Code of Practice for Info-Communication Facilities in Buildings

Briefing to Industry
(by invitation)

7 December 2018
Friday, 10am
1. Background on COPIF

2. Key Changes Adopted for COPIF 2018
   i. Rooftops as preferred Mobile Installation Space
   ii. Modifications to in-home co-axial cabling
   iii. New residential buildings: Additional fibre and data points
   iv. New non-residential buildings: 2-way air-blown fibre microducts
   v. Resilience requirements for networks/services, emergency access

3. Implementation of COPIF 2018

4. Questions and Answers
Code of Practice for Info-communication Facilities in Buildings (COPIF): an Introduction
1) Background on COPIF

- Issued by IMDA, draws powers from Telecommunications Act
- **Purpose**: To ensure that developers or owners of buildings provide adequate space and facilities, for telecom licensees’ provision of infocomm services
  
  - Space and facilities include:
    - Main Distribution Frame (“MDF”) Room, Telecom Equipment Room (“TER”), Mobile Installation Space (“MIS”), underground pipeline systems, risers and cable trays/trunking, associated with a development;
    - in-home cabling, e.g. pre-laid internal wiring
  
- COPIF specifies the duties of telecom licensees and building developers or owners on such matters
- COPIF 2018 effective on **15 Dec 2018**
  - First published in 2000, revised in 2008 and 2013
  - Completed 2 consultation rounds in Jun 2017 and Jun 2018
Enhancing features, enabling new tech adoption

Underpinning issues

• Expectations of end users
  o Enhanced connectivity, wired and wireless, on-the-go

• Telecommunications (Amendment) Act 2016
  o Operationalise changes introduced under legislation, align COPIF with TA as announced by Min(CI)

• Objective of COPIF 2018
  o Adapt to market, adjust with landscape changes
  o Enable user access to new technology as it arises

• Complemented by QoS framework
COPIF 2018: Key Changes Adopted and Implementation
2i) Designation of Preferred Mobile Installation Space (MIS) – Rooftop MIS (1/3)

Purpose: Rooftop MIS to serve surrounding areas for enhanced, wider mobile coverage

Mobile Installation Space to be provided by building developers or owners:
Specified amount of space to be provided without charge, for mobile deployment

New

COPIF 2018 requirements

- Mobile Network Operators ("MNOs") to decide on MIS location, due to their expertise on deployment
- Option for MNOs to use rooftop MIS to also serve external areas

Benefits:
- Enhanced coverage for end users
- Shorter provisioning time

Affects:
- All buildings, new and existing;
- Existing agreements to remain in force until expiry
2i) Designation of Preferred Mobile Installation Space (MIS) – Rooftop MIS (2/3)

- Rooftop MIS
- Mounted equipment
- Floor-standing equipment
- Mobile equipment (blending in with rooftop)
- Floor-standing equipment
- Rooftop MDS
### 2i) Mobile Installation Space (MIS) – Treatment of ancillaries and associated apparatus (3/3)

<table>
<thead>
<tr>
<th>Type of ancillary/associated apparatus</th>
<th>Computed as MIS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabling/trunking and cable trays</td>
<td>No</td>
</tr>
<tr>
<td>Ceiling-mounted indoor cones/antennae</td>
<td>No</td>
</tr>
<tr>
<td>Camouflage (i.e. reasonable aesthetics)</td>
<td>No</td>
</tr>
<tr>
<td>Antennae (with footprint)</td>
<td>Yes</td>
</tr>
<tr>
<td>Base transmission system (BTS) (with footprint)</td>
<td>Yes</td>
</tr>
<tr>
<td>Combiner (with footprint)</td>
<td>Yes</td>
</tr>
<tr>
<td>DB box (with footprint)</td>
<td>Yes</td>
</tr>
<tr>
<td>Remote Radio Unit (RRU) (with footprint)</td>
<td>Yes</td>
</tr>
</tbody>
</table>
2ii) Modification of in-home co-axial cabling (1/2)

Purpose: Repurpose co-axial cablings for re-distribution of Digital TV signals

Cross-sectional view of high-rise residential building showing COPIF 2013 requirements (in blue):

New

COPIF 2018 requirements

- No longer a need for developers or owners to:
  - pre-lay co-axial cable from Main Distribution Frame (MDF) room, up the riser, and into the splitter (located in closet of each home)

- Developers or owners need only provide in-home co-axial cablings, due to Hybrid-Fibre Co-axial (HFC) cessation

Benefits:
- Lower construction cost to developers or owners

Affects: New residential buildings and landed homes
2ii) Modification of in-home co-axial cabling (2/2)

New

COPIF 2018 requirements

- Developers or owners continue to install 1 co-axial cable point in living room and every bedroom
- Add 1 new input socket in the living room; resident can connect an indoor antenna to re-distribute Digital TV signals

Benefits:
- Homes can use single indoor antenna and re-distribute

Affects: New residential buildings and landed homes
### 2iii) New Residential Buildings: additional fibre and data points (1/2)

**Purpose:** To enable faster technology adoption, more varied services in homes

<table>
<thead>
<tr>
<th>New COPIF 2018 requirements</th>
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<tbody>
<tr>
<td>• Provision of additional fibre:</td>
</tr>
<tr>
<td>o optical fibre cable in each residential unit</td>
</tr>
<tr>
<td>o category 6 Ethernet cables with RJ45 outlet in each room</td>
</tr>
<tr>
<td>• Developers or owners:</td>
</tr>
<tr>
<td>o must provide 4-fibres from telecom riser and into each home;</td>
</tr>
<tr>
<td>• Telecom operator:</td>
</tr>
<tr>
<td>o connect their fibre to 1 of the fibres;</td>
</tr>
<tr>
<td>o required to remove their fibre once customer terminates fibre subscription</td>
</tr>
</tbody>
</table>

**Benefits:**

• Allow end users to enjoy greater number of services provided over fibre infrastructure

**Affects:** New residential buildings and landed homes
### 2iii) New Residential Buildings: additional fibre and data points (2/2)

<table>
<thead>
<tr>
<th>Location within residential unit</th>
<th>Number of data point(s) (Category 6 or better) per location COPIF 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living room</td>
<td>2</td>
</tr>
<tr>
<td>Master bedroom*</td>
<td>2</td>
</tr>
<tr>
<td>Kitchen#</td>
<td>1</td>
</tr>
<tr>
<td>Each bedroom</td>
<td>1</td>
</tr>
</tbody>
</table>

*Additional data point

# New location for data point
2iv) New Non-Residential Buildings: 2-way Air-blown Fibre (ABF) Microducts (1/2)
Purpose: To enable telecom operators’ faster provisioning to customers

New

COPIF 2018 requirements

- Developers or owners to pre-lay (and label) the 2-way air-blown fibre microducts from the riser to each unit on each floor
- On-going obligation by developers or owners to provide additional 2-way air-blown fibre microducts to sub-divided units

Benefits:
- Improves service provisioning for businesses/tenants
- Neater, better for telcos’ maintenance

Affects: New non-residential buildings
2iv) New Non-Residential Buildings: 2-way Air-blown Fibre (ABF) Microducts (2/2)

- Developer’s/owner’s responsibility for Tube Patch Panel (TPP) at the riser

- Telecom Operator blows fibre directly to Fibre Distribution Point (FDP) at the riser

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**Developer’s deployment**

- To units
- ABF microducts provided by developer/owner
- TPP provided by developer
- Fibre
- FDP box provided by telco

**Telecom Operators’ deployment**

- To units
- Developer/owner provides TPP
- Telecom Operator provides FDP
- Telecom Operator deploys fibre when customer orders service

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2v) Resilience requirements: Emergency Access to Space and Facilities

Purpose: Ensure clear processes, less delay for urgent restoration of services

New

COPIF 2018 requirements

• Developers or owners and telecom operators to co-operate on such access

<table>
<thead>
<tr>
<th>Building type</th>
<th>Timeframe for Emergency Access to be provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manned</td>
<td>Within 2 hours from the receipt of licensee’s notice</td>
</tr>
<tr>
<td>Unmanned</td>
<td>As soon as possible and in any case not more than 8 hours from the receipt of licensee’s notice</td>
</tr>
</tbody>
</table>

Benefits:
• Clarity in Emergency Access situations and minimise delays to service restoration

Affects: All developments, new and existing (except to road/train tunnel locations, where disruptions would be caused to commuter and traffic services)

* “Emergency access” defined under new COPIF as:
Situations that require urgent restoration of telecommunication service(s), due to unplanned outage or downtime, which cannot be resolved by the Licensee remotely.
2v) Resilience Requirements: Network and Service (1/2)
Purpose: Support enhancement of networks and service diversity

<table>
<thead>
<tr>
<th>New</th>
</tr>
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<tbody>
<tr>
<td>COPIF 2018 requirements</td>
</tr>
<tr>
<td>• <strong>Definite list</strong> of buildings that house vital services (e.g., hospitals, ports of entry, data centres etc.)</td>
</tr>
<tr>
<td>• Building developer to provide dual set of infrastructure (i.e. MDF room, cable systems) to enhance resilience of network and services</td>
</tr>
</tbody>
</table>

**Affects:** All such new buildings
2v) Resilience Requirements: Network and Service (2/2)  
– Enhancement of Network and Service Resilience

COPIF-specified list of buildings housing vital services requiring resilience and diversity provisioning. These include:

• hospitals;
• ports of entry for land, air and sea, including immigration checkpoints;
• police and fire stations;
• utility plants;
• data centres; and
• key financial centres such as the Stock Exchange.

Other types of buildings not listed above may also have diversity provisioning, if the developer/owner decides and sees fit to do so based on the development’s needs.
What’s new - recap

Key Changes Adopted

- **Preferred Mobile Installation Space** (renaming only, conceptually the same)
  - Designation of rooftops as *preferred* MIS
  - Location of MIS (selected by MNO in consultation with BO)
- **Residential requirement**: 4-core fibre (i.e. additional 2-core fibre)
- **Modification of co-axial cabling** inside homes
- **Non-residential requirement**: 2-way ABF microducts pre-installation
- **Resilience** requirements, including **Emergency Access**

❖ *Co-operation from all parties needed, benefits all*
3) Implementation of COPIF 2018

COPIF 2018 and Guidelines

• Issued on 28 November 2018
• Effective **15 December 2018**

Contact for queries on requirements
Send e-mail to:
Interconnect@imda.gov.sg
Questions and Answers

Please identify yourself, clearly stating your:
- name
- company and
- question

Thank you