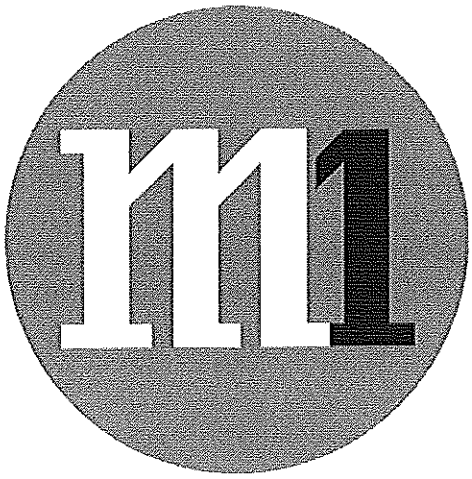
IN RESPONSE TO THE CONSULTATION PAPER ISSUED BY THE INFO-COMMUNICATIONS DEVELOPMENT AUTHORITY OF SINGAPORE

PUBLIC CONSULTATION ON THE REVIEW OF THE CODE OF PRACTICE FOR INFO-COMMUNICATION FACILITIES IN BUILDINGS ("COPIF")



PUBLIC CONSULTATION ON THE REVIEW OF THE CODE OF PRACTICE FOR INFO-COMMUNICATION FACILITIES IN BUILDINGS ("COPIF")

1. M1 is a leading provider of mobile and fixed info-communications services to over 2 million customers in Singapore. We welcome the opportunity to submit our views and comments on the review of the Code of Practice for Info-communication facilities in buildings ("COPIF"). As one of the major telecommunication operators in Singapore, M1 is fully supportive of IDA's proposal to revise the COPIF to allow Mobile Telecommunication Operators ("MTOs") to deploy installation and plant in the relevant space and facilities of developments for the provision of better mobile coverage. We concur that revisions to the COPIF will be necessary to ensure that info-communication facilities provided within buildings continue to support rapidly evolving technological developments in the telecommunication industry.

2. While the IDA's proactive approach to ensure the continued relevance of the COPIF is commendable, we would respectfully point out that the proposed revisions do not fully consider the underlying technology and operating environment for provision of mobile services, and does not provide MTOs with sufficient access rights to ensure compliance with Quality of Service ("QoS") standards imposed on MTOs.

Sufficient "Overlap" in Mobile Coverage Needed for Seamless Connectivity

3. IDA's proposed changes to the COPIF only allow MTOs to access and use relevant space within developments for the purpose of providing mobile telecommunication services to those developments. It serves to render mobile services as akin to "fixed-line" services but does not take into account the operating environment for a mobile network.

4. Mobile services are provisioned over radio links, which allows end-users to move around a wide geographic area. To establish seamless connectivity, mobile services rely on sufficient "overlap" in cellular coverage between base stations to ensure good handover. Insufficient "overlap" of cellular coverage would lead to drop calls and call set-up failures. As such, it is impractical and unnecessarily restrictive to only allow MTOs to access and deploy installation and plant in the relevant space and facilities within developments for the provision of better mobile coverage within these developments. The provisions under the proposed changes to the COPIF, as drafted, do not grant MTOs full access rights to provide seamless mobile connectivity. To this end, M1 strongly put forth to IDA that the MTOs be granted with full access rights to deploy installation and plant in the relevant space and facilities of developments for the provision of mobile coverage, so long as the solution also caters for these developments.

Access Rights of MTOs

5. To effectively and realistically achieve further improvements to the existing mobile QoS standards, MTOs will require mandatory free access rights to buildings to install additional mobile equipment, as well as priority access to space and facilities such as telecommunication risers, for the purpose of providing mobile coverage. As such, M1 propose that MTOs be granted the same access rights/priority as Public Telecommunications Licensees ("PTLs").

6. For clarify, we seek IDA's concurrence that rental charges should not be levied for usage of PMDS for the deployment of mobile equipment and all essential peripherals, required for the provisioning of mobile coverage. Furthermore, no access/escort fees shall be levied for site visits by MTOs to installed sites for maintenance purposes.

Potential Mobile Deployment Space ("PMDS")

7. The minimum PMDS required to provide effective mobile coverage to a development is largely dependent on the unique characteristics of the development, i.e. type of development, size, design, layout, and geographic location, the most feasible and effective coverage solution may entail differing PMDS requirements.

- Large Developments (including high-rise buildings)
  Depending on the size of the development, two (2) or more PMDS may be required due to limited link budget as a result of excessive cabling. The PMDS should be located to serve different areas within the development. For high-rise buildings, one PMDS should be located in the "top half" of the building to serve the higher levels, whereas one PMDS should be located in the "bottom half" of the building to serve the lower levels. In general, each PMDS must be about 14 m^2 per operator.

  M1 also foresees that MTOs would need to install active equipment in telecommunication risers in order to provide sufficient cellular coverage to larger developments. As such, we propose that MTOs be allowed to install active equipment in telecommunication risers and for the size of telecommunication risers to be increased by 1 m.

- Low-Rise Developments
  Low-rise development typically consist of industrial parks, warehouses and private landed estates. Since these developments tend to be of low occupancy and thus generate low cellular traffic, providing mobile coverage using in-building systems is neither commercially viable nor technically feasible. The deployment of macro base stations remains as the most feasible and cost effective solution. However, due to the "low-rise" nature of these developments, there is no suitable rooftop space to install macro base stations. Hence, the COPIF should provide for allocation of space within low-rise developments for MTOs to build towers/monopoles for the purpose of providing mobile telecommunication services, so long as the solution also caters for these low-rise developments.

8. In summary, developments are likely to have varying PMDS requirements. Therefore, provisions under the revised COPIF ought to allow "flexibility" for MTOs and building owners/developers to work together on space requirements and facilities to provide good mobile coverage. In-building space beyond the PMDS guidelines should be provided by the building owner/developer if necessary.

9. Nevertheless, IDA could issue PMDS guidelines for industry reference. This would help building owners/developers plan for the provisioning of space and facilities to allow MTOs to provide mobile telecommunication services.

High-Rise Buildings

10. With the increasing pervasiveness of high-rise buildings planned and developed by the Housing Development Board ("HDB") and other Private Building Owners, the issues surrounding high-rise buildings will need to be effectively addressed in the COPIF.

11. For high-rise developments, the only effective solution to resolve coverage/interference issues is to create a dominant signal via in-building systems. It will be most cost-effective and efficient for building owners/developers to plan and provision for the relevant space and infrastructure required by MTOs during the design/construction phases. Hence, we propose that the IDA introduce the necessary legislative provisions for all building owners (including public buildings) to provide sufficient in-building infrastructure for all new high-rise developments to facilitate mobile coverage.

12. Since such enhancements will only benefit occupants of the building, the building owners/developers should also bear the full cost of the installation accordingly.

IDA to Effectively Address Public Health Concerns

13. Arising from public health concerns on radiation from mobile equipment (though not entirely proven or supported by scientific and medical evidence), M1 has encountered instances where some customers requested for mobile enhancement solutions, but upon successful installation, the neighbouring occupants had demanded for the removal of mobile equipment. In this regard, it will be useful for IDA to provide written assurance to building owners that the mobile base stations and equipment are type-approved by IDA, so as to allay any public concern.

14. We also submit the following specific comments on the proposed changes to the COPIF for IDA's review and consideration:

a) Section 1: Provision of Space and Facilities to Facilities-Based Operators who are Licensed to Provide Public Mobile Telecommunication Services

Reference	Description	M1 Comment
Paragraph 6	**Definition of Development:** *"A development will be defined in the revised COPIF to mean a single project consisting of 1 or more buildings and includes all parcels of land comprised within the same project."*	HDB Towns Public housing in Singapore is managed by the Housing Development Board ("HDB"). The flats are located in housing estates, which are self-contained satellite towns with various commercial, recreational and social facilities and amenities. In view that HDB plans and develops entire HDB towns, M1 submit that such towns should fall under the definition of a single "Development". That is, under the proposed changes in the COPIF, MTOs should be allowed to access and use PMDS and related facilities within a HDB town for the provisioning of indoor/outdoor coverage to cover all parcels of land comprised within the same HDB town. This should apply irrespective of the different developments across Singapore. Mass Rapid Transit ("MRT") MTOs should similarly be granted access rights to provide mobile coverage in MRT stations/tunnels, and not be charged rental and access fees for space/room for installation of facilities essentially used to serve public interest. With Singapore's long-term plan for rail to become the backbone of public transport by 2030, it is prudent to plan ahead and make the necessary provisions to ensure and facilitate mobile coverage in the MRT to serve train commuters. Other buildings/infrastructure in Singapore The scope of "development" should also include other buildings/infrastructure where MTOs are required to provide cellular coverage (e.g. road tunnels, airport, military camps and police stations). Owners of such developments, including government organisations should provide MTOs with the necessary space and facilities required to provide mobile coverage to serve the developments, at no cost.

Paragraph 8	*"...to allow MTOs to deploy installation and plant in the relevant space and facilities of Developments for the provision of better mobile coverage within these Developments."*	Proposed change: *"...to allow MTOs to deploy installation and plant in the relevant space and facilities of Developments for the provision of better mobile coverage, so long as the solution <u>also caters for these developments</u>."*
Paragraph 9	Existing contractual arrangements between owners of Developments and MTOs	To minimize unnecessary administrative work, M1 propose that the revised COPIF be applied concurrently for all new and existing Developments from the effective date of the revised changes i.e. any existing contractual arrangements should be superceded. Otherwise, any revised QoS requirements imposed on MTOs should apply only, a) after existing contractual arrangements expire; and b) when additional space and necessary facilities required for the providing mobile coverage are made available to MTOs.
Paragraph 9 a) (i)	Potential Mobile Deployment Space ("PMDS")	<u>PMDS Requirement</u> The PMDS should include space for antennae mounting (indoor/outdoor), microwave antenna, active equipment, cables and components. Indoor antennae should be allowed to be mounted below false ceilings. <u>Other Space Requirements</u> The following spaces should not be included in the calculation of PMDS, but should be provided by the developer/owner, at no cost, over and above the PMDS requirements:- • Access space needed for door opening etc; • Space for essential peripherals, including but not limited to telecommunication risers, cable trays (200 mm per operator), power source, utility meters, and transmission, required for the provisioning of mobile coverage; and • Any horizontal and/or vertical cabling required between equipment locations. For example, developments like Suntec span several towers. Cables linking the towers span several kilometres. Another example is in Marina area where separate developments namely, Pan Pacific Hotel, Oriental Hotel, Marina Mandarin Hotel, Marina Square Shopping Mall are accessible via a common car park. Such multi-tenanted developments will inevitably share a common transmission network. Thus, the fibre cables will carry traffic from all buildings.

		In light of the above, the revised COPIF should address MTOs' ability to gain access within developments with multiple Facility Management teams (e.g. for Suntec, the convention centre is managed by a different management department from the shopping centre towers). <u>Power Requirements:</u> MTOs require base stations, feeders, power source, transmission, antennae etc. for the provisioning of mobile coverage. Thus, all Mechanical & Electric ("M&E") requirements necessary to operate the mobile service should also be covered in the revised COPIF under which the developer/owner shall provide for the MTOs. <u>Transmission Requirements:</u> Transmission can be in the form of cables (e.g. fibre), but also increasingly via microwave. While the microwave antenna is pointing outwards from the development, it is actually serving the development itself. Hence, it is proposed that microwave antennae be covered as part of the MTOs' equipment serving the development. <u>GFA</u> Consistent with the Urban Redevelopment Authority's ("URA") definition of Gross Floor Area ("GFA"), the floor area of the PMDS should be excluded from the GFA calculations.
Paragraph 9 a) (ii) & b)	In the event of concurrent deployments by FBOs, the following access priority is proposed: 1. PTLs; 2. Other FBOs providing fixed-line services to the Development 3. MTOs	To effectively and realistically achieve further improvements to the existing mobile QoS standards, MTOs will require <u>mandatory free access rights</u> to buildings to install additional mobile equipment, as well as priority access to space and facilities such as telecommunication risers. As such, M1 propose that MTOs be granted the same access rights/priority as PTLs.
Paragraph 9 a) (iii)	*"...a developer may choose to allocate space on rooftop or in car parks of the Development as opposed to increasing the size of the MDF Room/TER."*	Any alternative space provided within the development to meet the PMDS requirements should at least be on first storey or above. Basement car parks should not serve as an alternative to MDF Room/TER as they are susceptible to risk of flooding. 1. For car park space, the area must be well-ventilated with safety barrier. If the space is enclosed, air-conditioning should be provided by the building owner/developer.

		2. If space is allocated on rooftops, building owners/developers should ensure the following: • 24 hours daily, 7 days a week "access" to rooftop for fault rectification and maintenance • For equipment installation, the rooftop must be able to withstand an average floor loading of 1.5 KN/m^2 • For safety reasons, there should be at least a 2m clearing between the allocated space (including access path) and the edge of the rooftop • 3 Phase, 32 Amps AC power source • Availability of E1 DB at the rooftop (otherwise, building owner must ensure sufficient space in the telecommunication riser for running E1 cable from the MDF room to the rooftop) • Average area of rooftop space (per operator): a) 14 m^2 for in-building systems; or b) 18 m^2 for outdoor solutions • To allay potential health concerns, the space allocated should preferably be reasonably distant from private residential areas (e.g. penthouse apartments and rooftop gardens) • Trellis should be provided at no cost, if required by the building authority • Outdoor antenna screening panel should be provided at no cost, if required by the building authority In addition to the above, no charges should be levied for leased circuits and cabling laid by the MTO.
Paragraph 9 a) (iv)	Rental charges and related access charges such as escort fee shall not be levied for usage of PMDS	<u>No rental charges for essential peripherals</u> We seek IDA's concurrence that rental charges should not be levied for usage of PMDS for the deployment of mobile equipment and all essential peripherals, including but not limited to telecommunication risers, cable trays, antennae (indoor or outdoor), power source, utility meters, transmission, and all active equipment, required for the provisioning of mobile coverage. <u>Access for maintenance purposes</u> MTOs should be allowed to access installed sites for maintenance purposes at no cost, including waiver of access/escort fees for site visits.

		Miscellaneous We seek IDA's clarification on the following:- *"the provisioning of PMDS should not prejudice or in any way affect existing contractual obligations between owners of Developments and MTOs over the usage of space."*
Paragraph 9.a) (v)	Provision of necessary facilities, such as Telecommunication risers and cable trays	"Necessary facilities" should include all essential peripherals required for the provision of mobile coverage, including but not limited to telecommunication risers, cable trays, power source, utility meters, and transmission etc. For the provision of mobile coverage in road/MRT tunnels, equivalent facilities including but not limited to mounting brackets and power points required to operate active equipment should be provided by the Land Transport Authority ("LTA"), at no cost.
	Proposed minimum PMDS for multi-storey residential buildings/non-residential developments	Developments not required to set-aside PMDS Developments not required to set-aside PMDS for mobile coverage i.e. multi-storey residential buildings with less than 80 units and non-residential developments with less than 2,000m^2, should be exempted from any revisions in QoS standards. If required, the building owners/developers should be responsible in providing the relevant space and facilities needed to provide coverage to serve the developments, at no cost. Minimum PMDS Requirement The PMDS required is dependent on the following:- a) Type of development (e.g. industrial buildings, high-rise buildings, large developments etc.); b) Size of development; c) Expected traffic generated within the development; and d) Design for coverage or capacity. In light that developments are likely to have varying PMDS requirements, provisions under the revised COPIF ought to allow "flexibility" for MTOs and building owners/developers to work together on allocating the necessary space and facilities to facilitate mobile coverage. For the avoidance of doubt, space beyond the PMDS guidelines should also be provided by the building owner/developer, at no cost (e.g. rental cost and related access charges shall not be levied).

		In general, the larger the development, the greater the total amount of PMDS required to provide mobile coverage to serve a development. However, due to limited link budget, the large developments will require two (2) or more PMDS located to serve different areas within the development. For guidance, each PMDS must be about 14 m^2 per operator, e.g. for a high-rise building, a single operator will require 2 PMDS, each of about 14 m^2.
Paragraph 9 c)	Dispute resolution guidelines for the usage of building space in provisioning outdoor mobile coverage MTOs may enter into commercial arrangements with owners of Developments for the usage of space, typically rooftop space, to locate their equipment for the provision of outdoor or street-level mobile coverage beyond such Development	The provision of mobile coverage to a development should also include the outdoor space within the development and the surrounding roads. Cellular coverage relies on sufficient "overlap" of signals between base stations to ensure handover when travelling in and out of the development. To provide such coverage, outdoor antenna will have to be installed at the rooftop. For some development with many blocks, it may be more effective to put up a macro base station to provide mobile coverage to the development rather than installing in-building system. Hence, outdoor antenna should be considered as part of the COPIF to provide mobile coverage to the Development.

b) **Section 2: Provision of Cables for Telecommunication (Non-Broadband Coaxial Cable) System in all Residential Properties**

Reference	Description	M1 Comment
	Provision of Fibre cables	Specifications of fibre cables should address reliability and versatility issues. Although underground cables have hard protective covers to withstand rugged outdoor conditions, typical in-building structured cabling do not recommend the use of underground cables. However, as residential properties will have fibre cables covered by plaster within walls, it may be necessary for the fibre cables to be hardened. In a commercial environment, fibres are laid on cable tray and raised floors. These are not found in residential units. For fire prevention, it may be necessary to look into low smoke zero halogen, so that any fire can be contained as far as possible.
	Cat 6 Cable Specifications	There is a need to examine/investigate whether there would be excessive heat dissipation, which could result in peeling of plaster walls.

c) **Section 3: Location of Main Distribution Frame Room and Telecommunication Equipment Room**

Reference	Description	M1 Comment
Paragraph 14.	To locate MDF Room and TER on the 1st Storey (Street-Level) of the Building	In some areas, MDF Room and TER on the first storey have been identified to be at risk of flooding, since water usually enters via street level. Rather than relocating the MDF Room and TER to 2nd storey and above, which will entail additional cost for operators to run underground cable to higher storeys, M1 proposes to raise the floor in the MDF Room/TER by 2 feet or higher, if practicable.