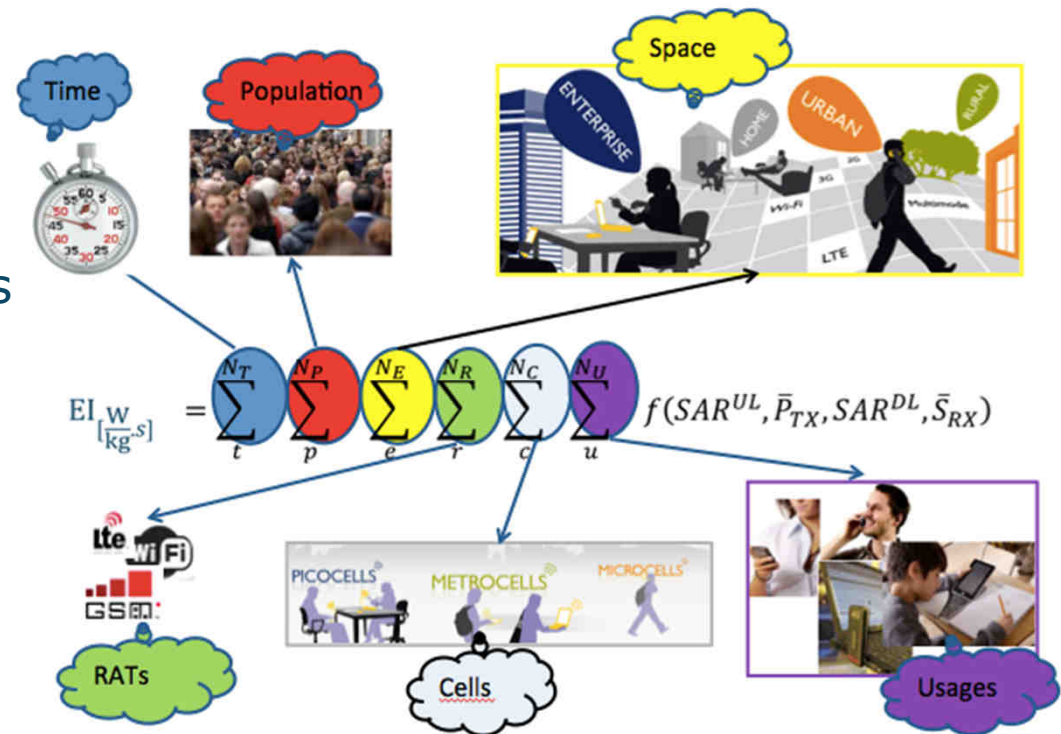
# The new paradigm of the exposure assessment

- Today base stations and mobile phone are considered separately from the exposure point of view



- With LEXNET the exposure is global taking into account

- Duration
- Technologies
- Population
- Usage
- Relative exposure induced by mobile and base station



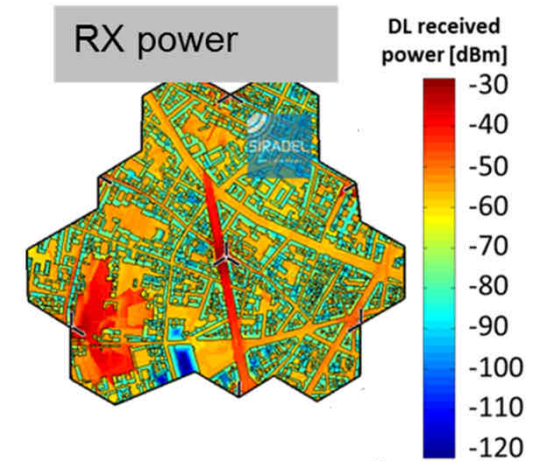
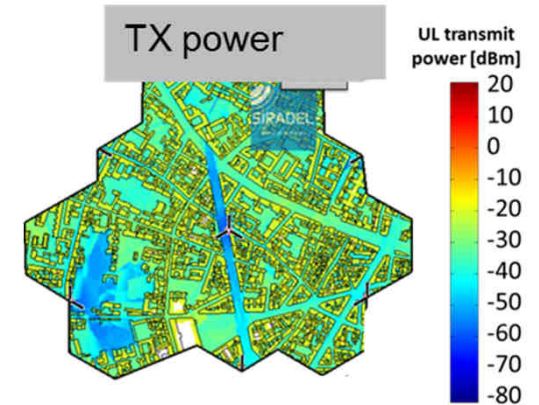
# Global exposure comparison between 2G and 3G

## Hypothesis:

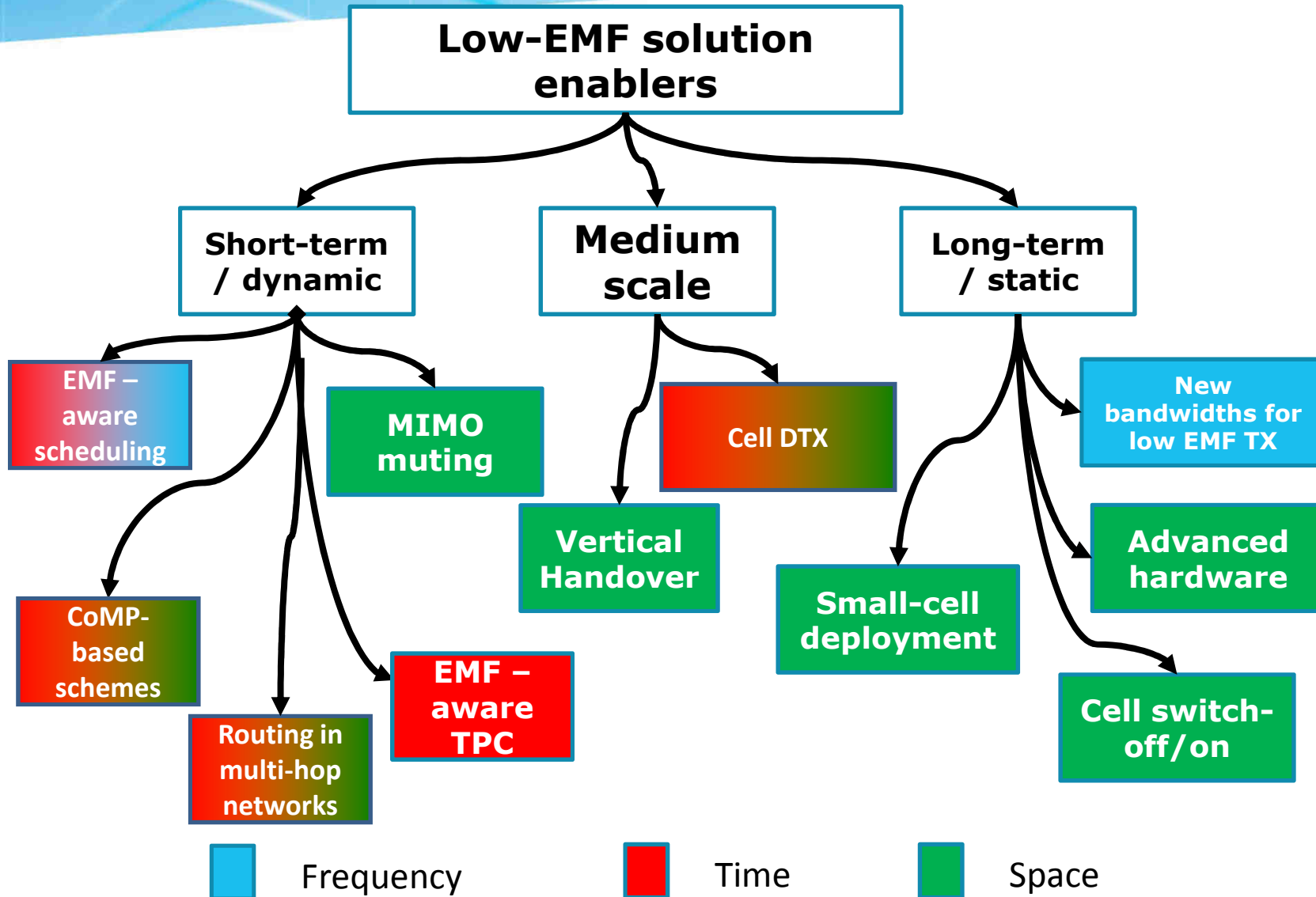
Voice call : 138 minutes/month  
 same data exchange with diff throughput  
 voice avg 2G 50% Pmax    3G 1% Pmax

	<b>Ratio WG mobile/WG BS</b>	<b>Ratio local mobile/local BS</b>
2G	≈ 10000	≈ > 50000
3G	≈ 400	≈ 10000

WB EI 2G/EI 3G	≈ 10
Local in head EI2G/EI3G	≈ 50



# LEXNET next step minimize the exposure

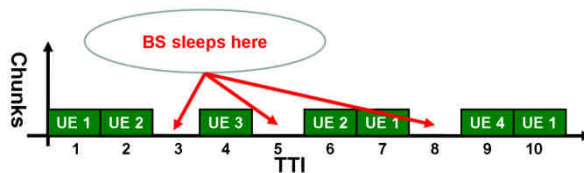




# LEXNET next step minimize the exposure

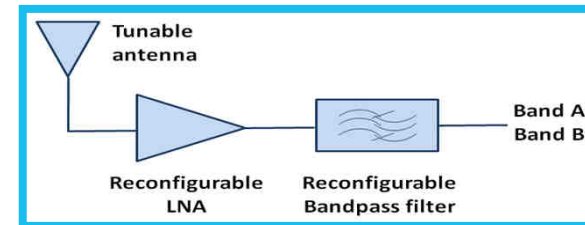
- Analyse technologies able to reduce the global exposure

- Enhanced receiver sensitivity



- DTX

- LTE Reference Symbols Usage Reduction

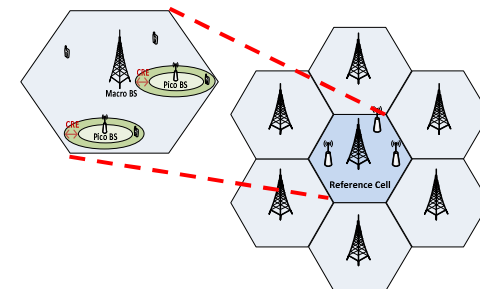


- Analyse architectures able to reduce the exposure

- novel routing

- Offloading

- Design a coordinated cell scheduling Scheme for HetNets



# LEXNET project

9 countries  
17 partners

## ○ Research labs:

- ✓ CEA-LETI (FR)
- ✓ IMind (B)
- ✓ KIT (DE)
- ✓ CWC (FI)

## ○ Universities :

- ✓ UNICAN (ES)
- ✓ Inst Mines Telecom (PT)
- ✓ UniS (UK)
- ✓ Univ. Montenegro & Belgrade

## ○ Equipment manuf.:

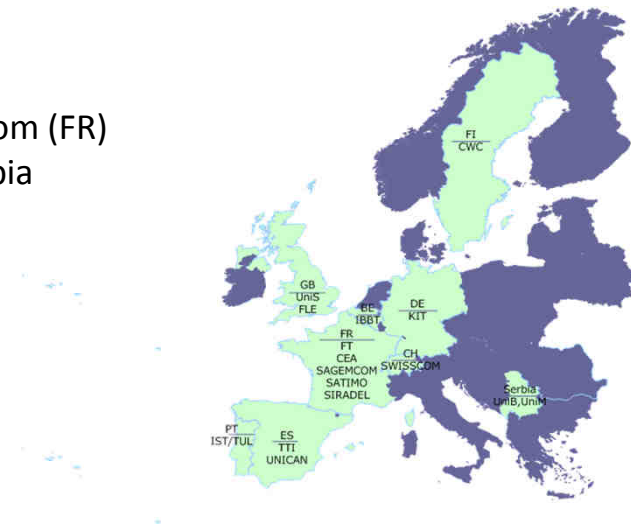
- ✓ SAGEMCOM (FR)
- ✓ Fujitsu Labs Europe (UK)

## ○ Operators:

- ✓ France Telecom (FR)
- ✓ Telekom Serbia

## ● SMEs (3)

- TTI (ES)
- SATIMO (FR)
- SIRADEL (FR)



Reports and results at  
<http://www.lexnet-project.eu>

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# Thanks

**Men build too many walls and not enough bridges.**

**Isaac Newton**