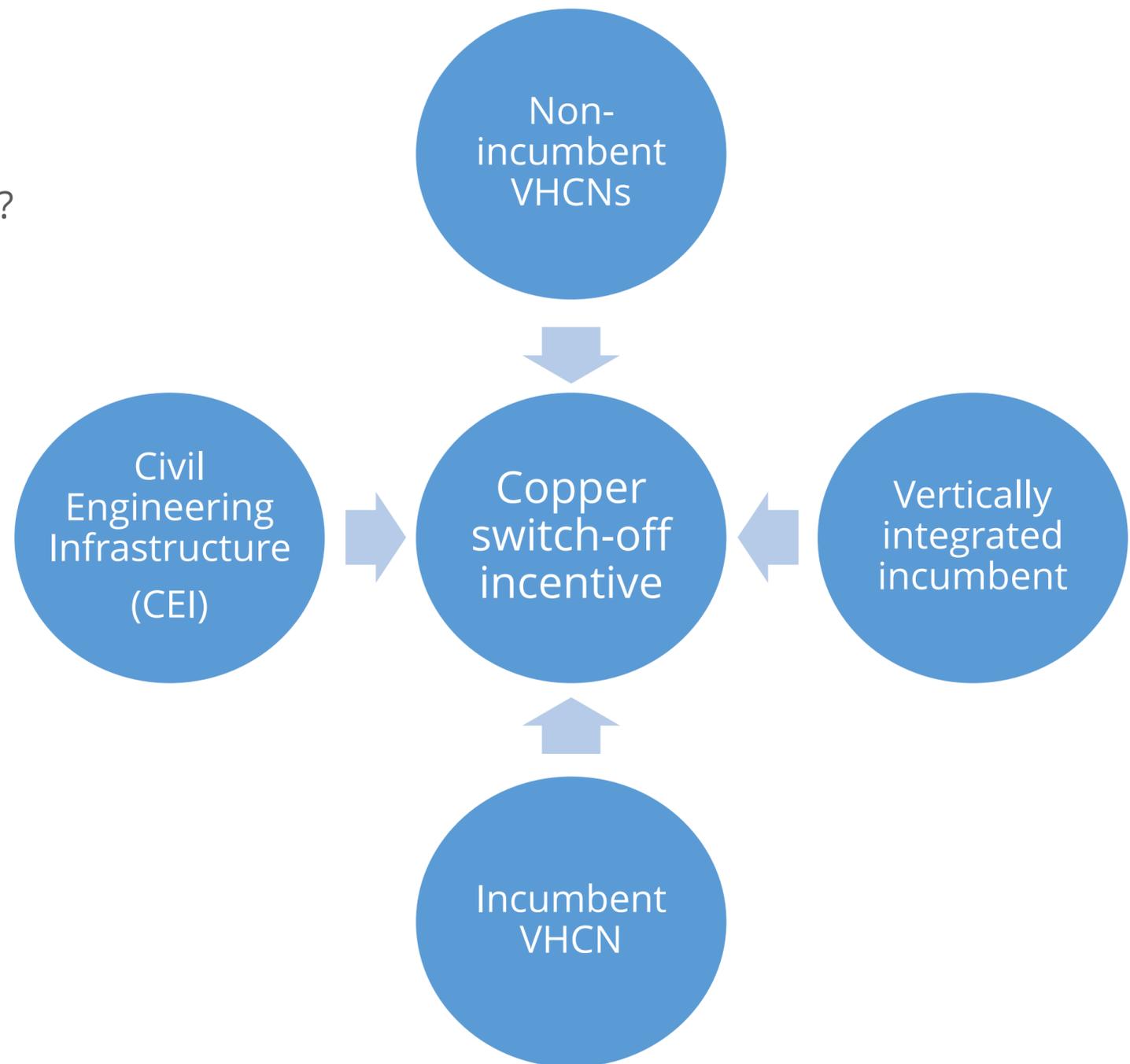


Copper Closure Incentives

Should NRAs intervene?

- While NRAs have spent much effort to encourage investment in and deployment of VHCNs, copper closure is something that has received much less attention.
- Should copper closure be encouraged by NRAs?
 - What are its risks and benefits?
 - What are the incentives on incumbents to close or maintain copper services?
- What factors should the NRA consider when considering intervention?
 - Consumer interests
 - *Including vulnerable consumers*
 - Investment incentives
 - *For incumbent and non-incumbent providers*
 - Impact on downstream competitors.
- What tools do NRAs have to intervene?
 - Timing and conditions for closure
 - Copper/fibre pricing.



Risks and benefits of copper closure

Should NRAs intervene?

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Risks

- **Consumer harm**
 - Higher prices
 - Service continuity
- **Harm to downstream competition**
 - Timing and processes
- **Harm to upstream (infrastructure) competition**
 - Tie-in of wholesale and retail customers
- **Impact on incumbent cost recovery**
 - CEI pricing
 - Stranded assets

Benefits

- **Improved long-term efficiency**
 - Fibre networks are more efficient and lower cost to maintain
- **Improved consumer experience due to accelerated fibre take-up**
- **Economic growth due to accelerated fibre take-up**
- **Improve the incumbent's fibre business case**
- **Environmental benefits**
 - Immediate direct reduction in power consumption
 - Indirect reduction in user's carbon footprint due to increased bandwidth

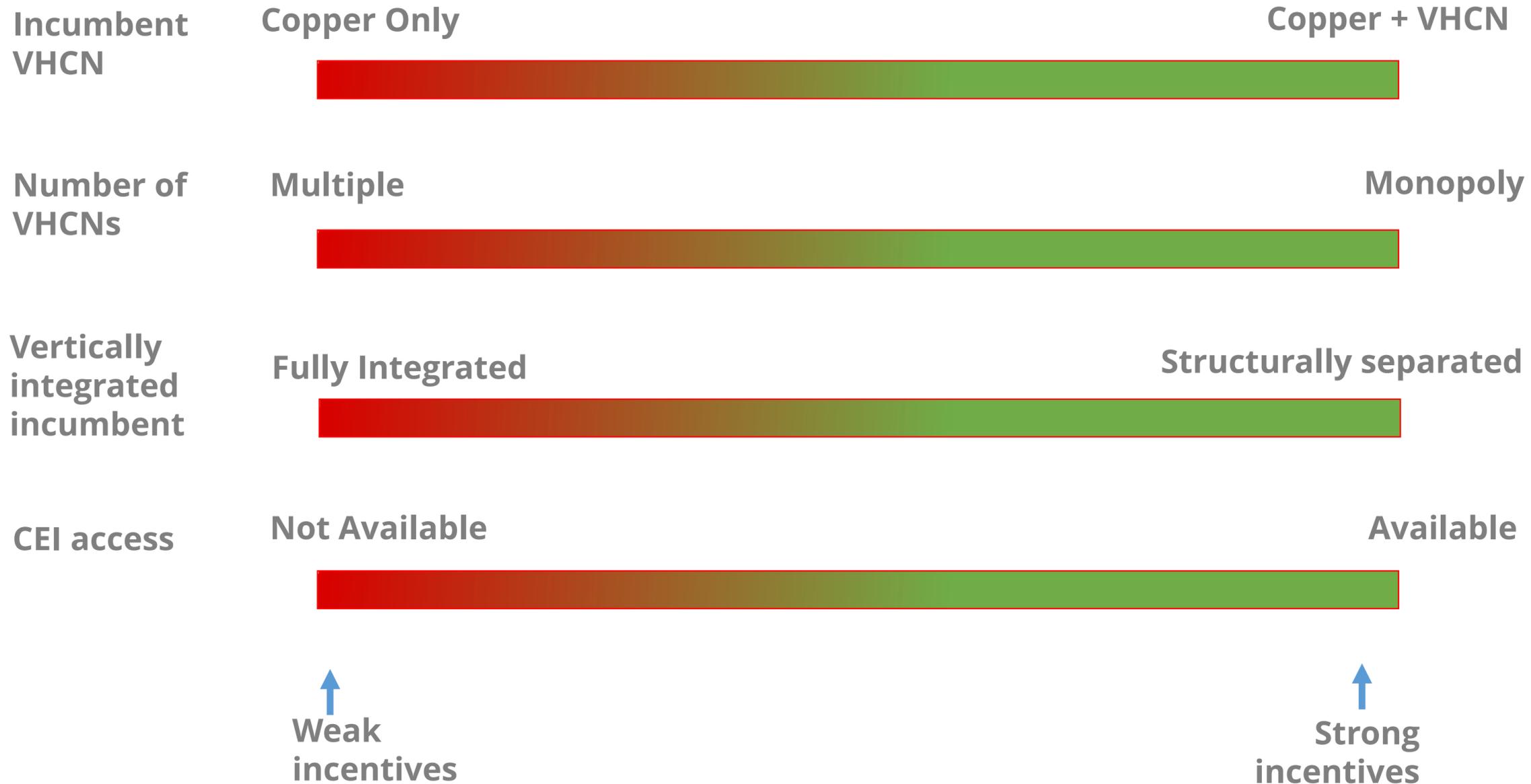
Market forces alone may not lead to optimal closure date of copper services.

NRA intervention may be required to mitigate the risks, but could also be justified to achieve the benefits.

Interventions need to be designed to fit specific market conditions.

Incumbent copper closure incentives

The main drivers



Incumbent VHCN

The incumbent's incentive to close copper depends on whether it has a VHCN

Copper Only

Copper + VHCN



Where the incumbent does not have a VHCN:

- **If there is non-incumbent VHCN deployment, then the incumbent could be incentivised to keep copper services live and lock retail and wholesale customers in.**
 - Where subsidies are applied in uneconomic areas the VHCN pricing could affect the Incumbent's copper closure incentives.
 - If the non-incumbent provider is or could become regulated as SMP provider in local area, this could affect the incumbent's copper closure incentives.

Where the incumbent has a VHCN:

- **The incumbent should have incentives to close copper services in order to reduce costs.**
 - Partial copper closure only delivers limited benefits, the majority are achieved at complete copper switch-off in an exchange area.
 - Offering copper services in small areas may be uneconomical so incumbents would be incentivised to deploy VHCNs ubiquitously in each exchange area.

- **Relative wholesale prices of copper and VHCN will influence downstream pricing and demand, and hence the speed of copper closure.**
 - Higher relative copper prices may incentivise demand for VHCN.
 - But high copper pricing may incentivise incumbents to continue offering copper services.

Multiple

Monopoly



- **Presence or threat of VHCNs by other operators could increase the incentive on incumbents to close copper services.**
 - First-mover advantage is very important for competing networks providers (including the incumbent), so creating a push to migrate from copper in advance of competitive deployment may be very beneficial to the incumbent.
 - *Barriers to consumer switching are important; if switching between fibre network providers is easy then first-mover advantage is reduced.*
- **NRA intervention to facilitate VHCN investment by non-incumbents would therefore likely influence the incumbent's incentives to close its copper services.**
 - Where other VHCNs are already in place, the incumbent may want to keep its copper services running to avoid loss of market share.
 - Where there is a threat of VHCNs by competitors, the incumbent may wish to accelerate copper closure to benefit from first mover advantage .

Fully Integrated

Structurally separated



- **A vertically integrated incumbent would consider the impact of copper closure on both its retail and wholesale businesses.**
 - Cost reduction at the infrastructure level is considered versus potential of increased commercial risk at the retail level .
- **If copper closure is considered desirable by the NRA, then it may need to intervene to create the necessary incentives if the incumbent is not structurally separated.**
 - An incumbent that is wholesale only (or with effective functional separation) may have greater incentives to copper closure than a vertically integrated operator (which risks end user churn during migration).
 - *NRAs may need to review separation and/or EOI obligations for impact.*
 - Vertically integrated operator may act to prevent fair churn of its end users to other retailers through its processes and prices.
 - *NRAs may need to consider appropriate end user migration rules.*
- **In areas where incumbent does not have a VHCN, competitors may not offer viable wholesale products, inhibiting a vertically integrated incumbent from closing its copper network.**
 - NRAs may need to reconsider SMP and/or symmetric obligations on smaller VHCN networks.

Availability and terms of CEI may have a significant influence

Not Available

Available



- **Where CEI is not available, the incentives on the incumbent to close copper would likely be reduced.**
 - Lack of CEI would often result in reduced likelihood of competitive threat from rival VHCN builders.

CEI-related issues

- **Whilst CEI access pricing is independent of what type of network is deployed, the actual cost of CEI may differ between copper and fibre deployment.**
 - If the CEI price relates to the space used by the network (cross-sectional areas occupied) then a copper network will likely be more expensive than a fibre network.
 - This means that (if the incumbent has to impute the CEI charges) the incumbent would be incentivised to remove its copper network.
- **Where incumbent has CEI, but not VHCN, copper closure would decrease its wholesale and retail copper revenues but may increase its CEI sales.**
 - Relative prices of CEI, retail and wholesale will impact the incentives for copper closure.
 - Higher CEI sales volumes may require improved CEI processes, systems and cost recording.
- **Where a VHCN provider receives public subsidies, the CEI pricing may need to be reviewed to prevent distortion in market, including copper closure incentives, and/or subsidy leakage.**
- **Cost oriented CEI prices may be affected if copper closure timing differs from forecast.**
 - NRAs should ensure that CEI pricing models appropriately anticipate copper closure.

A complex challenge for NRAs

Not a one size fits all

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- **The need for regulatory intervention in the copper closure process will differ from country to country.**
 - Consumer protection may be necessary in all or most places.
 - But it may not be necessary to intervene to influence the incumbent's incentives to withdraw its copper services.
- **At GOS Consulting, we have invested in understanding the possible issues and potential remedies available to ensure that copper closure happens in a manner and timeframe that:**
 - serves the interests of consumers,
 - does not harm downstream competition, and
 - does not harm infrastructure competition.
- **Failure to intervene where the incumbent's incentives are not aligned with those of consumers could result in increased pricing and reduced competition and innovation.**
- **We would be pleased to present our thinking in this area and discuss the specific market conditions in your jurisdiction.**

Gita Sorensen, Managing Director GOS consulting.

Gita has more than 30 years of experience in telecommunications regulation and has held industry positions of Director of regulation, interconnection, and wholesale, before moving into consultancy. As a consultant, Gita has advised operators, regulators and investors across the world on a wide range of regulatory policy and strategy issues.

Tom James

Tom James was Head of Competition/Regulatory Finance at BT Group from 2011 to 2019 and previously held finance and regulatory roles at a number of UK and multinational telcos. He has particular experience in the theory and practice of cost measurement, modelling and reporting. He is a fellow of the Institute of Chartered Accountants in England and Wales (FCA).

Dr. Antony Srzich

Antony is a regulatory economist with over 25 years' experience in the telecommunications sector. He has worked in management and regulatory roles for an incumbent operator and a wholesale-only operator, as a senior advisor for a regulator, and as a consultant. Through these diverse roles, Antony has gained a unique combination of management, technical and regulatory economics experience.

Jonathan Kingan

Jonathan Kingan is a highly experienced senior consultant in regulation, strategy and technology in the ICT sectors. He works internationally with clients in 30+ countries who have valued his combination of business and technology expertise. Jonathan runs JJK Associates Ltd (a network of independent consultants) and is an associate of GOS Consulting.