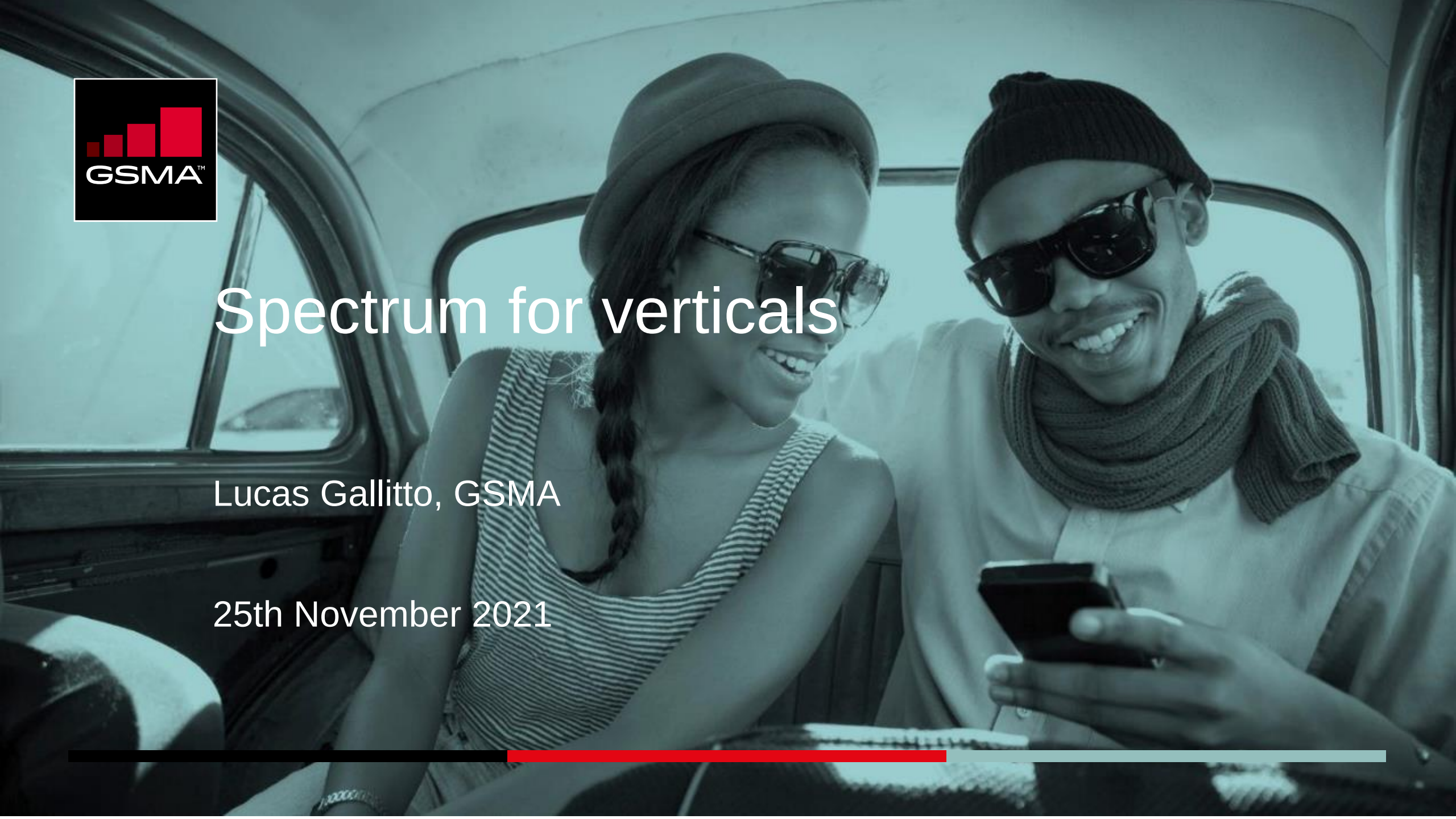


Spectrum for verticals

Lucas Gallitto, GSMA

25th November 2021

Vertical networks – today and tomorrow

- **Industry verticals have long had their own private networks for local & nationwide comms**
  - E.g. public safety/transport, on-site walkie-talky networks (e.g. security)
  - They have their own spectrum outside key mobile bands
- **Their needs are evolving & new use cases emerging**
  - Traditional users want a broadband upgrade
  - Growing desire for narrow-band IoT (e.g. smart grids)
  - Local 4G/5G networks: manufacturing, (air)ports, hospitals etc
  - Low cost cellular kit (thus harmonised mobile bands)
- **Diverse requirements:**

High speed
Low latency
High security
High resiliency
LPWA

New regulatory approaches can harm MNOs

Regulators adopting measures to help verticals build their own private networks

1. **Set-asides for "local licences" in core 5G bands**
   - Risks forcing MNOs to pay more for less spectrum

2. **Set-asides for "local licences" outside core 5G bands**
   - Better option but may limit future MNO 5G spectrum acquisition

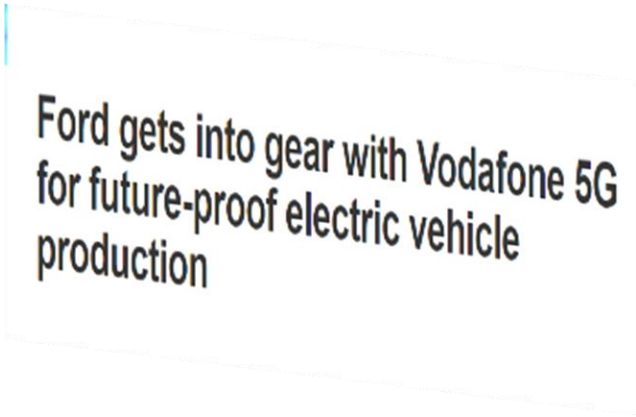
3. **Spectrum sharing in core 5G bands**
   - Less spectrum available for public 5G services (i.e. US 5G mid-band scarcity)

4. **Regulatory measures to ensure MNOs sub lease** (e.g. Finland)
   - No harmful impacts on MNOs as long as obligations are reasonable

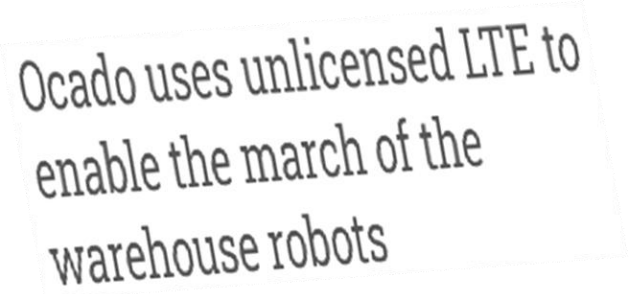
Current approaches support verticals well

No evidence of market failure and existing spectrum approaches already proven

- **Commercial MNOs well equipped to support all vertical needs**
  - Competitive mobile market means verticals have options
  - MNOs have experience and major economies of scale
  - MNOs are already trusted partners and wider networks add resiliency
  - Diverse MNO spectrum/network assets mean all use cases supportable



- **Unlicensed and other spectrum well suited to verticals**
  - Unlicensed spectrum is already used to support private networks
  - Radio environment in factories is controllable so QoS can be good
  - Other spectrum options outside of core mobile bands



Leasing agreements provide added options

Mobile operators already sub-lease spectrum where they are allowed

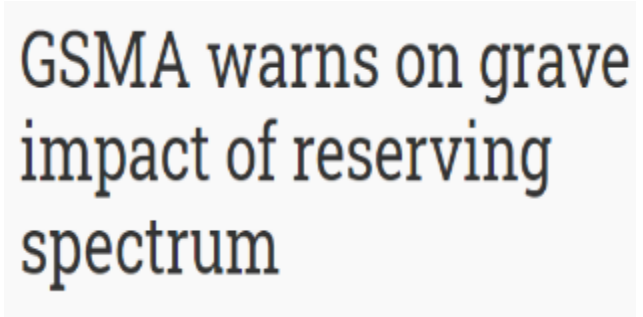
- **MNOs can sublease spectrum to enable verticals to access spectrum to build their own networks**
  - Reduces negative impact on public 5G services
  - Preserves the benefits of market-based assignments
  - Licence conditions can ensure the needs of verticals are met

- **Others sharing agreements pose fewer risks than set-asides in core 5G bands**
  - Some bands are hard to clear so suit lower power local use
  - These could be used by verticals and MNOs too

Set-asides in core 5G bands are a major concern

Mobile operators already sub-lease spectrum where they are allowed

- **Set-asides likely to be underused and harm market awards**
  - Spectrum will not go to user who values spectrum the most
  - Set-asides will do underused in many areas where MNOs would use it
- **Set-asides harm the wider success of 5G**
  - Reduces amount of spectrum for MNOs leading to slower 5G
  - Inflates 5G auction prices risking slower rollouts and slower 5G speeds
- **Creates technical challenges that limit use cases and can create harmful interference**
  - Networks must be synchronised which limits vertical set-aside use cases



Vital to consult MNOs before making rash decisions

5G policy mistakes take years to undo and cost economies dearly

- **Regulatory decisions must be backed by evidence not hype**
  - Set-asides are building momentum without evidence they work
  - We need to push for evidence-based spectrum policy decisions
  - Mobile industry needs renewed efforts to make our socioeconomic case

- **Real regulator-industry dialogue needed at consultations**
  - We need to show we are serious about meeting vertical needs
  - More case studies and proofpoints – we are not believed enough right now
  - Neets to ensure awards are designed to help us invest in 5G