ASIA-PACIFIC TELECOMMUNITY

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M1, Singapore

Industry Trends Driving ICT Strategies

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APT Policy and Regulatory Forum

4 August 2015

Introduction to M1

Background

- Second mobile operator in Singapore, launched in April 1997
- The National Fibre Network (NFN) provided M1 the opportunity to expand services beyond just mobile
  - First to launch fibre services in Sep 2010, reselling bandwidth services of NFN OpCo
  - Rolled out own fiber active network in 2011

Mobile Service Milestones

- Achieved many firsts:
  - **2000:** Smart dualband GSM network on 1800MHz and 1900MHz
  - **Feb 2005:** 3G mobile services
  - **Dec 2006:** Nationwide wireless broadband service (HSPA)
  - **June 2011:** Commercial LTE network in Marina Bay Financial District
  - **Sept 2012:** Nationwide LTE network

M1's Network and Infrastructure Capabilities

M1's Network and Infrastructure

- Nationwide next-generation 4G network
  - Nationwide 300Mbps download speed
  - M1 has the best 4G connectivity (IDA, 3 June 2015)
- Ultra-High Speed Broadband
  - Own and operate ultra high speed business fibre broadband of up to 10Gbps
  - Provide fibre network redundancy services for key Data Centres through DWDM (Dense Wavelength Division Multiplexing)
- Next-Gen "Green" Data Centre
  - Purpose built Tier-3 MiWorld Data Centre facility
  - Meets BCA's Green Mark requirements

2008 vs 2015

Source of Internet Connection

2013

17%

2025

80%
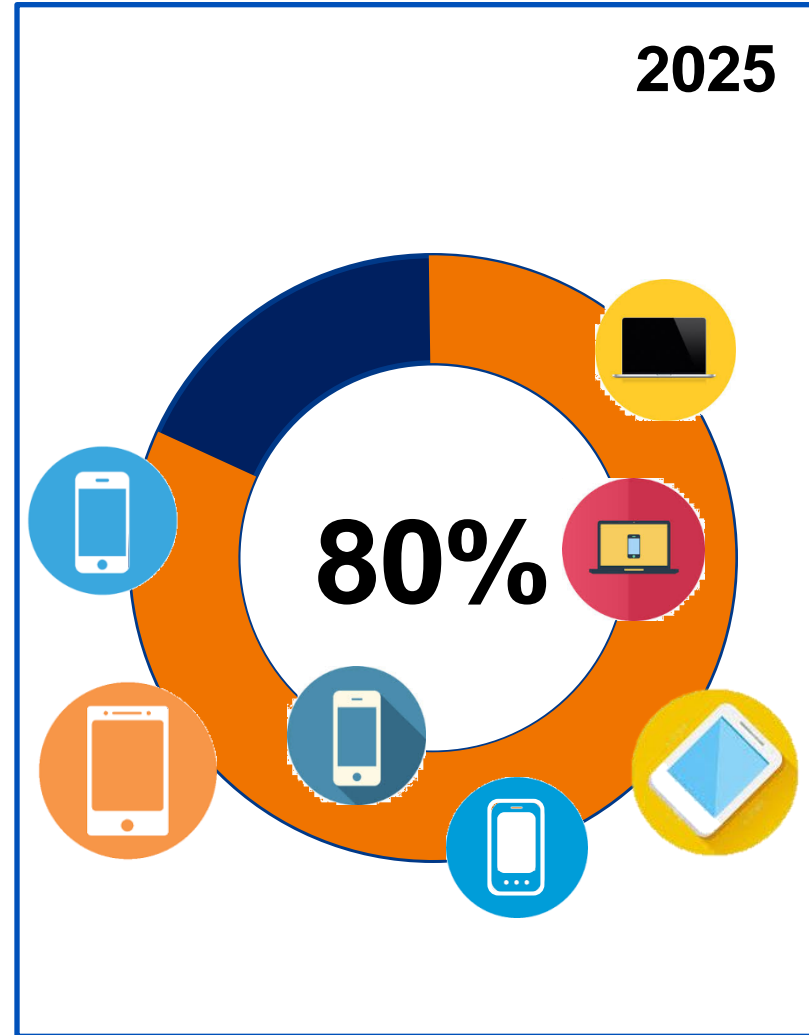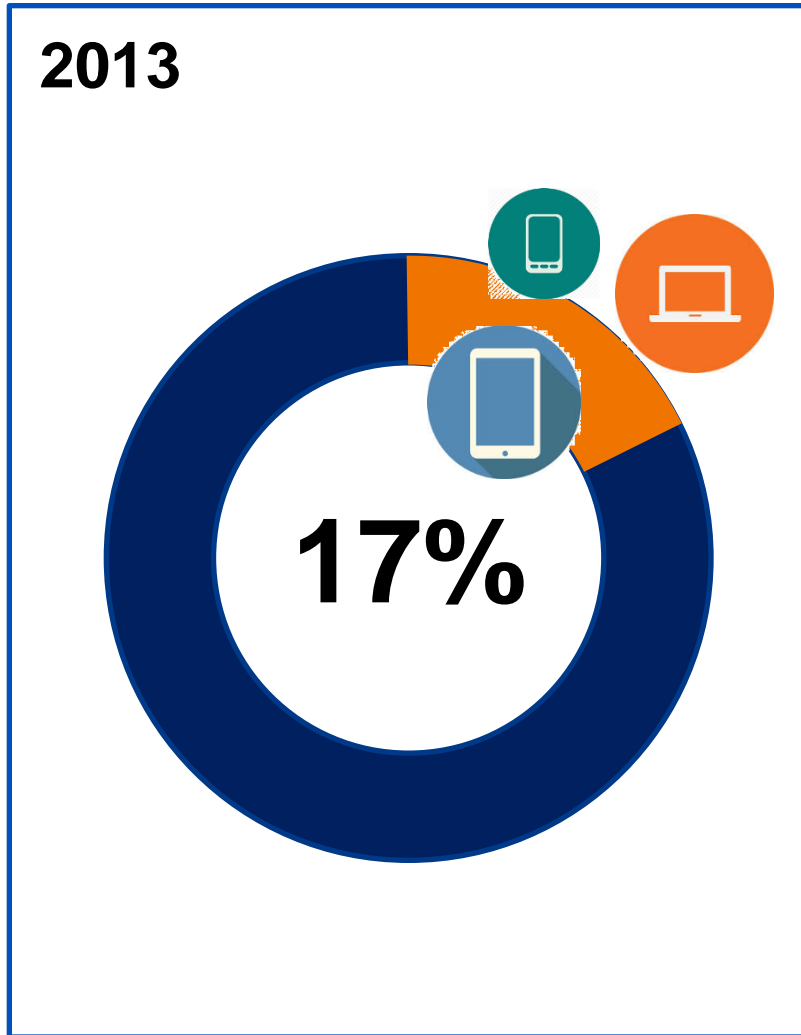
Forces Shaping the Future of Telecommunications

- Growing market for ultra-low cost handsets
- IoT / Big Data / M2M
- Increase demand for data and speed

Connected Devices

Access

- Basic broadband pervasive
- Fixed and Mobile Broadband
- Ultra-high speed broadband grows
- Cloud and shared communications

- Historically, traffic and revenue tracked along the same path
- However with flat tariffs, costs no longer match revenues for delivering the increasing amount of data over networks

Decoupling of Traffic & Revenue

Industry Structure & Regulations

- Smart Nation initiatives
- Convergence of vertical industries and sectors
- New mobile and broadband competition
- Net neutrality

The Challenge to Monetize Content

- Revenues from digital content and mobile content not sufficient to compensate for revenue decline in traditional services
- Need to better monetize massive growth of OTT services

Singapore's Smart Nation Vision

SMART NATION

Infrastructure

n∞ Next Gen Nationwide Broadband Network

Wireless @SG

HETNET

AG Box

Smart Nation Operating System

- SN-OS Functional Architecture
- Security
- Data Protection and Rights Management
- Real-Time Stream Analysis
- Trust by Design
- Video System and Unstructured to Structured (U2S) Platform
- Sensors and Sensor Networks

Opportunities for Growth

Ultra Fast Broadband

- Demand for mobile data has been growing rapidly
  - *~10Petabyte per month in Q1 2015, double from 2012 (IDA)*
- Broadband speed increasing
  - 1Gbps fibre broadband service launched in 2013
  - Nationwide LTE launched 2012, 300Mbps 4G launched 2014
- Next phase is the deployment of ultra-fast broadband networks (>1Gbps) which requires high levels of investment

Premium Add-On Service

- Opportunity for premium connectivity features and add-ons to complement the broadband offerings (e.g., guaranteed low latency, security, more robust content delivery network, etc.)
  - *GamerPRO (traffic prioritization, low latency)*

Opportunities for Growth

IoT / M2M / Big Data

- **ioT:** 4.9 Billion Connected "Things" Will Be in Use in 2015 – rising to 25 billion in 2020 (Gartner)
  - *So far, investment in IoT mainly from ICT industry, but gaining traction outside ICT industry (e.g. retail)*
- **M2M:** New opportunity for service providers' revenues through ramping up M2M services with an infinite number of connected objects
- **Big Data:** Businesses can look forward to provide insights in transforming IoT/M2M data into actionable business intelligence

Cloud & Virtualization

- Companies continue to move away from big infrastructure investments in favour of cloud-based systems
  - Greater adoption of cloud and in-house/cloud hybrid hosted operations
  - SDN and Network Virtualisation to improve agility in cloud solutions

Opportunities for Growth

Cyber Security

- Growing importance due to the increasing reliance of computer systems in most societies, from devices (smartphones, TVs, IoT, etc.) to networks (Internet, private data networks, Bluetooth, WiFi, etc.)

- Recent high-profile security breaches (Apple, Sony, Target) have propelled security to the top of the IT priority list
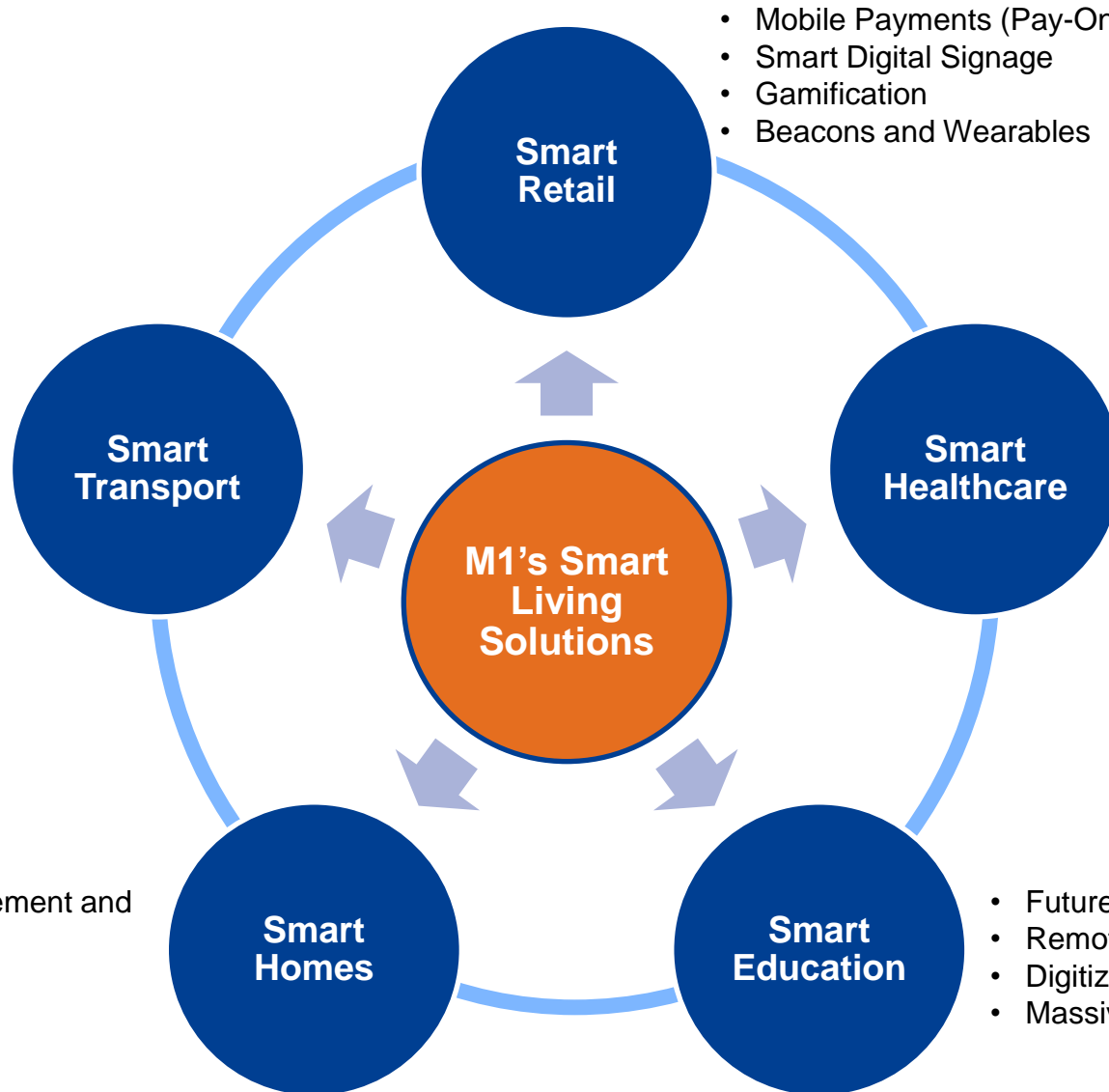
New Verticals

- Opportunity to create value through new industry verticals
  - Establish strategic partnerships and innovations to develop solutions to ride on network and infrastructure

M1's Smart Living Solutions

Smart Retail
- Mobile Payments (Pay-On-The-Spot)
- Smart Digital Signage
- Gamification
- Beacons and Wearables

Smart Transport
- Telematics
- Autonomous Driving & Connected Mobility
- Smart Traffic Monitoring
- Traffic Optimization and Prediction
- Smart Car Solutions
- Drones (Logistics)

M1's Smart Living Solutions

Smart Healthcare
- Remote Healthcare
- Smart Elderly & Alert Monitoring System (SEAMS)
- Medical Concierge
- Centralised Cloud Medical History Data
- Tricorder *(handheld diagnostic device to detect diseases and administer medication)*

Smart Homes
- Home Energy Management and Monitoring (HEMS)
- Home Automation
- Elderly Monitoring
- Person Tracking

Smart Education
- Future Schools
- Remote Learning
- Digitized Classrooms
- Massive Open Online Course (MOOC)

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Smart Retail

Smart Signage

- M1 and partners setup and deployed digital signage solutions in selected HDB blocks

  ➢ Integrated interactive technology with signage solution for 2-way communications – allowing consumers to interact directly with the advertising through their smartphones

Mobile Payments

- Partnered MasterCard and WireCard to offer a Mobile Point-of-Sale (mPOS) solution

  ➢ mPOS is a mobile payment acceptance solution that displaces traditional payment terminals

  ➢ Bundle mPOS solution with existing Restaurant Digital Menu Ordering Systems as a integrated one-stop retail offering

Smart Healthcare

Remote HealthCare

- M1 collaborated with leading healthcare service providers to offer an integrated smart healthcare solution
  - ➢ Facilitate offering of basic home care services to the elderly through telemedicine and connecting patients online with doctors and psychotherapists

Elderly Care

- M1 exploring deployment of the Smart Elderly Monitoring & Alert System (SEMAS) as alternative to "Pull Cord" system
  - ➢ Allows families to monitor and be alerted on the elderly living alone at home, through sensors placed in flats
  - ➢ Monitors current location, sleeping patterns, and even the duration spent in toilet

Summary

- Operators today need to evolve from being mere "dumb-pipe" providers to being smart communications providers – deepening its proposition in the value chain to offer a complete packaged solution:

  - ➢ Network, Infrastructure and Connectivity

  - ➢ Managed Services

  - ➢ Big Data / Smart Analytics

  - ➢ Strategic partnerships to offer innovative solutions to suit vertical markets

Thank You