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Mr Jake Mongalo

The Independent Communications Authority of South Africa
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Per email: <mailto:jmongalo@icasa.org.za>

Dear Mr Mongalo,

RE: TELKOM'S WRITTEN SUBMISSION ON THE DISCUSSION DOCUMENT FOR THE REGULATORY FRAMEWORK ON INFRASTRUCTURE SHARING

Telkom SA SOC LTD ("**Telkom**") welcomes the opportunity to provide comments on the discussion document for the Regulatory Framework on Infrastructure Sharing ("**Discussion document**"), as published in Government Gazette No. 39208 (Notice 916 of 2015) on 15 September 2015.

Telkom's comments are presented hereafter which it trusts the Independent Communications Authority of South Africa ("**the Authority**") will find useful. Telkom will appreciate an opportunity to make representations in the event that the Authority decides to hold oral hearings.

Yours Sincerely



Siyabonga Mahlangu
Group Executive: Regulatory Affairs and Government Relations

Submission to the Independent Communications Authority of South Africa

REGULATORY FRAMEWORK ON INFRASTRUCTURE SHARING

13 November 2015

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1 EXECUTIVE SUMMARY

Telkom submits that the Electronic Communications Act, Act 36 of 2005 as amended (“**the ECA**”) provides an adequate dispensation for infrastructure sharing. In the ECA, licensees share infrastructure through a lease of electronic communication network services (“**ECNS**”) from one another in the form of products/services or a lease of essential facilities by one licensee from an ECNS licensee. The ECA empowers the parties who wish to share facilities to negotiate mutually acceptable commercial terms for the sharing. In the event of a dispute between licensees, the Authority acts as the final arbiter.

A licensee from whom access to an electronic communication facility is requested is entitled to refuse if the request is unreasonable in that it is neither technically nor economically feasible and does not promote the efficient use of its electronic communication network or services. Therefore, Telkom does not support promulgation of any infrastructure sharing regulations as the existing ECA framework suffices.

Were the Authority to consider regulating infrastructure sharing, Telkom submits that the Authority will first need to undertake a Chapter 10 market review process to assess the market failure which necessitates such an intervention.

In respect of the distinction between passive and active infrastructure in the discussion document, Telkom contends that there is no technical or legal justification for such a distinction.

Telkom is of the view that infrastructure sharing will not, by itself, promote network coverage in rural and sparsely populated areas. More needs to be done to expand coverage in rural and sparsely populated areas. There is a need for incentives to promote the roll out of infrastructure in these areas and to support sharing. Telkom proposes two models, i.e. the “**GAP’s** and “**Publicly Funded Infrastructure**” models which it believes could assist in moving towards a more pragmatic and inclusive solution to address rural and sparsely populated areas.

Lastly, the Authority is encouraged to align its views on infrastructure sharing with those of the Facilities Leasing Regulations and the National Integrated ICT Policy Review Report of 2015 as they support continuation of the existing ECA framework.

2 INTRODUCTION

The Authority published a Discussion document titled "Regulatory Framework on Infrastructure Sharing" ("**Discussion document**") in Government Gazette No. 39208 (Notice 916 of 2015).

Telkom's written submission is structured as follows:

- Section 1 – Executive Summary
- Section 2 – Introduction
- Section 3 – General Comments
- Section 4 – Responses to the Authority's questions

3 GENERAL COMMENTS

The Authority has embarked on this Discussion document on infrastructure sharing based on the assumptions that infrastructure sharing between parties will assist in:

- *“achieving deployment of network infrastructure across the country including rural and sparsely populated areas”*; and
- *“that the cost to communicate will significantly reduce when the cost of infrastructure deployment is reduced (both capex and opex), through the sharing of infrastructure”*.

Telkom submits that:

- the infrastructure sharing regulations would add very little value, if any, to the existing facilities leasing regime as several infrastructure facilities fall outside the regulatory purview of the Authority, unless determined to be essential facilities;
- the facilities leasing regulations encourage infrastructure sharing on a commercial basis based on an identified need. The sharing of masts is a good example where the industry sought commercial solutions to high network deployment costs in both urban and rural areas;
- infrastructure sharing in urban areas will not necessarily result in cost efficiencies or lower the cost to communicate because infrastructure is already deployed. Sharing may require significant costs to be incurred to reconfigure some of the functional elements of an ECNS to facilitate the sharing; and
- infrastructure sharing could promote coverage into underserved areas, but only if accompanied by regulatory and financial incentives to ensure commercial viability.

Telkom contends that the Authority will first need to conduct a chapter 10 market enquiry and establish a market failure which necessitates the regulation of infrastructure sharing. The Authority will also need to be fully informed of the implications of the current geographic income disparities and the challenges presented by the urban/rural divide.

International experience has revealed that infrastructure sharing in urban areas is not without challenges.¹ Some of the identified challenges are²:

- capacity bottlenecks – original networks were not designed to carry traffic of two operators and different services;
- high Investment costs – original networks will have to be upgraded to accommodate other operators or new networks built to accommodate sharing;
- competition issues – some network elements are critical for competition and operators are reluctant to share them e.g. network switches holding commercially sensitive information. Where network coverage is a competitive edge, the sharing of towers will not be desired if it speeds up the roll-out of a competitor;
- maintenance – there is confusion as to who is responsible to do the maintenance and upgrades required;
- quality of service – e.g. a failure on one network may negatively affect the quality of service of the other network that is sharing the infrastructure;
- service innovation limitations - the infrastructure owner may not fully exploit its network capability; and
- misalignment of network service providers - the operators may be at different stages of maturity having different visions and objectives.

Telkom urges the Authority to consider the impact on the relevant wholesale and retail access markets when discussing the competitive aspects of infrastructure and spectrum sharing. The Authority should take cognizance of the criteria discussed by BEREK/RSPG³ on the possible distortion or restriction of competition by an infrastructure sharing agreement. These include:

- unilateral (one operator agrees to provide access to another), bilateral (two operators agree to provide mutual access) or multilateral (several operators agree to provide access to each other) sharing agreements;
- the geographic scope (one site, several or all sites in a certain region);

¹“Consultation paper on infrastructure sharing of cellular mobile companies”, Pakistan Telecommunication Authority, August 2007;

²“Botswana Telecommunications Authority Communications Infrastructure Sharing Concept Paper”, Martin Mokgware, Tshoganetso Kapaletswe, Mpho Moletsane, October 2009

³Source Joint BEREK/RSPG Report on Infrastructure and spectrum sharing in mobile/wireless networks -16 June 2011

- the impact on important competition parameters such as coverage, prices and network quality in the concerned markets before and after the sharing agreement;
- retention of operators' independent control over the radio planning and the freedom to add sites;
- whether the operators are enabled to conclude similar agreements with other parties (no exclusivity clauses);
- the exchange of information between the sharing parties should be limited to what is strictly necessary for the purpose of the sharing agreement and not extend to the exchange of confidential business information;
- operators should be able to differentiate themselves in terms of prices and quality and variety of services; and
- the independence of a network operator should not be prejudiced to avoid collusive behavior.

In order to comprehend the dynamics of infrastructure sharing, the Authority is encouraged to consider the “GAP’s” and “Publicly Funded Infrastructure” models of infrastructure sharing. The “GAP’s model” differentiates the market into different zones and evaluates the market and access gaps experienced between the zones. The diagram below depicts the GAP’s model:

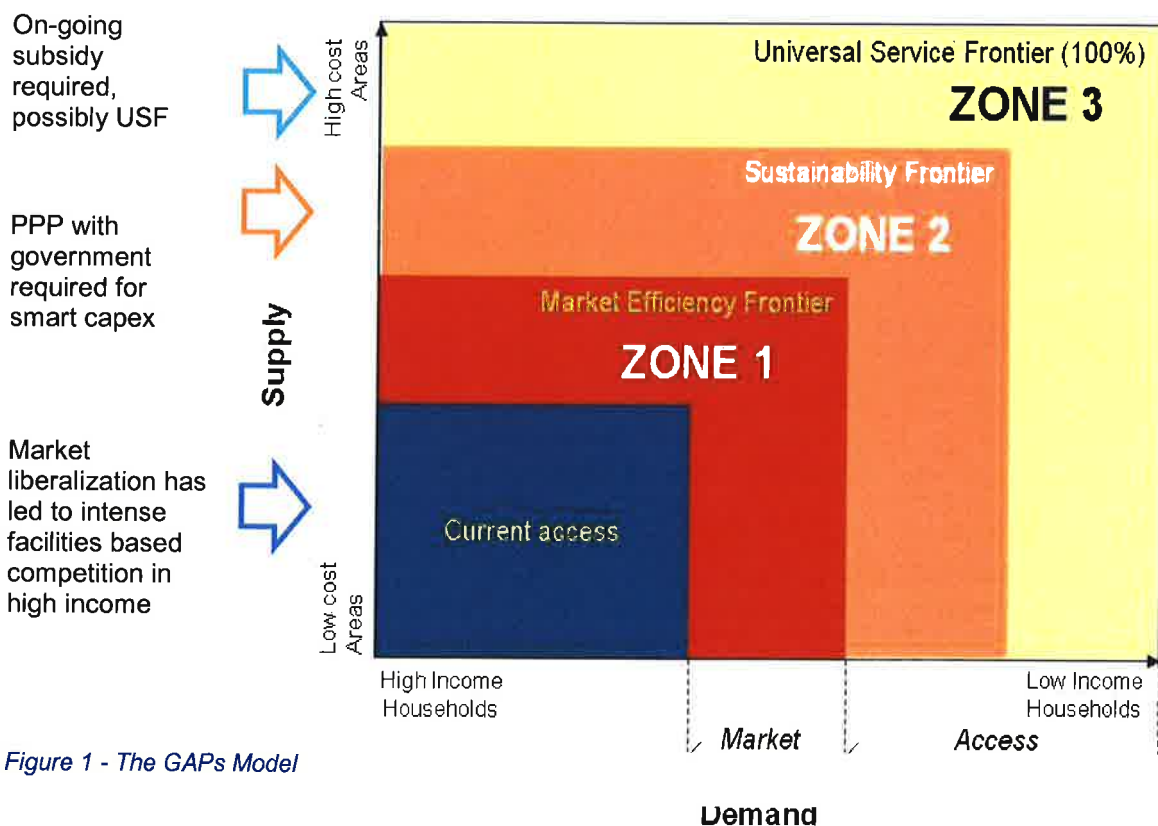


Figure 1 - The GAPs Model

- zone 1 – areas where infrastructure competition is promoted as operators can sustain such;
- zone 2 – areas where infrastructure competition is not supported by economics. Operators could either pool resources to build a joint network, or receive a smart subsidy from Government. The revenues associated with the network should sustain the operating costs, and
- zone 3 – without on-going Government support there is no business case for operators to build out networks in these areas, no matter how much infrastructure and network sharing may be contemplated.

The “Publicly Funded Infrastructure” model recommended by the ITU provides that “*Policy-makers may wish to consider infrastructure-sharing and open access approaches for publicly funded infrastructure. Although various strategies for open access exist, it is vital that policy-makers ensure that access to new facilities is provided on fair, reasonable and equivalent terms. This may include both price factors (such as the wholesale price of access to infrastructure) and non-price factors (such as product specifications and service level agreements).*”⁴

⁴ Source: State of Broadband 2015 – ITU and UNESCO

4 RESPONSES TO QUESTIONS

4.1 Do you agree that infrastructure sharing will encourage the deployment of networks to rural and sparsely populated areas? If not, please provide the reason(s) for your answer.

Yes, in principle, Telkom agrees that the sharing of infrastructure will encourage network deployment in rural and sparsely populated areas. However, due to the notable lack of modern infrastructure in these areas, only a limited amount of infrastructure can be shared. Telkom cautions that there is a risk that deployments into these areas will remain unchanged despite infrastructure sharing unless adequate incentives are proposed. The exact nature of these incentives may be revealed in the course of a chapter 10 enquiry.

To encourage infrastructure sharing in underserved areas, all licensees should agree to enhance coverage and identify common areas that require better coverage. The following are some of the considerations:

- cost of application and administration fees;
- maintenance;
- upgrades; and
- imposition of obligations on all the players including non-licensed third party entities rolling out networks.

4.2 In your opinion, how do you think infrastructure sharing will encourage service based competition?

Infrastructure sharing will allow licensees to pool resources in the infrastructure layer and redirect the savings to innovation and differentiation of services and products. The table below illustrates services based competition:

| Services Based Competition | | | | | | |
|-----------------------------------|---|---|---------------------------------------|----------------|-----------------|-------|
| Mode of competition | Licensee | Description | ECS/ /ECNS licenses differentiate on: | | | |
| | | | Technology | Coverage & QoS | Product & Price | Brand |
| Core network | ECS | A single operator provides the fixed access component; with several ISP's building their own core networks offering VoIP, VPN's & Internet Active RAN sharing with multiple IMS cores also resides in this category | ✗ | ✗ | ✓ | ✓ |
| MVNO or Virtual ISP (ECS license) | ECS | A single network is used, with different resellers thereof e.g. Virgin Mobile, Red Bull Mobile | ✗ | ✗ | ✗ | ✓ |
| OTT service competition | None* | Over the top providers are agnostic of the network as they access the unregulated CPE directly over an Internet channel from anywhere in the world. One should differentiate between those services that substituted for ECS and hence erode domestic revenues e.g. Skype & Whatsapp | | | | |
| Content/ Application competition | None (although may require broadcast license) | ... from those applications which complement the service offerings of ECS licensees e.g. Wireless Application Service Providers; although they may cannibalize the revenues of broadcasters e.g. IPTV, Netflix, YouTube etc. | | | | |

Table 1: Service based competition

In urban areas, licenses do share infrastructure based on mutually acceptable commercial terms. The table below illustrates a scenario where mast and mast sites are shared between multiple licensees. This kind of sharing promotes service based competition, each licensee retains its own radio apparatus, antennae and uses own spectrum to compete with the others.

| Infrastructure Based Competition | | | | | | |
|---|-------------------|--|---------------------------------------|----------------|-----------------|-------|
| Mode of competition | Licensee | Description | ECS/ /ECNS licenses differentiate on: | | | |
| | | | Technology | Coverage & QoS | Product & Price | Brand |
| Inter-technology competition | ECNS (+ spectrum) | Operators compete using different types of access technology, e.g. fibre, xDSL, 3G, 4G, etc. | ✓ | ✓ | ✓ | ✓ |
| Network provider competition | ECNS (+ spectrum) | Several mobile operators all build competing radio networks in an area, using different base stations. | ✗ | ✓ | ✓ | ✓ |
| Network provider competition with sharing | ECNS (+ spectrum) | Several mobile operators all build competing radio networks in an area, using shared base stations | ✗ | ✗ | ✓ | ✓ |

Table 2: Infrastructure based competition

4.3 To what extent do you believe that the objectives of infrastructure sharing are reached?

The objectives of infrastructure sharing as envisaged in the Discussion document have been realised to some extent in that there exist different types of sharing models in the sector already.

It is worth noting that infrastructure sharing sacrifices some of the benefits of infrastructure competition in urban areas as opposed to promoting effective competition. Hence the trade-off between infrastructure sharing and infrastructure competition needs careful consideration.

The objective of avoiding duplication of investment in infrastructure is achieved to an extent where it is feasible for operators to share the same infrastructure such as masts. The primary factors determining demand for mobile masts sharing, already incentivised by economic efficiency, are as follows:

- mast loading which affects antenna positioning in terms of height;
- landlord right of refusal for expansion of the property occupied and rental issues; and
- acquiring rights to masts that are already occupied.

In order to realise the objectives of providing universal access for broadband; the following demographic factors should be considered when conducting a universal service and access review⁵:

- population percentage of the literate in those areas,
- local content in the various South African languages;
- connectivity speeds and bandwidth capacity required by users, and
- purchasing power.

⁵ C.K Prahalad, "The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits", Wharton School Publishing, February 6, 2006

4.4 Do you believe that the Authority should deal with infrastructure sharing matters in one Regulation?

No. The current legislative framework, i.e. the ECA and Facilities Leasing Regulations effectively caters for infrastructure sharing. Should the efficacy of the latter be doubted, then the Authority should embark on a Chapter 10 market review process. This approach will support evidence based regulation and avoid any unintended consequences on the growth of the sector.

Research⁶ has shown that even in unregulated sharing of infrastructure, two ('2') out of three ('3') network sharing deals are put on hold because of concerns on loss of independence by operators, high asset write-off, deal complexity, integration complexity, too high integration cost, growth limitations, strategic lock-in; competitive disadvantage; complex governance; regulatory scrutiny; high termination cost; technology mismatch; and asymmetric benefits. Since the South African ICT sector is not immune to these challenges, their implications should be fully explored and understood in order to ensure that adequate environment for sharing is fostered.

Telkom cautions that any infrastructure sharing regulations may dilute the existing facilities leasing regulations due to possible overlap.

4.5 Please list other benefits realised as a result of infrastructure sharing

Telkom is not aware of any further benefits but cautions that infrastructure sharing by itself without a supportive policy environment and adequate incentives may not yield the intended results.

4.6 Do you think that it is necessary for the Authority regulate for 'one-build' civil works and mast erections at this time? Please state your reasons?

No. In our understanding, the "**one build**" policy or regulation centres around reducing the environmental impact of network roll out on the public. Notwithstanding that there

⁶ Dr Kim Kylesbech Larsen, Technology Economics – Deutsche Telecom

is a need to support such a view with a proper impact assessment. Also, Telkom considers that it is too early to decide whether "one-build" is feasible or not without it being clearly defined and its pros and cons highlighted sufficiently. "One-build" should be supported by defined technical standards and proper regulations enforced by the Authority to ensure fair and proper implementation thereof.

The disadvantages of one-build are that despite the positive impact on the environment, it may constrain network growth as it does not cater for future network demands for Internet growth speeds and uncertainty of spectrum availability. The policy / regulation will also require a thorough forecast on the side of the licensee and will be restrictive in that licensees' network capacity will be limited. Upgrading will also be difficult to support.

The Authority needs to perform proper economic forecasts of the sector and demand forecasts for network services to ensure the success of "one-build".

4.7 In your view, what incentives will encourage infrastructure sharing in general?

Infrastructure sharing can be an incentive in itself if it saves costs, is consistent with the business model of an operator and is commercially viable in the longer term. Moreover, Telkom is of the view that the following incentive options could be considered assuming there are rural or sparsely populated areas that are commercially viable.

- tax incentive for capital infrastructure;
- state-owned infrastructure should be made available on a cost basis and be shared equally amongst the operators, e.g. power lines, train networks, roads, etc;
- municipalities should also co-operate by removing any administration fees or barriers to provision communications infrastructure;
- rapid Deployment guidelines should be accelerated;
- prioritisation of processing of Environmental Impact Assessments ("EIA");

- government contributes to funding the deployment of network in under-serviced areas;
- should other licensees wish to join, then all parties should contribute equally to fund the network in rural areas or sparsely populated areas; and
- Sub-letting of shared infrastructure should not be allowed.

4.8 In your view, how can the Authority improve on its intervention in terms of non-discriminatory access to infrastructure?

The ECA and Facilities Leasing Regulations sufficiently address the non-discriminatory provision between licensees. Licensees also have a right under Facilities Leasing and Interconnection Regulations to refer disputes to the Authority should they feel discriminated against. Should those regulations be proven to be insufficient, the Authority could make appropriate amendments. The Authority is however not permitted to act outside of the legislative and regulatory framework, lest such actions be deemed arbitrary and capricious and hence subject to review.

4.9 Would you say that the facilities leasing regulations adequately cater for infrastructure sharing needs in South Africa? If not, please state the areas that have not been covered.

Yes. The existing ECA licensing framework and facilities leasing framework contemplated in sections 43 & 44 adequately cater for infrastructure sharing.

4.10 Do you agree with the Authority on the definition of passive infrastructure? If not, please provide an alternative definition.

No. The Authority appears to be introducing categories in its definitions which are not in line with the spirit of the ECA. The scheme of the ECA does not support a distinction between active and passive infrastructure sharing. The Authority appears to conflate “sharing” of active infrastructure with “leasing” of network services. For example, capacity on transmission backbones is usually leased to other licensees in the form of an electronic communication network service (a defined product offering of the ECNS licensee); however the actual network itself or elements thereof are never ‘shared’, but

commercially leased. Telkom refers to all elements used to construct an electronic communication network as "functional elements" of the network.

4.11 Please state other passive infrastructure that you consider essential for sharing.

Please refer to a response to question 4.10. There should be no differentiation between active and passive functional elements in a network.

4.12 Please state the advantages and disadvantages of passive infrastructure sharing.

Telkom reiterates that there should be no differentiation between active and passive functional elements of a network.

Infrastructure sharing on incumbent networks will be cumbersome as those networks were designed without taking consideration of additional load requirements as per the potential needs of future operators e.g. space in ducts, exchanges, cabinets, power requirements and capacity on masts.

It is far easier to implement infrastructure sharing on new infrastructure as better planning can be done up-front with the requirements of other operators in mind. However, the operator constructing the new infrastructure will then carry the risk and additional costs of planning and building for this future need without the guarantee of a return on investment. Therefore co-planning and co-funding is necessary to promote infrastructure sharing for new developments unless publicly funded infrastructure is made available to all operators.

In urban areas where there is limited space, re-location of the existing infrastructure and redesign is required to accommodate sharing which may be a very costly investment.

The disadvantage of sharing masts leads to sub optimal radio coverage and minimal capacity to support two or three licensees. There are also associated power limitations and the tilt and height of the antenna to be considered, as well as the load bearing

capacity and the azimuth angle of different service providers. Combined equipment that can be used between operators for sharing of infrastructure may create a limitation on modification and network enhancements.

In addition, the negative implications of sharing ducts is that it may lead to security and Quality of Service (QoS) issues such as malicious or accidental damage of Telkom's network which leads to disruption of services.

Furthermore, the disadvantage of sharing the copper local loop is the high investment costs on refurbishing a degraded network when that investment can be used on newer technologies or the adverse impact of such sharing on the efforts to modernize the network.

4.13 Do you agree with the Authority on the definition of active infrastructure? If not, please provide an alternative definition.

No. Telkom reiterates its responses to question 4.10. In particular, Telkom contends that that the Authority appears to be introducing categories in its definitions which are not in line with the spirit of the ECA. In Telkom's view, the ECA does not support the distinction between active and passive infrastructure sharing. Telkom proposes that all elements used to construct an electronic communication network be referred to "functional elements" of the network.

4.14 Please state other active infrastructure that you consider essential for sharing.

Please refer to responses to question 4.13 above.

4.15 Please state the advantages and disadvantages of active infrastructure sharing

Telkom reiterates that there should be no differentiation between active and passive functional elements in a network.

The advantages of Roaming are acquiring an immediate competitive footprint. Roaming is merely a commercial agreement between two service providers where one party procures an electronic communication network service from the other to allow for

the exchange of customer data in the correct and timely manner. As evidence that roaming does not create any major technical issues for it to be regulated, there are a number of roaming agreements in place across the globe.

Networks have different priorities and costs associated depending on rural or metropolitan areas. One of the prominent challenges will be deciding whose infrastructure will be leased in which area, since all large carriers have their own core network access network or fibre infrastructure. Licensees will not build new infrastructure and incur the costs for such if they will be forced to share such at cost or very low margin, which makes it nearly non-profitable. Telkom proposes that the GAP's model be applied to help counter some of these scenarios.

4.16 Please provide examples of how active and passive infrastructure is being shared in South Africa.

Telkom echoes its sentiments that there should be no differentiation between active and passive functional elements in a network.

The South African market is defined by extensive levels of service based competition in number portability, handset unlocking, roaming/MVNO and mobile APN as depicted in the diagram below although national roaming, MVNOs and mobile APN are commercially negotiated agreements.

South Africa is actively participating in the cost effective separate builds segment which offers mobile mast site sharing and mobile mast sharing. Telkom's wholesale products in this segment include space leasing upon masts, sites leasing in yards and space leasing in exchange buildings.

In the joint builds segment, Telkom is not aware of any Multi-operator Core Network (MOCN) sharing, multi-operator radio access network (MORAN) sharing and multi-operator backhaul sharing practiced in South Africa. However these models should be commercially negotiated between operators.

The diagram below depicts the sharing landscape in South Africa:

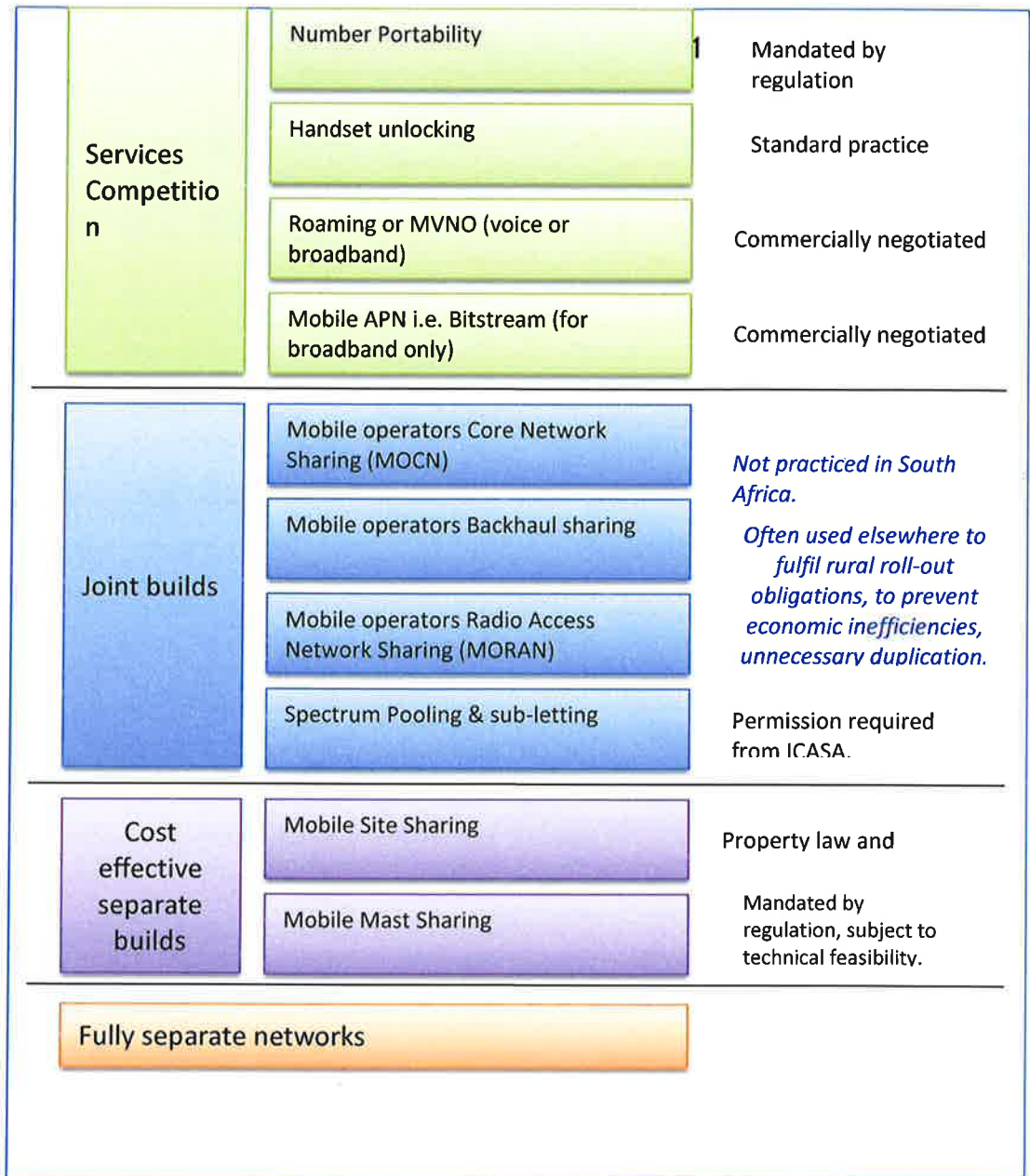


Figure 2: Sharing Landscape in South Africa

The End