5G spectrum and its economic impact

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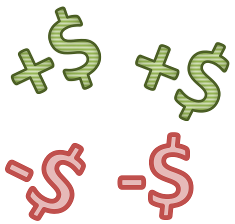
Simplified view on technology and business model roadmap



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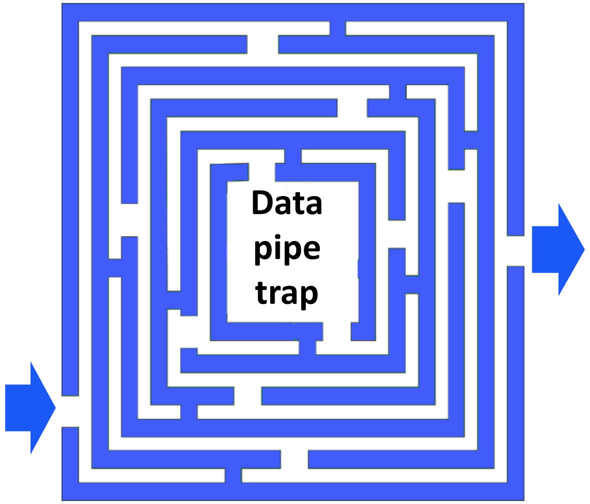
Voice driven market

Mobile data driven market



Bright, but forever gone past

Recent diminishing returns and loss of innovative edge

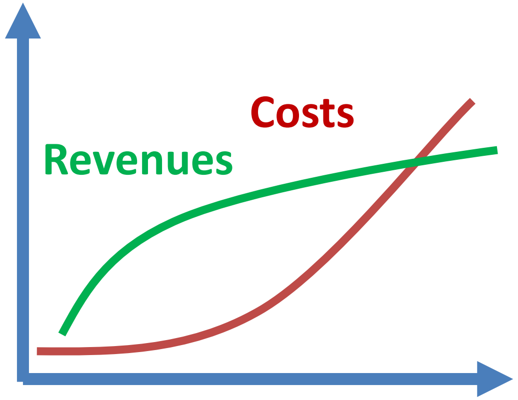
We are here

A complex path of transformation

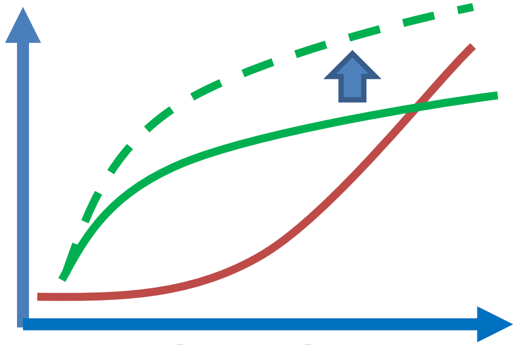
Even brighter future with 5G used for multitude of industrial applications

Revenue vs expenses struggle

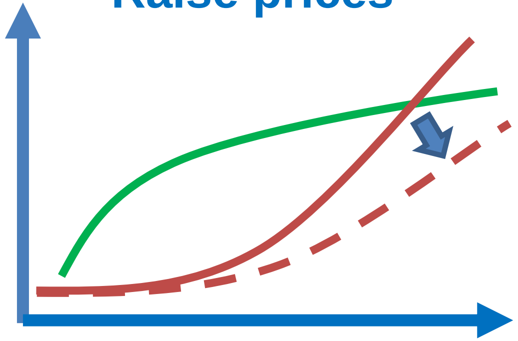
The risk of uncontrolled costs due traffic growth



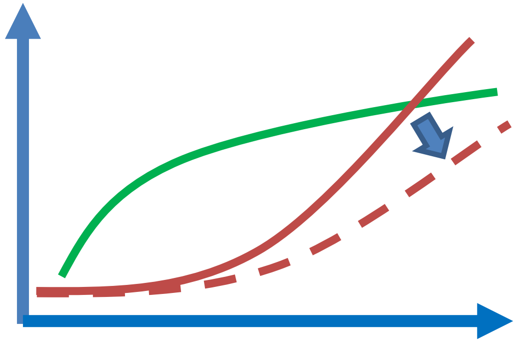
Possible short-term measures



Raise prices

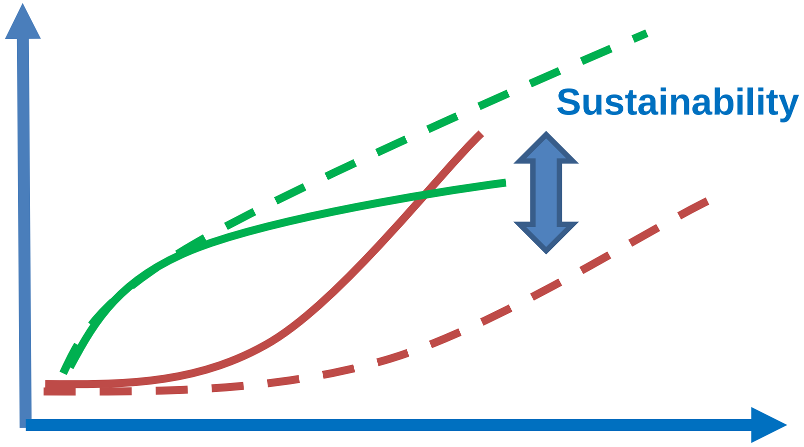


Additional wide spectrum for a reasonable price

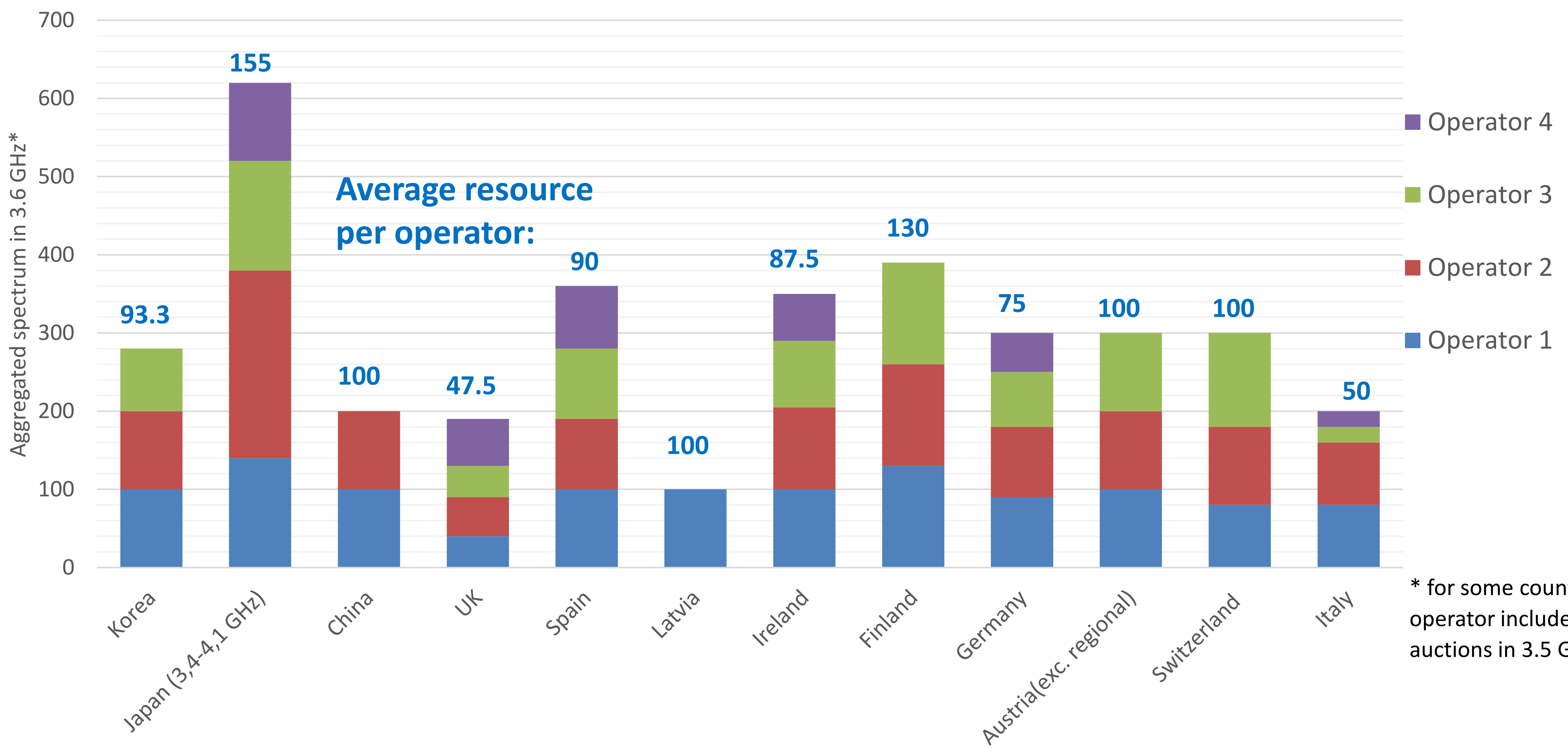


Virtualization and zero-touch network

New significant revenue streams from industrial applications in a long-term (combined with previous measures)



Wide spectrum in the mid-bands to prolong existing business models



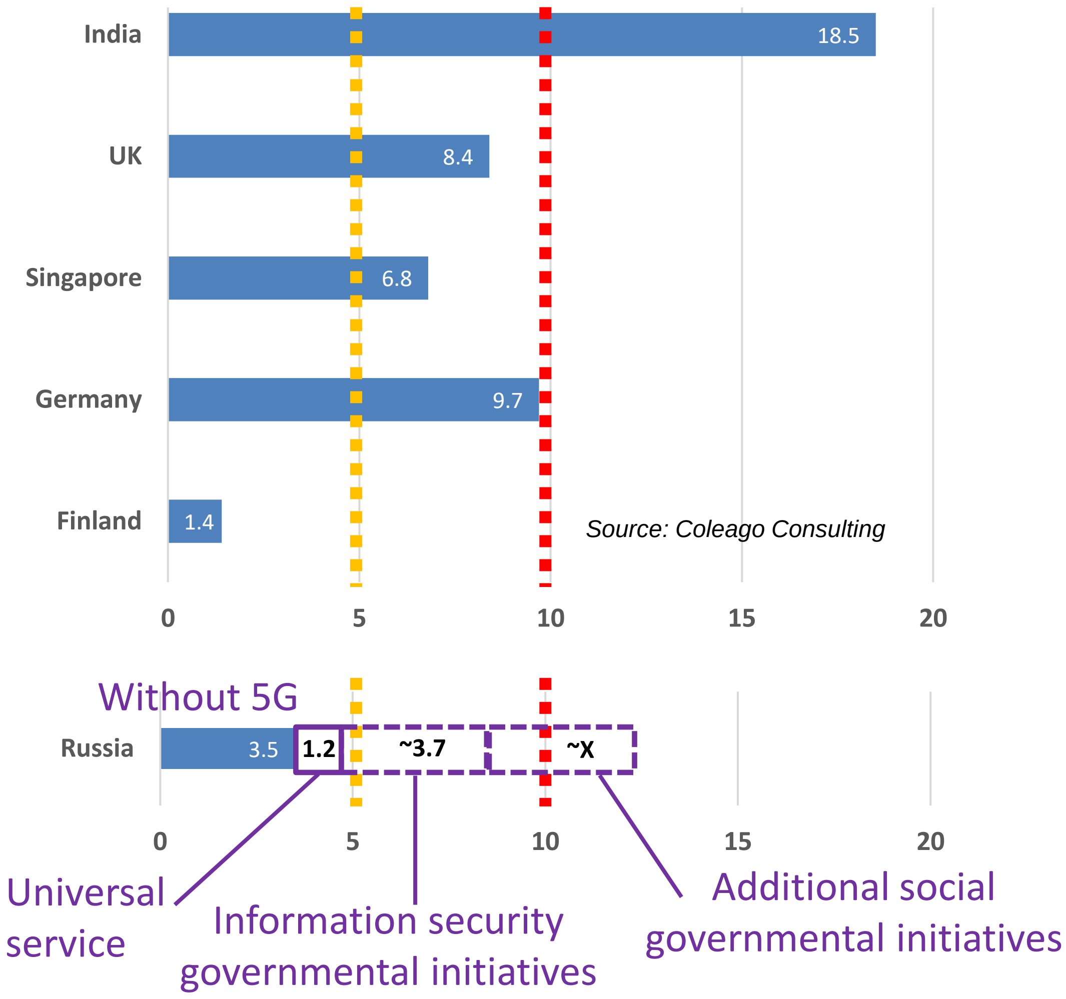
* for some countries spectrum per operator includes results of separate auctions in 3.5 GHz and 3.7 GHz bands

Mid-band spectrum with channel bandwidth of 80-100 MHz is a desirable and achievable goal to outweigh traffic growth by reducing the price of Gbyte delivery

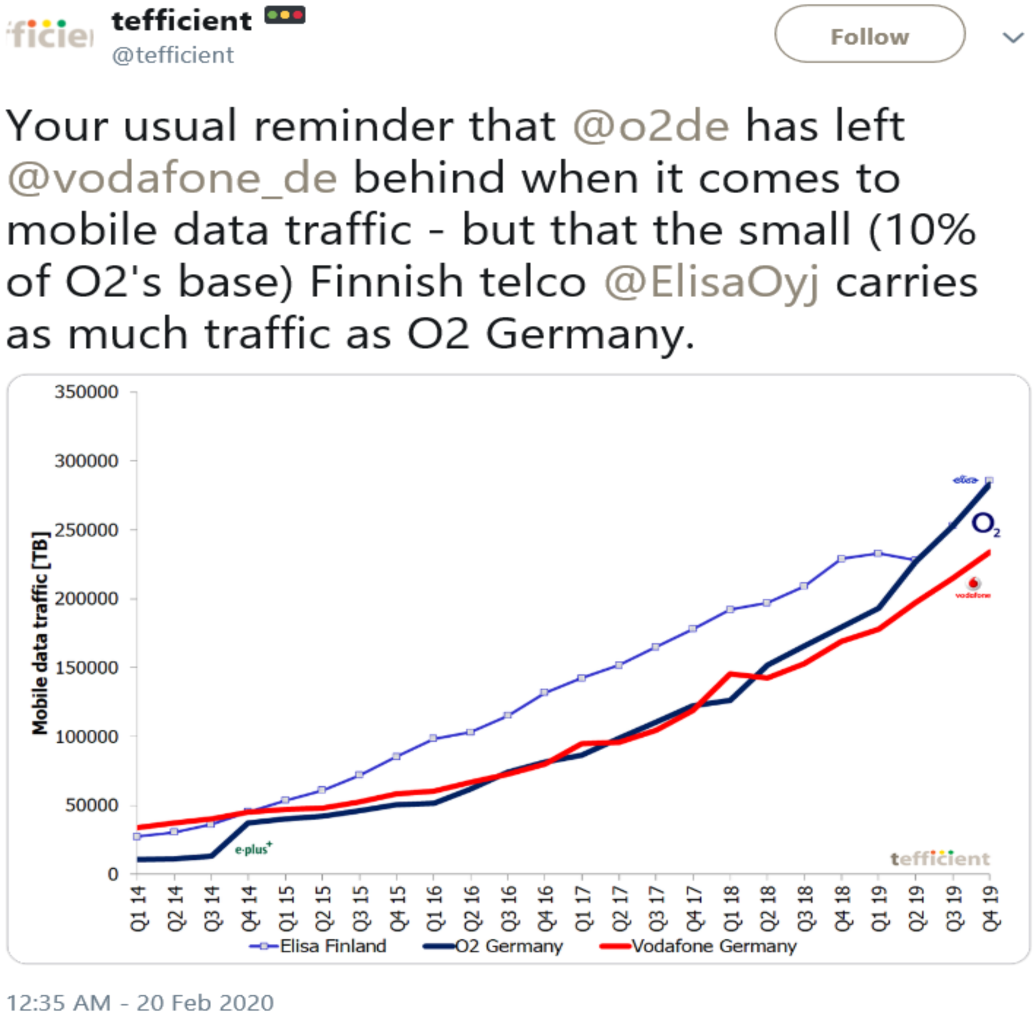
Spectrum fees(auction and/or annual payments) for sustainable investment

Annualized cost of spectrum in selected countries

Annualised cost = cost of capital / (1 - (1 / (1+cost of capital)) ^ licence duration)

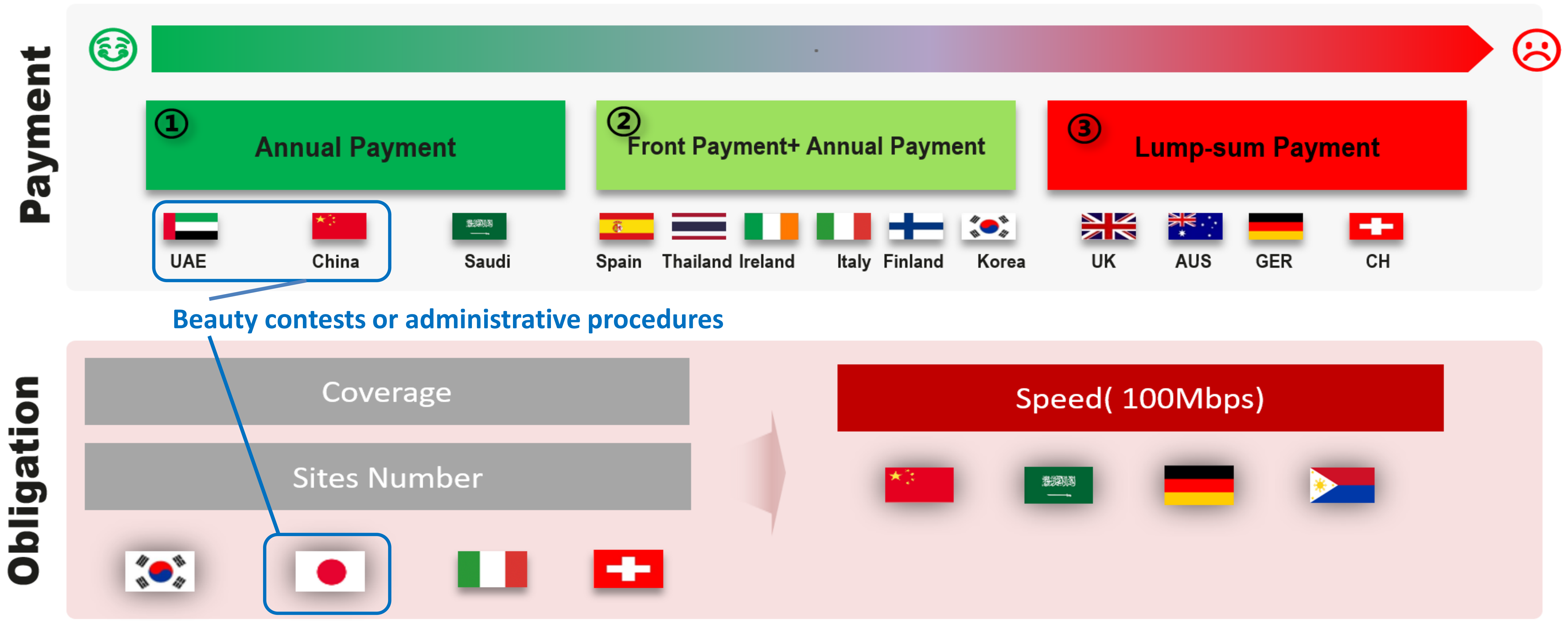


Mobile traffic comparison between Finland and Germany



Overall spectrum payments and additional non-tax payments (not related to infrastructure investment) should be preferably limited by 5-10% of MNOs revenues from mobile communication services

Spectrum payments and obligations in selected countries



Source: *Huawei Market Insight 2019, Huawei Technologies Co. Ltd.*

Annual payments, sites number and coverage obligations(with lower speeds) are more preferable for infrastructure investment

Summary and additional recommendations

- Mobile communications industry shouldn’t be considered only in the context of telecommunications and should be evaluated as a means to spur digital transformation of traditional industries

- The transformation of MNO into catalyst of digitalization for traditional industries is a time and investment consuming process, which requires optimization of existing business models.

- Additional new spectrum with wide channels is one of the major tools to address the increasing cost of growing traffic delivery

- Spectrum fees and payments, as other potential non-tax payments, should be adjusted to be less than 10% of MNO revenues or preferably even below 5% not to stifle investment into new infrastructure and industrial applications development.

- Widespread rural coverage obligations or commitments become less and less feasible with current business models and requires voluntary sharing (and even stipulated) as well as subsidizing from the government.

Thank you for your attention!

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