Possible directions in drafting 802.16e amendments to support Fix and Mobile applications

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Purpose:
Explain authors view on fix-mobile convergence and backward compatibility issues

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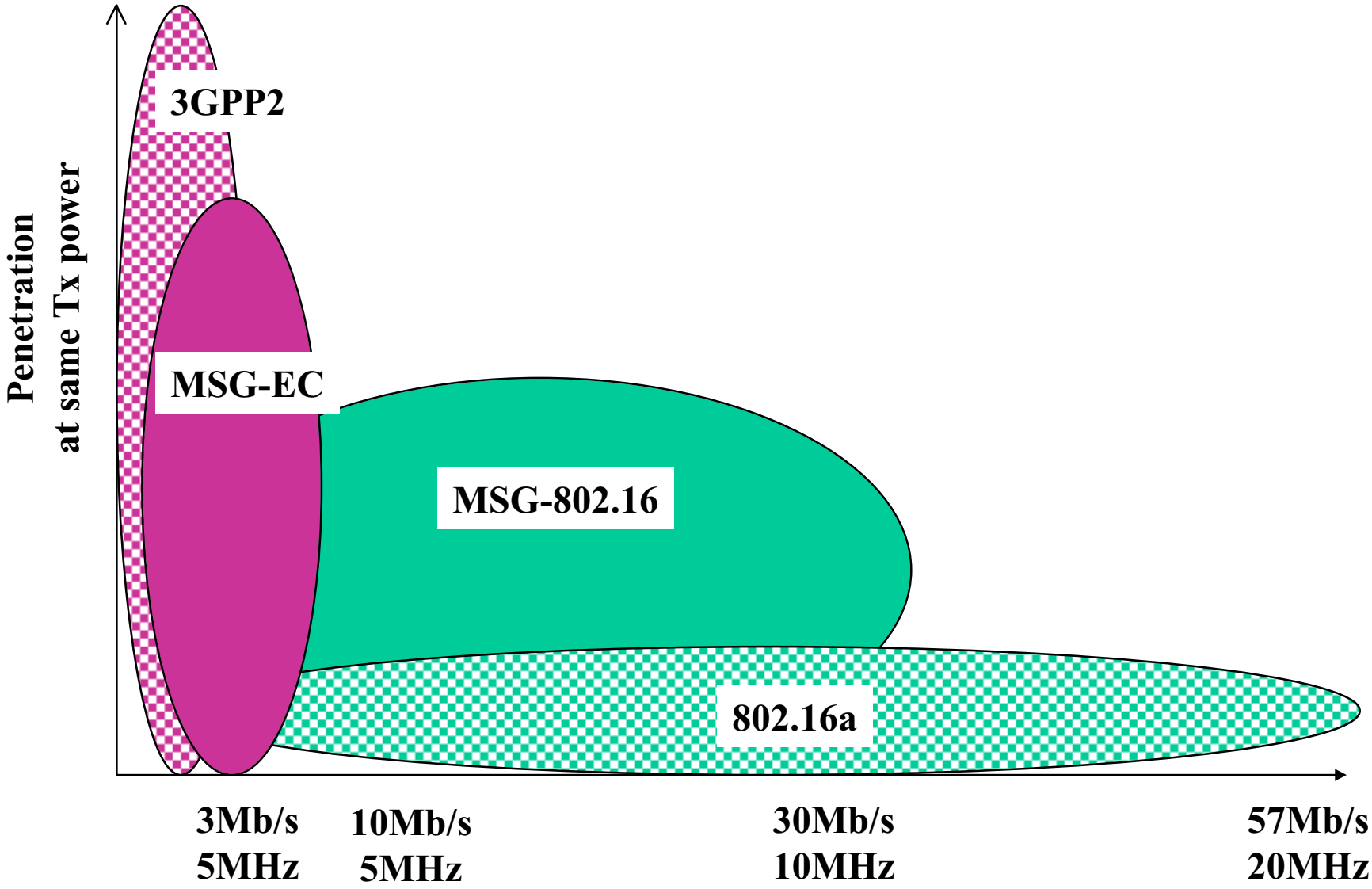
Contents

- View of the 2 PARs
- Backwards compatibility
- Conclusions

Actual Differences

- Bandwidth
  - EC-SG: up to 5MHz, focus on 1.25MHz
  - 802.16 SG
    - Has to define the maximum channel width
      - Proposal: 10MHz
- Data rates
  - EC-SG: not clear, probably the target spectral efficiency is 2b/s/Hz
  - 802.16 SG
    - 3-4 bit/s/Hz
- Receive sensitivity level / data rate
  - Cannot be actually defined now

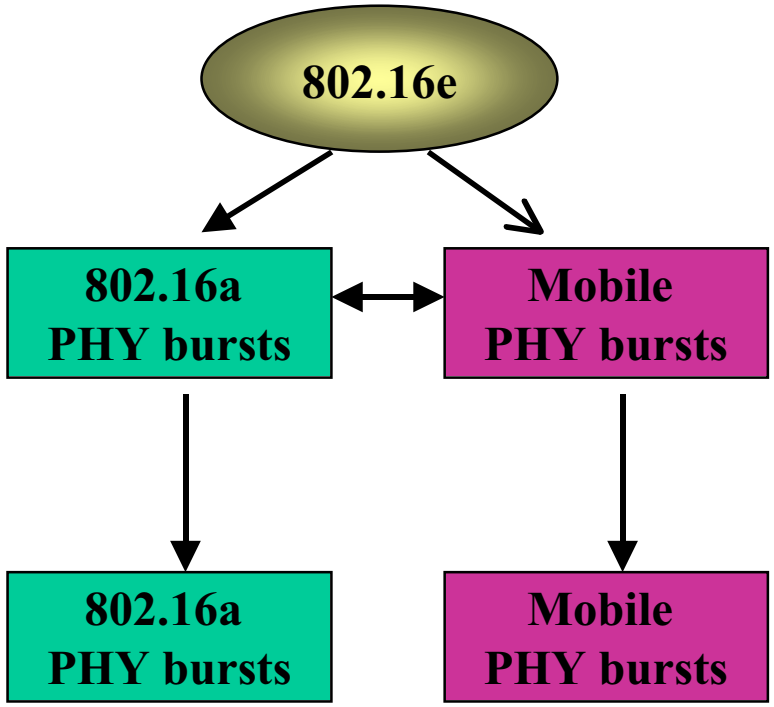
Comparison between the 2 PAR scope



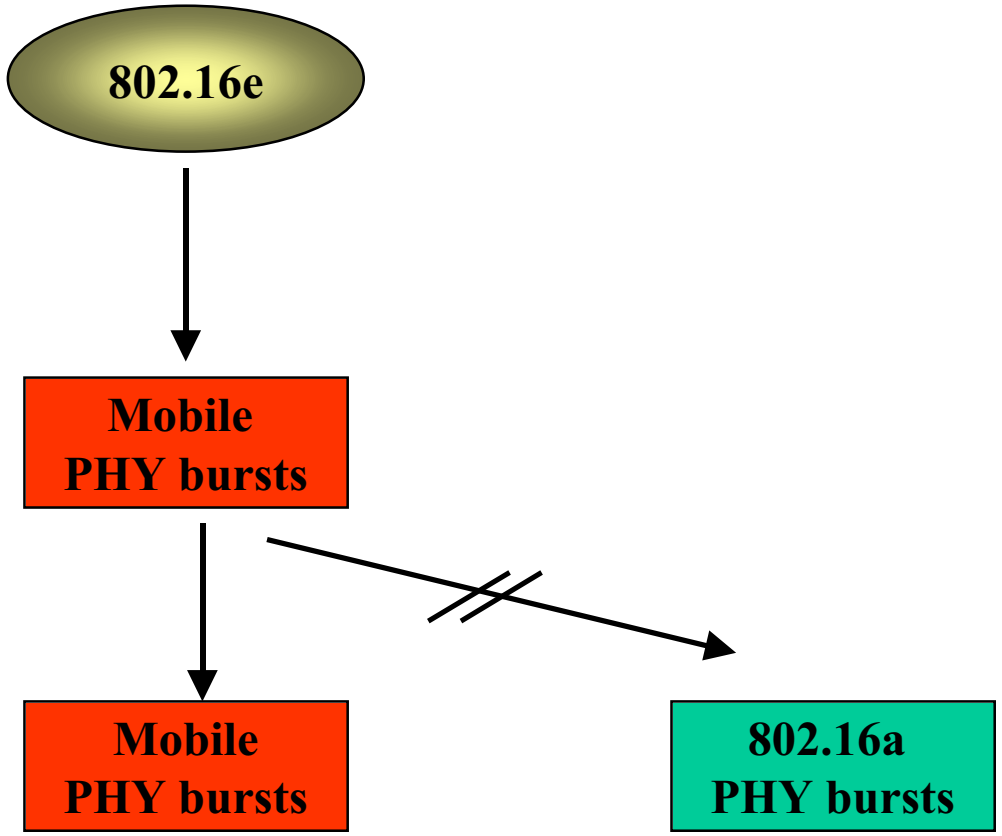
802.16e Scope

- Channel BW: 3-10MHz
- Maximum spectral efficiency: 3-4 bit/s/Hz
  - Reduced channel spacing (802.16a : up to 28MHz)
  - Does not target 1.25MHz
  - Keep existing maximum 802.16a data rates in the target channels
- Traffic symmetry
  - Up to symmetrical data rates
- Speed
  - Up to 120km/h moving subscriber
  - Up to 250km/h train (mobile feeding)

Backward compatibility for 802.16e OFDM PHY



802.16e – not backward compatible



Comparison between different variants

	Variant 1 Back-ward compatible	Variant 2 Not backward compatible
Backward 802.16a SS compatibility	Yes	No
Robustness to mobile situations	Yes	Yes
Overhead in fix use	Minimum	Higher
Up-grade of 802.16a FWA cells to MB cells	Possible	Not possible

What Mobile OFDM PHY burst profile could be?

- Higher multi-path support
  - Higher FFT size
- Adaptation to faster channel variation
  - Use mid-ambles
- Faster ARQ
  - Insert CRC per data sub-block
  - Avoid the granularity problem with fix block code

Conclusion

- Backward compatibility with 802.16a may be possible
  - We did not study enough all the details to be 100% convinced
- The 5 Criteria can mention it, but not as binding requirement
  - The effect of converging FWA and MB brings a higher market potential