Framework of the Digital Terrestrial Television Broadcasting (DTTB) Migration Plan
Bringing New Dimensions to the Broadcasting Experience of Filipinos

Copyright © DICT

National ICT Planning Division
National ICT Governance Service
Department of Information and Communications Technology
Republic of the Philippines

DICT Building, CP Garcia Avenue, Diliman
Quezon City, Philippines 1101
Telephone: +632 920 0101
Website: www.dict.gov.ph
Email: info@dict.gov.ph
Framework of the Digital Terrestrial Television Broadcasting (DTTB) Migration Plan

Bringing New Dimensions to the Broadcasting Experience of Filipinos

October 2017
The Framework of the Digital Terrestrial Television Broadcasting (DTTB) Migration Plan has been prepared by the Department of Information and Communications Technology (DICT), Republic of the Philippines, in consultation with public and private broadcasters, equipment manufacturers, content producers and key TV industry stakeholders.

The DICT acknowledges the contributions from the DTTB Migration Committee and Technical Working Group (TWG) members, the Ministry of Internal Affairs and Communications (MIC), Government of Japan, and the International Telecommunications Union (ITU) Regional Office for Asia and the Pacific in the development of the plan.

The DTTB Migration Plan addresses policy, regulatory and technical issues as well as fiscal considerations, industry and consumer support interventions, and other measures necessary for the country's migration to Digital TV Broadcasting, including the Public Communications Strategies in preparation for the planned Analog Switch Off (ASO). The National Telecommunications Commission (NTC) shall issue the corresponding additional Rules and Regulations to ensure smooth DTTB implementation, in accordance with this DTTB Migration Plan and the Philippine Spectrum Roadmap.
Framework of the Digital Terrestrial Television Broadcasting Migration Plan

Bringing New Dimensions to the Broadcasting Experience of Filipinos

Acronyms and Abbreviations ................................................................. i
Secretary’s Message ................................................................. ii
Executive Summary ........................................................................ iii

1.0 Introduction ................................................................................. 2
  1.1 Background to the Policy Formulation Process ......................... 3
  1.2 Concepts and Definition ......................................................... 4
  1.3 The Importance of Digital Migration ........................................ 6
  1.4 Situational Analysis .............................................................. 8
  1.5 The Broadcasting Transmission Standard .................................. 14

2.0 Rationale for Digital Migration .................................................. 18
  2.1 Alignment to the National Development Agenda ....................... 18
  2.2 Bridging the Digital Divide .................................................... 19
  2.3 Increasing Access to Information ............................................ 20
  2.4 Reinforcing National Identity of Disaster Resilience ................. 21
  2.5 Development of Local Content Industries ............................... 22
  2.6 Managing the Radio Frequency Spectrum ............................... 22
  2.7 Realization of New Services .................................................. 23

3.0 The Philippine Transition from Analog to Digital Television ....... 25
  3.1 Consideration for Different Switch Off Approaches Geographic Aspects of Switch Off ....... 25
  3.2 Geographic Aspects of Switch Off ......................................... 27
  3.3 Setting the ASO Deadline .................................................... 27
  3.4 Socioeconomic Impacts of Migration ..................................... 29

4.0 The Digital Migration Policy for the Philippines ......................... 31
  4.1 Guiding Principle ............................................................... 31
  4.2 Policy Statement ............................................................... 31
  4.3 Policy Goals .................................................................... 31
  4.4 Policy Areas of Action ....................................................... 32

5.0 Implementation Framework ...................................................... 43
  5.1 Role of Different Stakeholders .............................................. 43
  5.2 Consensus Building and Consultation .................................... 45

6.0 Public Communication Strategy ................................................ 49
  6.1 Communication Plan .......................................................... 50
  6.2 Communication Strategy ..................................................... 50
  6.3 Communication Tools ........................................................ 51
  6.4 Mechanics and Synergy for the Promotions ............................. 56

Conclusion ....................................................................................... 58
References and Acknowledgments ................................................. 59
Annex .......................................................................................... 60
# Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
</tr>
<tr>
<td>ASO</td>
<td>Analog Switch Off</td>
</tr>
<tr>
<td>ATSC</td>
<td>Advanced Television Systems Committee</td>
</tr>
<tr>
<td>BML</td>
<td>Broadcast Mark-up Language</td>
</tr>
<tr>
<td>CAS</td>
<td>Conditional Access System</td>
</tr>
<tr>
<td>CATV</td>
<td>Cable Television</td>
</tr>
<tr>
<td>DENR</td>
<td>Department of Environment and Natural Resources</td>
</tr>
<tr>
<td>DOF</td>
<td>Department of Finance</td>
</tr>
<tr>
<td>DOST</td>
<td>Department of Science and Technology</td>
</tr>
<tr>
<td>DSO</td>
<td>Digital Switch On</td>
</tr>
<tr>
<td>DSWD</td>
<td>Department of Social Welfare and Development</td>
</tr>
<tr>
<td>DTI</td>
<td>Department of Trade and Industry</td>
</tr>
<tr>
<td>DTTB</td>
<td>Digital Terrestrial Television Broadcasting</td>
</tr>
<tr>
<td>DTT</td>
<td>Digital Terrestrial Television</td>
</tr>
<tr>
<td>DTV</td>
<td>Digital Television</td>
</tr>
<tr>
<td>EPG</td>
<td>Electronic Program Guide</td>
</tr>
<tr>
<td>EWBS</td>
<td>Emergency Warning Broadcast System</td>
</tr>
<tr>
<td>FTA</td>
<td>Free-to-Air</td>
</tr>
<tr>
<td>HDTV</td>
<td>High Definition TV</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>DICT</td>
<td>Department of Information and Communications Technology</td>
</tr>
<tr>
<td>IDTV</td>
<td>Integrated Digital Television</td>
</tr>
<tr>
<td>IECEP</td>
<td>Institute of Electronics Engineers of the Philippines</td>
</tr>
<tr>
<td>IPTV</td>
<td>Internet Protocol Television</td>
</tr>
<tr>
<td>IRR</td>
<td>Implementing Rules and Regulations</td>
</tr>
<tr>
<td>ISDB-T</td>
<td>Integrated Services Digital Broadcasting – Terrestrial</td>
</tr>
<tr>
<td>ITU</td>
<td>International Telecommunication Union</td>
</tr>
<tr>
<td>KBP</td>
<td>Kapisanan ng mga Brodkaster ng Pilipinas</td>
</tr>
<tr>
<td>MC</td>
<td>Memorandum Circular</td>
</tr>
<tr>
<td>MPEG</td>
<td>Moving Picture Expert Group</td>
</tr>
<tr>
<td>MTRCB</td>
<td>Movie and Television Review and Classification Board</td>
</tr>
<tr>
<td>NEDA</td>
<td>National Economic Development Authority</td>
</tr>
<tr>
<td>NGA</td>
<td>National Government Agency</td>
</tr>
<tr>
<td>NRFAT</td>
<td>National Radio Frequency Allocation Table</td>
</tr>
<tr>
<td>NTC</td>
<td>National Telecommunications Commission</td>
</tr>
<tr>
<td>PAIA</td>
<td>Philippine Appliance Industry Association, Inc.</td>
</tr>
<tr>
<td>PAGE</td>
<td>Philippine Association of Government Electronics Engineers</td>
</tr>
<tr>
<td>PIA</td>
<td>Philippine Information Agency</td>
</tr>
<tr>
<td>RF</td>
<td>Radio Frequency</td>
</tr>
<tr>
<td>SDTV</td>
<td>Standard Definition TV</td>
</tr>
<tr>
<td>STB</td>
<td>Set-Top Box</td>
</tr>
<tr>
<td>TWG</td>
<td>Technical Working Group</td>
</tr>
<tr>
<td>TVHH</td>
<td>TV Households</td>
</tr>
<tr>
<td>UHF</td>
<td>Ultra High Frequency</td>
</tr>
<tr>
<td>VHF</td>
<td>Very High Frequency</td>
</tr>
</tbody>
</table>
Secretary's Message

To mark the comprehensive nationwide implementation of the migration into Digital Terrestrial Television Broadcasting (DTTB), the Department of Information and Communications Technology (DICT) has consulted broadcasters, manufacturers, content producers and civil society in crafting the Framework of the DTTB Migration Plan. This plan outlines the Rationale for Digital TV Migration, nuances The Philippine Migration from Analog to Digital Television, discusses The DTTB Migration Policy for the Philippines, explains the Implementation Framework and highlights the comprehensive Public Communications Strategy.

While the shift from Analog to Digital TV signal offers key advantages, urgent challenges of emerging technologies require an enabling framework to cushion the impact and address the policy, regulatory, as well as the economic concerns of the migration process. These thematic issues are conscientiously considered in the development of this Framework of the DTTB Migration Plan.

The Migration into Digital TV not only paves the way for a better TV viewing experience for the Filipinos but also for a more efficient and richer information dissemination platform for a well-prepared Philippines in times of calamities.

The Integrated Services Digital Broadcast – Terrestrial (ISDB-T) Standard features the Emergency Warning Broadcast System (EWBS) that can disseminate early warnings, alerts and advisories in localized areas. Moreover, the switch to Digital Television will foster a competitive environment for the broadcasters to offer new services through Datacasting and Broadcast Markup Language (BML).

True to its mandate, the DICT further commends the TV networks, ISDB-T receiver manufacturers and local content producers for providing guidance to the design, development, and deployment of DTTB, as well as in stimulating innovation and achieving economies of scale and scope. With this framework, many information and education campaigns are in the pipeline that is essentially premised on a smooth transition to Digital TV.

The DICT factors in pressing concerns from the digital broadcast players on ground, and the Department likewise considered recommendations from Japanese experts and counterparts, ranging from policy issuances, industry best practices to regulatory frameworks, with DTTB slated to be a national priority and a consensus that the eventual migration is key to having a competitive broadcasting environment in the Philippines.

Together, let us watch the Philippine TV migrate and transition into Digital. DTTB will be bringing new dimensions to the broadcasting experience of Filipinos. Indeed, the shift to Digital TV begins NOW.

RODOLFO A. SALALIMA
Secretary
Department of Information and Communications Technology
Republic of the Philippines
Executive Summary

Digital Terrestrial Television Broadcasting (DTTB) is the new technology in delivering TV programs over the airwaves. It will replace the current analog transmission system, premised on utilizing the spectrum efficiently and providing better quality of service broadcast and reception. The migration process allows for a gradual introduction of Digital TV services without disenfranchising the existing analog TV viewers until such time when a prescribed percentage of the viewing population has already shifted to digital which will subsequently warrant the termination of analog broadcasting services.

Considering that the migration to Digital Terrestrial Television Broadcasting has been a global trend, the Philippines could learn from the experience and best practices of other countries' migration to Digital TV.

In the pursuit of achieving efficient use of limited spectrum resource in compliance with the International Treaties and with the technical assistance from the International Telecommunications Union (ITU), the timeline for the digital switch-over process of the country is projected based on the experiences of other nations currently undergoing or has finished the migration process.

The Framework of the DTTB Migration Plan is divided into chapters, starting with the Rationale for Digital TV Migration, followed by The Philippine Migration from Analog to Digital Television, which then proceeds to elaborate on The DTTB Migration Policy for the Philippines, including the Implementation Framework and provides for a Public Communications Strategy.

The system preceding DTTB is the analog television system. Analog technology has been in use for the past several decades to transmit conventional TV signals to viewers, which is currently received in standard definition (SD) format. In the Philippines, broadcasters operate TV transmission stations in both Very High Frequency (VHF): 54 MHz - 72 MHz, 76 MHz – 88 MHz and 174 MHz - 216MHz (TV Channels 2 to 13) and Band IV - Ultra High Frequency (UHF): 512 MHz – 698 MHz (TV Channels 14 to 51). From the beginning of TV broadcasting in the country back in 1953, when the first publicly announced television broadcast occurred, the number of TV stations has increased to around 228 in 2006 to 372 in 2011 and to 435 in 2014.

The revolution of the broadcasting industry is made more apparent today as the Philippines commences to migrate from Analog to Digital TV, based on the Japanese standard Integrated Services Digital Broadcast – Terrestrial (ISDB-T).

This is a strong statement of the country’s preference for enhanced TV viewing experience for the public, while democratizing access to information, enriching programming with supplemental information, and providing modes of disaster alert data delivery.

---

2 NTC, Number of Broadcast and CATV Stations by Region (as of December 2011) a later version is available in the BSD, NTC
3 2014 Annual Report, National Telecommunications Commission, Republic of the Philippines
The Framework of the DTTB Migration Plan is a comprehensive document, which addresses policy, regulatory, and technical issues involved in the country's migration to Digital TV. Based on the review of available guidelines and documents on the migration to DTTB from other countries, the Philippine government in consultation with key stakeholders shall address various issues on both the pre-implementation and implementation stages, including periodic monitoring of the DTTB roll out, coverage and receiver penetration.

To ensure that the full benefit of Digital TV technologies will be enjoyed by the viewing public, compliance to the basic technical specifications mandated by the government will be strictly monitored and enforced. Compliance by self-regulation of the manufacturers for the receivers is welcomed, however the government reserves the right to implement a type approval process should it become warranted.

Digital TV has many inherent advantages over analog TV. Generally, it provides accurate representation of the original signal with visually lossless quality and allows ease of storage and manipulation of the digital signal data.

Specifically, digital transmission will create great economic opportunities by way of more capable and cost-efficient broadcasting technology. Broadcasters will be able to deliver more programs/services and better-quality content that would allow the development of new revenue streams depending on the business model subject to existing government regulations and applicable laws.

To illustrate, broadcasters currently use the assigned 6 MHz TV bandwidth on a defined channel to transmit one analog program in SDTV format, comparatively, in digital technology, broadcast of multiple SDTV programs and/or in High Definition TV (HDTV) using the same bandwidth is possible.
While broadcasters are presented with this multi-channel capability, the business models currently implemented in the industry will change in order to dynamically adjust and accommodate the requirements of high definition images. These opportunities must always favor the viewing public through the enhancement of existing services – the increase in quality is expected and that no degradation on the current quality of audio and video services shall be incurred for the sake of increasing the quantity of program offerings.

Migrating to DTTB will also result to a greater and more efficient utilization of frequency spectrum. The Digital Dividend or the freed-up channel capacity by the switch from analog to Digital TV can be reallocated to maximize 4G or 5G and other mobile broadband technologies in the 700 MHz up to 890 MHz band previously classified as UHF Band V broadcast service as per determination of the government. This digital dividend will be a premium government resource for the realization or enhancement of broadband applications for the delivery of services to the public. The smooth transition to Digital TV should be undertaken to cover and attract huge viewership base at the soonest time possible. This premise can be achieved by the digital service offerings of the broadcasters to make it attractive enough for the viewers to acquire digital receivers.

The migration process is a matter of government policy respecting the right of the people to information and access to Free-To-Air (FTA) TV and news. Migrating to Digital TV will be done in an iterative regional phased fashion; the determining conditions/factors will dictate the unified or independent schedule of the migration, as TV broadcasting is classified as a universal public service and an important infrastructure for the people relying on it as the primary source of information, news, entertainment, advisories, among others. Thus, it would be necessary to involve and consult all stakeholders in all stages of DTTB migration, which includes the framework of the migration plan formulation and its implementation. A DTTB Migration Committee and corresponding Technical Working Group (TWG) has been created to develop and implement measures to address all concerns of the stakeholders.

More than 150 countries around the world have already started or completed the migration to DTTB, and the Philippines’ decision to migrate to Digital TV is very timely. The Filipinos can now enjoy the benefits of digital television starting the Digital Switch-On (DSO) on 01 January 2015. The Ceremonial DSO was subsequently held on 14 February 2017, at the Digital TV Summit 2017 and shall signal the comprehensive nationwide implementation of DTTB in view of the planned Analog Switch Off (ASO) in four (4) to six (6) years.

---

4 Memorandum Circular 07-12-2014, National Telecommunications Commission, Republic of the Philippines
Introduction
1.0 Introduction

Migrating to DTTB allows broadcasters to be competitive and more attractive than the other modes of delivery of TV services, unlike in other countries wherein alternative delivery of Audio and Video services like that of Cable TV (CATV) and Direct-To-Home (DTH) Satellite Services being more prevalent. Since Philippines, is an archipelagic country and majority of Filipino TV viewers are very reliant on FTA Terrestrial TV reception, broadcasters need to utilize this opportunity to capitalize this being their main source of revenue. Technology is indeed very dynamic and in this era of convergence, TV remains to be a critical source of information for the public. Notably, advancements of information and communications technology (ICT) empower its users with more personalized choices to make better decisions and be immersed in the information pool.

Today’s global mainstream broadcasting technologies may either be analog or digital. In the Philippines, the former has been in commercial operation since 1953 and the transition from analog to Digital TV broadcasting has been undertaken in response to worldwide trend of utilizing spectrum efficiently in terms of service quality, compression technology and operational cost. DTTB creates new business opportunities for the broadcasters/operators, content producers/providers, manufacturers/suppliers, and consumers where they can compete in a converged arena.

This Framework of the DTTB Migration Plan is a comprehensive document which details policy and legal framework, and provides technical guidance for concerned stakeholders, measures for fiscal considerations as necessary, and communications strategies for public awareness for the smooth implementation. This document will further identify several important considerations in the DTTB migration process, those needed to be considered before, during and after the transition until the planned Analog Switch off (ASO) on 31 December 2023.

The migration process aims that broadcasting services currently delivered through the analog network will be fully replicated and provisioned for the digital network, through the Integrated Services Digital Broadcasting–Terrestrial (ISDB-T) standard, in such a way that no disservice will take place once a specific timeline chosen the ASO TV transmission in a certain service area. As a matter of policy, all existing FTA programs must be present and shall be classified as the Primary Program of a broadcaster in the transitional process from analog to digital utilizing the multi-program DTTB service.

There are several advantages of migrating into DTTB and while there is availability of other global Digital TV standards, one of the most compelling reasons of adopting ISDB-T standard is the proven and tested Emergency Warning Broadcast System (EWBS) feature. Leveraging on a disaster alert information system utilizing the EWBS function would be of substantial advantage to the Philippines which is prone to natural disasters such as earthquakes and typhoons.

---

Innovation can be built around a standard technology platform which can be attributed to data broadcast and emergency early warning, especially when there is a need for pre-disaster information, real-time disaster communications, and post-disaster response efforts, which stand to benefit the Filipino people in such times. This is a paramount and inherent feature that cannot be overlooked.

1.1 Background to the Policy Formulation Process

As the national policy-making body for ICT, the Department of Information and Communications Technology (DICT) has embarked on an all-inclusive approach in making the Framework of the DTTB Migration Plan, that is, by empowering the key stakeholders to participate in crafting a policy that will benefit the public, as well as to address the regulatory issues, economic considerations and legal framework. With public service as the key driver to adopting ISDB-T as the sole standard for DTTB, this document has been prepared in consultations and meetings with various stakeholders including the internal services/offices of the Department, the DTTB Migration Committee and the Technical Working Groups (TWG).

It is the government policy under the Public Service Act that TV broadcasting is considered as public service, and access to information is a democratic right enshrined in our constitution. The government’s role as the administrator and regulator of the spectrum, needs to ensure the efficient use of this scarce resource and adhere to the goal of universal access.

The broadcasters’ congressional franchise requires them to: (a) provide adequate public service time to enable the government through its broadcasting stations to reach the population on important public issues; (b) provide at all times sound and balanced programming; (c) promote public participation such as in community programming; (d) assist in the functions of public information and education; (e) conform to the ethics of honest enterprise; and (f) not use its stations for the broadcasting of obscene and indecent language, speech, act or scene, or for the dissemination of deliberately false information or willful misrepresentation to the detriment of the public interest, or to incite, encourage, or assist in subversive or treasonable acts. Being a franchise issued by the government, it is considerably not a right but a privilege by the licensing authority of the government that can be withdrawn at any time, should it be warranted in accordance to law.

With the introduction of digital broadcasting technology, current broadcast operators are, at the very least, required to replicate the analog coverage but not to extend beyond the approved license/authorization unless otherwise granted. This will, as enfranchised networks, to increase TV viewership as prelude to universal access.

Moreover, such introduction of DTTB services within the existing analog coverage service shall be enhanced through the elimination of shadow areas through the technical implementation of identified solutions such as Single Frequency Network (SFN) or Gap Fillers, among others, and wherever it applies, provided that it shall not exceed the approved DTTB coverage and in concurrence with the Frequency and Channel Plan issued by the National Telecommunications Commission (NTC).

---

6 Senate of the Philippines, Republic of the Philippines
While mobile communications technology in one of the prevalent alternative sources of entertainment and news, the traditional FTA TV in the Philippines is still the preferred mode of accessing information, thereby the move to migrate to Digital TV will not only make the broadcast industry in the country at par with the rest of the globe, but it will also provide citizens a better viewing experience.

1.2. Concepts and Definitions

For the purposes of this Framework of the Migration Plan, the following terms and terminologies have been defined as follows:

**Analog Television (Analog TV)** – Is the original television technology that used analog signals to transmit video and audio.

**Digital Dividend** – The spectrum that is to be freed-up by the switch from analog to digital television.

**Frequency Planning** – The exercise to ascertain the availability and limitation of spectrum in each service area. It also considers the aspect of interference protection among existing operators.

**Pay Television (Pay TV)** – A system which allow users to access premium contents for a fee without prejudice to the FTA service.

**Roadmap** – A management forecasting tool and is directed to the implementation of strategy and related to project planning. It matches the short-term and long-term goals and indicates the main activities needed to meet these goals.

**Digital Terrestrial Television Broadcasting (DTTB)** – Also pertains to Digital Terrestrial Television (DTT). An implementation of the digital technology in the television service intended to provide greater number of Standard Definition Television (SDTV) channels and/or better quality of picture (e.g. HDTV) and sound (e.g. AAC, EAC3, Dolby Digital) through conventional aerial antenna instead of satellite or cable connection.

**Integrated Services Digital Broadcast Terrestrial (ISDB-T)** – A flexible digital television (DTV) transmission system that is capable of providing three (3) levels of hierarchical modulation that can carry audio, video, and data services to fixed, mobile and handheld terminals using a single transmission facility with an integrated Emergency Warning Broadcast System (EWBS).

**Standard Definition TV (SDTV)** – A television broadcasting system that has a resolution of 480 lines per frame.

**High Definition TV (HDTV)** – A television broadcasting system with a resolution of 1080 lines per frame.

**Digital Terrestrial Television Broadcasting (DTTB) Service** – The service or set of services provided by a television broadcast service provider using digital technology, whether fixed or mobile which may include, but are not limited to, television broadcast services, audio broadcast services, data broadcast services and such other services as may become available in the future.

---

7 Paper on the Philippines' Migration to Digital Terrestrial Television Broadcasting (DTTB), National Economic and Development Authority (NEDA), 21 May 2012
**Single Frequency Network (SFN)** – A transmission scheme where several broadcast transmitters simultaneously send the same signal content/program over the same 6 MHz frequency channel over an approved service area.

**Emergency Warning Broadcast System (EWBS)** – A system in DTTB service that shall be activated to alert and guide the public of an impending or on-going emergency situation by delivering warning information through an audible sound the superimposition of data to various types of ISDB-T receivers that are automatically activated.

**Databcasting** – Also known as data broadcasting, a method of delivering Rich Text and graphics on the screen including the details and instructions from Emergency Warning Broadcast of an ISDB-T service; implemented using Broadcast Markup Language.

**Broadcast Markup Language (BML)** – A data-transmission markup language allowing text to be displayed on an ISDB-T enabled device; mandated as part of the minimum specifications of ISDB-T receivers.

**Middleware** – A software layer located between the classical operating system (software that provides access to resources and devices) and the applications; mandated to be BML.

**One-Seg (1seg)** – a mandated service in DTT for broadcasting to handheld and portable devices. Such service shall contain the free to air legacy program and the support display of EWBS information.

**Analog Switch off (ASO)** – The mandatory termination of all analog television services in a service area.

**Digital Switch On (DSO)** – The commencement of the Digital Terrestrial Television Broadcasting service.

**Migration** – The process of switching from analog broadcasting to digital broadcasting system.

**Migration Period** – The period beginning with DSO until ASO.

**Service Area** – The geographic area over which a Duly Authorized Analog TV operator is authorized to provide its broadcast services or the authorized service area approved for new DTTB station.

**Set Top Box (STB)** – An intermediary device that converts DTV signals to analog for viewing on conventional TV sets – may also be equipped with Conditional Access System.

**Simulcast/Transition** - This is the interim period in which broadcasting in analog and digital are done simultaneously.

**Free-to-Air (FTA)** – TV and radio broadcast services in clear and unencrypted form requiring no subscription, other on-going cost or reception fee.

**Cable TV (CATV)** – A system of delivering television programming to paying subscribers via radio frequency (RF) signals transmitted through coaxial cables or light pulses through fiber-optic cables.

**IDTV** – An integrated digital television is a TV set with a built in ISDB-T/digital tuner.

**Conditional Access System (CAS)** – A technology used in digital TV systems which involves satisfying qualified criteria prior to granting access to content.

---

**Figure 4. Comparison of Analog and Digital TV**

Analog | Digital
---|---
Conventional TV | Higher Quality
Status Quo | Lower Costs
Better Compression
1.3 The Importance of Digital TV Migration

The Digital technology is composed of different types of content (audio, video, data) to be multiplexed in the same channel/frequency and delivered to a variety of access technologies (televisions, mobile phones, computers). The convergence of multiple platforms of information delivery expected to produce a rich diversity of content, telecommunication carriers, content developers, and online service providers will find the DTTB Migration a competitive market.

As necessary result, the migration to digital broadcast is seen to be an enabler not only for consumers who will benefit from enhanced TV picture and sound quality, but also for broadcasters for a broader program environment and service offerings. The government strives to create an enabling atmosphere for greater investment in broadcast, as similarly implemented and practiced in other countries with localization that best fit the needs of the Philippines. With this, the Philippines will have the opportunity to use the spectrum to be vacated as the result of the said migration, for the enhancement of the delivery of public services – for rural internet connectivity, mobile broadband technologies, and public safety, among others.

A question might be asked, “How will the migration to digital benefit those households which are currently watching in an Analog TV setup?” First off, with Digital TV, viewers will able to watch TV programs in High Definition (HD) should the broadcasters offer such HD services. They too may be offered supplementary programming content, such as Electronic Program Guide (EPG), among others. Consumers will have a wider variety of sub-channel options to choose from as DTTB supports the simultaneous transmission of a significantly larger number of programs, and more channels could possibly fit into an allocated television spectrum, with the new program offerings.

This implies further that the amount of content available on such platforms would increase considerably. Users will also be able to access the content on mobile devices and receivers on the go, such in the case of mobile reception. This refers to the state of receiver being in transit and in these cases, ISDB-T devices are able to receive stable broadcasting streams while in motion due to the digital system’s high robustness and the optional use of diversity antenna systems.

Figure 5. Benefits of DTTB Migration to Stakeholders

- **For consumers**
  - Better Quality TV Experience
  - More Program Choices
  - Portability and Mobility

- **For broadcasters**
  - Global Competitiveness
  - Reduced Infrastructure cost
  - Opportunities for Growth

- **For the nation**
  - Digital Dividend for Basic Services
  - Stimulating Economic Growth
  - Job Creation and Employment
### Table 1. Why Migrate to Digital TV

| Interactivity / Enhanced TV Services | DTTB could offer interactive services as a complementary service to the existing or new business model competitive edge. For the initial deployment, it may be limited to passive services like the Electronic Program Guide. One can view metadata over the program’s topic, e.g. viewing the number of votes of each contestant while watching a reality show, or even join a voting session for a TV show. |
| Additional Pay TV Platform / Conditional Access System (CAS) and Billing Facilities | With conditional access and billing facilities, DTTB could provide service providers a platform to launch Pay-TV services, such as tiered television packages, pay-per-view offerings, and pre-paid facilities. Pay-TV services are often launched on the basis of a multi-channel offering and hence, this competitive edge comes very often in combination with an ‘additional services’ augment. |
| Addition Services / Multi-Channel Offering | Pause and play are now integrated due to time shifting, can take a break, skip boring advertisements, and play back when ready to watch again. The introduction of a multi-channel DTTB offering could be a key demand driver in areas where limited analog TV programs are offered. |
| Lower Costs (one-off and / or recurring) | Lower network costs and receiver costs-one-off costs could form a major barrier for consumers to adopt digital television. STBs with built-in Digital Video Recorder (DVR) can record shows from the preferred resolution up to full HD video recording. HDTV services-better reception and/or picture quality. Offers cinematic panoramic viewing and more vivid and clear pictures. Audio quality is integrated with digital surround sound 5.1 channel and stereophonic sound setups. |
| Better Picture and Reception Quality | |
| Usability / Portability | Services are wireless and can be received on very compact receivers – competitive advantage of portability, especially when the receiver comes with a small antenna or an integrated antenna. In line with mobility, public utility vehicles can offer clearer TV broadcast while running on roads. Even high definition TV broadcast can be received on mobile TVs. |

The migration will enable broadcast companies to comply with global standards as well as lead in the Asia Pacific market for innovations, being the sole adopter of ISDB-T in the region. The classified nationwide TV networks, upon authorization from NTC, may implement a Single-Frequency Network (SFN), having only one channel for that station to cover a defined service area, unlike in the past – wherein different channels/multiple frequencies are required for every service area of broadcast. This is consistent with the pursuit for spectrum efficiency. In addition, TV networks can now utilize their adjacent channel frequencies due to the high shoulder spectral roll-off that minimizes the chances of adjacent channel interference subject to the emission standards/limits defined in the ISDB-T standard and the Frequency and Channel Plan of the government.

At the onset of convergence, infrastructure sharing is a standing proposal to reduce cost of setting up new Digital TV stations. Thus, it is suggested that the concept of implementing a Multiplex Operator to carry broadcasters in a common facility may be considered by the government to accelerate the introduction of DTTB services, should the need be warranted. This can be through the government station or through an approved private entity, subject to applicable laws and compliance with existing regulations.
1.4 Situational Analysis

Based on 2015 Philippine Statistics Authority (PSA) data, the total population in the Philippines is 100,571,703. The average size of household in 17 regions is 4.4 persons while the total household is 22,984,971.

The Philippine television market is characterized by many national and commercial TV services and a variety of choices of TV platforms (analog and digital cable, satellite TV). The current TV set up in the households uses analog and favors FTA TV’s. Analog TV has been in operation ever since, and the Philippines is dominantly a FTA terrestrial TV market.

1.4.1 Brief History of Some Philippine Broadcasters in the Industry

Given the primary operations of the following broadcasters, the corresponding brief historical excerpts are for appreciation with the essence of leading analog TV development in the country, in light of the current migration to the digital broadcasting.

**ALTO BROADCASTING SYSTEM – CHRONICLE BROADCASTING NETWORK (ABS-CBN)**

Alto Broadcasting System – Chronicle Broadcasting Network, loved by many as ABS-CBN, is the largest multimedia network in the country. From its humble beginnings to its undeniable successes, the Company has over 60 years of stories to tell.

In the face of changing governments, despite natural disasters, and amidst rapidly evolving technologies, ABS-CBN remains steadfast in its commitment to serve the Filipino. The organization is continuously evolving to provide better service through radio, free TV, digital terrestrial TV, cable TV, film, movie, music, publishing, online, events, licensed products, cash remittance, and various advocacies.

**ASSOCIATED BROADCASTING CORPORATION (TV5)**

TV5 (formerly known as ABC 5) is a major Filipino commercial multi-channel and multi-platform network with offices in Taguig, Mandaluyong and Quezon City. It is owned and operated by the ABC Development Corporation, solely owned by MediaQuest Holdings, Inc., a subsidiary of the Philippine Long Distance Telephone Company headed by Manuel V. Pangilinan. TV5 is a transformative media services conglomerate that maximizes its assets for various communication products and efforts.

---

8 National Statistics Office, Republic of the Philippines
The country's government television network began operations on February 2, 1974 as Government Television (GTV-4) through the National Media Production Center. It was renamed Maharlika Broadcasting System in 1980. Following the People Power Revolution in 1986 it was, rebranded as People's Television (PTV) and On March 26, 1992, President Cory Aquino signed Republic Act 7306 turning PTV Network into a government corporation known formally as People's Television Network Inc. In June 1992, President Fidel V. Ramos signed Republic Act 7306 stipulating that the government shall not appropriate funds for the operations of the Network.

On July 16, 2001, under President Gloria Macapagal-Arroyo, adopted the name National Broadcasting Network (NBN) carrying a new slogan "One People. One Nation. One Vision."

In 2011, NBN continued to enhance its digital broadcasting capabilities with equipment donated from the Japanese government. This equipment will also allow NBN to begin broadcasting emergency alerts. On March 2013, President Benigno Aquino III signed Republic Act 10390, , reorganizing the management and the government’s infusion of P5 billion to revitalized the station and make it "digitally competitive" in spite of GMA Network's strong opposition.

The new PTV covered the biggest events in the country including the 2013 National and Local Elections, 2013 Central Visayas Earthquake, Typhoon Ketsana, the visits of US President Barack Obama and Pope Francis and the APEC Philippines 2015.

GMA Network was founded by Robert La Rue Stewart in 1950 as Republic Broadcasting System (RBS) with flagship AM radio station DZBB. RBS ventured into television in 1961 and began broadcasting on Channel 7 in the Greater Manila Area.

In 1974, the triumvirate of Felipe L. Gozon, Menardo R. Jimenez and Gilberto M. Duavit took over the management of RBS. In 1996, RBS was renamed GMA Network, Inc. Today, GMA Network, Inc. is the leading broadcasting company in the Philippines which produces the most innovative, most trusted, and top rating TV programs. It operates a network of 47 VHF and 41 UHF TV stations, as well as 24 radio stations throughout the country.

Apart from its television and radio businesses, GMA also owns a wide array of media-related entities engaged in program syndication, film production, music publishing and distribution, set design and implementation, audio-visual production, and new media. GMA Network, Inc. was officially listed in the Philippine Stock Exchange in 2007. GMA is set to launch its Digital TV Transmission (DTT) project in 2017.
Radio Philippines Network, Inc. is a Filipino-based media company co-owned by Government Communications Group under the Presidential Communications Office, Nine Media Corporation, Far East Managers and Investors Inc., and several private stockholders. The network's main offices and its studios are located at Broadcast City, Capitol Hills, Diliman, Quezon City while its transmitter are located at # 97 Panay Avenue, Brgy. South Triangle, Quezon City. Founded by Roberto Benedicto and prior to the privatization, it was the sister station of government owned and controlled Intercontinental Broadcasting Corporation. Currently, Radio Philippines Network is the broadcaster affiliated by CNN Philippines, the local franchise of CNN in the Asia-Pacific Region.  

ZOE BROADCASTING NETWORK, INC.

The frequency rights of Channel 11 under call letters DWXI-TV in Mega Manila was given to a joint venture of the influential religious groups El Shaddai headed by Mike Velarde and Jesus is Lord Church headed by Eddie Villanueva in mid 1990’s. Conflict of interest started the two groups to contest the full ownership of the company. The Philippine Congress, composed of the Senate and the House of Representatives intervened and awarded to Eddie Villanueva and Jesus is Lord Movement the right to acquire the frequency held by Channel 11. Villanueva paid Velarde for the stocks and assets held by Delta Broadcasting System (DBS). In April 19, 1998, Jesus is Lord Church launches ZOE TV with ZOE Broadcasting Network Inc. as the new corporate name.

In the first quarter of 2005, Citynet Television, a subsidiary of GMA Network Inc., and ZOE TV entered to an agreement for Citynet leasing the entire TV airtime block of the station in exchange for upgrading the facilities of ZOE TV and a ZOE TV program on GMA Network every Monday midnight after its Sunday primetime block. ZOE TV was re-launched on channel 33 through DZOZ-TV and on March 1, 2011, it was rebranded as Light TV33.

INTERCONTINENTAL BROADCASTING NETWORK, INC.

In the late 1959, a group of businessmen led by Dick Baldwin ventured into the then black and white world of Philippine television. They established Inter-Island Broadcasting Corporation (IBC) in October 1959, and put up its TV station, dZTV Channel 13 on March 1, 1960. By 1962, there were six TV channels in the country: 3, 5, 7, 9, 11, and 13. Andres Soriano. He bought IBC-13 that year from Baldwin and company. Soriano asked Henry Canoy, owner of Radio Mindanao Network to head his tri-media conglomerate’s broadcast empire together with the Philippine Herald. Canoy reconfigured IBC’s programming boasting sharp NEWS reporting, an all-night talk show, and an outside broadcast (OB) van.

On September 21, 1972, with President Ferdinand E. Marcos declaring martial law and with the issuance of Letter of Instruction No. 1, ordering all radio and TV networks closed. IBC-13, was eventually allowed to reopen. In 1973, most ABS-CBN programs aired on Channel 7 transferred to IBC-13. In 1975, the government enforced the constitutional requirement for media to be 100% Filipino-owned. The Soriano’s sold IBC to Roberto S. Benedicto. On 01 February 1975, Channel 13 Manila reopened as the Intercontinental Broadcasting Corporation (IBC).

---

In 1977, IBC moved to its present home in Broadcast City in Capitol Hills, Quezon City. On March 2, 1986, all stocks and assets of IBC were placed under the Presidential Commission on Good Government (PCGG). In 1992, IBC became a 100% government-owned-and-controlled asset.

Pursuant to MC 03-04-85, or the “Promulgation of technical and program standards in the operation of radio and TV Broadcast Station,” the NTC adopts and promulgates the KBP Radio and Television Broadcast Program Standards and Technical Standards as follows, with MC 04-06-2016, or “Re-allocation of the 470-512MHz band for Digital Terrestrial Television Broadcasting Service in the Philippines.”

Table 2. TV Channel Band

<table>
<thead>
<tr>
<th>Channel</th>
<th>Frequency Range (in MHz)</th>
<th>Channel</th>
<th>Frequency Range (in MHz)</th>
<th>Channel</th>
<th>Frequency Range (in MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
<td>To</td>
<td>From</td>
<td>To</td>
<td>From</td>
</tr>
<tr>
<td>14</td>
<td>470</td>
<td>476</td>
<td>27</td>
<td>548</td>
<td>554</td>
</tr>
<tr>
<td>15</td>
<td>476</td>
<td>482</td>
<td>28</td>
<td>554</td>
<td>560</td>
</tr>
<tr>
<td>16</td>
<td>482</td>
<td>488</td>
<td>29</td>
<td>560</td>
<td>566</td>
</tr>
<tr>
<td>17</td>
<td>488</td>
<td>494</td>
<td>30</td>
<td>566</td>
<td>572</td>
</tr>
<tr>
<td>18</td>
<td>494</td>
<td>500</td>
<td>31</td>
<td>572</td>
<td>578</td>
</tr>
<tr>
<td>19</td>
<td>500</td>
<td>506</td>
<td>32</td>
<td>578</td>
<td>584</td>
</tr>
<tr>
<td>20</td>
<td>506</td>
<td>512</td>
<td>33</td>
<td>584</td>
<td>590</td>
</tr>
<tr>
<td>21</td>
<td>512</td>
<td>518</td>
<td>34</td>
<td>590</td>
<td>596</td>
</tr>
<tr>
<td>22</td>
<td>518</td>
<td>524</td>
<td>35</td>
<td>596</td>
<td>602</td>
</tr>
<tr>
<td>23</td>
<td>524</td>
<td>530</td>
<td>36</td>
<td>602</td>
<td>608</td>
</tr>
<tr>
<td>24</td>
<td>530</td>
<td>536</td>
<td>37</td>
<td>608</td>
<td>614</td>
</tr>
<tr>
<td>25</td>
<td>536</td>
<td>542</td>
<td>38</td>
<td>614</td>
<td>620</td>
</tr>
<tr>
<td>26</td>
<td>542</td>
<td>548</td>
<td>39</td>
<td>620</td>
<td>626</td>
</tr>
</tbody>
</table>

Source: National Telecommunications Commission (NTC) - Broadcast Services Division

1.4.2 Current Broadcasting Market Structure and Statistics

While majority of the Filipino viewers (around 82%) watch TV through Free-to-Air (FTA) reception, the remaining percentage of the market is shared by Cable TV (CATV) and Direct To Home (DTH) Satellite Service – based on the Pay TV model where premium contents are introduced. Cable TV in the Philippines was introduced commercially in the 1960’s as a solution to replace antenna in order to receive programs without much interference as compared to those over the air that are subject to variation of signal strengths or interference. Cable TV operates on a subscription model, offering TV channels from and beyond our country’s borders subject to existing regulations and control.

Satellite TV, another medium for Pay TV, was the most recent addition to the service offerings. This would require a satellite dish that will receive microwave frequencies over-the-air. Such is connected into the TV sets via coaxial cable and decoded using an STB, dubbed as “wireless cable TV setup.”
While current developments in Information and Communications Technology (ICT) allow us to access audio and video content through streaming services aside from Terrestrial Broadcasting, CATV and DTH, it has yet to be established if such alternative delivery method actually competes or complements the conventional television service. This alternative access of broadcasting service through CATV, DTH and emerging technologies are subject for appropriate regulations to uphold public interest and enable innovation in the industry.

Table 3 shows the summary broadcast service distribution in the Philippines as of 31 December 2014. There a total of 95 broadcasters providing FTA TV services in Philippine TV market. In Mega Manila, where TV viewers are concentrated, there are 13 commercial FTA TV stations.

Co-location practices and the sharing of site infrastructure are not common in the Philippines, with broadcasters using separate transmission sites, exclusive Studio to Transmitter Links (STLs) to cover a similar geographical area. Relying on off-air linking to distribute their service to other transmitters and when the geography limits terrestrial links, the option to use a satellite uplink/downlink system is employed. Transmitters and antenna systems are all owned by the broadcasters themselves. Establishing a common transmitting site is recommended in order to ensure better reception condition and uniformity of Radio Frequency (RF) coverage for DTTB which is subject to agreements among broadcasters unless otherwise mandated by the government.

In accordance with ITU Guidelines, the value chain for DTTB services comprises six basic functions which are the responsibility of associated “players” as depicted in the figure below. Compared to an analog television service the digital value chain has an extra function/player: the multiplex operator. By nature of the digital broadcast technology, where multiple programs or services can be carried on one frequency (i.e. multiplex), assigning the multiplex capacity to the numerous services is an extra function compared to the analogue broadcast value chain. This extra function is also referred to as managing the functional bandwidth of the multiplex, i.e. assigning access and available capacity to each service. The technical operation of the multiplex can be outsourced to a content distributor (i.e. the broadcast network operator).

<table>
<thead>
<tr>
<th>REGION</th>
<th>TV</th>
<th>CATV</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCR</td>
<td>23</td>
<td>62</td>
</tr>
<tr>
<td>CAR</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>I</td>
<td>24</td>
<td>132</td>
</tr>
<tr>
<td>II</td>
<td>29</td>
<td>73</td>
</tr>
<tr>
<td>III</td>
<td>23</td>
<td>211</td>
</tr>
<tr>
<td>IV</td>
<td>47</td>
<td>314</td>
</tr>
<tr>
<td>V</td>
<td>48</td>
<td>153</td>
</tr>
<tr>
<td>VI</td>
<td>38</td>
<td>107</td>
</tr>
<tr>
<td>VII</td>
<td>26</td>
<td>124</td>
</tr>
<tr>
<td>VIII</td>
<td>19</td>
<td>109</td>
</tr>
<tr>
<td>IX</td>
<td>29</td>
<td>48</td>
</tr>
<tr>
<td>X</td>
<td>35</td>
<td>48</td>
</tr>
<tr>
<td>XI</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>XII</td>
<td>33</td>
<td>50</td>
</tr>
<tr>
<td>ARMM</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>CARAGA</td>
<td>26</td>
<td>62</td>
</tr>
<tr>
<td>Total</td>
<td>438</td>
<td>1551</td>
</tr>
</tbody>
</table>

Source: National Telecommunications Commission (NTC) - Broadcast Services Division

![Figure 7. Benefits of DTTB Migration to Stakeholders](#)
1.4.3 Policy and Regulatory Environment on TV Broadcasting

The level of government intervention is a non-quantifiable cost of migration and has different impacts on the market, as there are different levels of intervention that the government might implement.

Broadcast media are subject to sovereign restrictions and are wholly reserved to Philippine nationals. These are limitations mandated by the Philippine Constitution. This is a significant consideration for regulators as they ponder the blurring lines of telecommunications and broadcasting, and the globalization of entertainment and media content especially on the onset of Digital TV broadcasting.

1.4.3.1 National Issuances

While the Philippines does not have a single comprehensive anti-trust law, the country has several different laws and statutes that, in whole or in part, deal with matters involving competition across varying industries and sectors. Nonetheless, here are some of the laws that cover the broadcasting industry:

<table>
<thead>
<tr>
<th>National Issuances</th>
<th>Arrange/Covers</th>
<th>Regulatory Body</th>
<th>Assigned Rights</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Philippine Constitution</td>
<td>The ownership and management of mass media shall be limited to citizens of the Philippines, or to corporation, cooperatives or associations, wholly owned and managed by such citizens.</td>
<td>Congress of the Philippines; NTC</td>
<td>Ownership and management of mass media</td>
</tr>
<tr>
<td>Republic Act 3846 (as amended)</td>
<td>An act provides for the Regulations of Public and Radio Communications in the Philippines.</td>
<td>NTC</td>
<td>No person, firm, company, association, or corporation shall construct, install, establish, or operate a radio transmitting station, or a radio receiving station used for commercial purpose, or a radio broadcasting station, without having first obtained a franchise therefore from the Congress of the Philippines.</td>
</tr>
<tr>
<td>Presidential Decree 576-A (1931)</td>
<td>Limits the ownership of radio and television. It is the 1-1-1 policy wherein an entity shall not allow operating more than one AM, FM, VHF-TV, UHF-TV in the same service area.</td>
<td>NTC</td>
<td>Under the same PD, the service rates of Broadcasting Stations are deregulated.</td>
</tr>
<tr>
<td>Presidential Decree 1986</td>
<td>Creating the Movie and Television Review and Classification Board</td>
<td>MTRCB</td>
<td>e.g. Media, Content, Broadcast right</td>
</tr>
<tr>
<td>R.A. 7925</td>
<td>An act to promote and govern development of Telecommunication and the delivery of public Telecommunication services.</td>
<td>NTC</td>
<td>No single franchise shall authorize any entity to engage in both Telecommunication and broadcasting.</td>
</tr>
</tbody>
</table>
1.4.3.2 Memorandum Circulars

<table>
<thead>
<tr>
<th>Memorandum Circulars</th>
<th>Arrange/Covers</th>
<th>Regulatory Body</th>
<th>Assigned Rights</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC 03-04-85</td>
<td>Promulgation of technical and program standards in the operation of radio and TV Broadcast Station.</td>
<td>NTC</td>
<td>Radio and Television Technical standards</td>
</tr>
<tr>
<td>MC 10-8-91</td>
<td>Promulgation of technical and program standards in the operation of radio and TV Broadcast Station.</td>
<td>NTC</td>
<td>Radio and Television Technical standards</td>
</tr>
<tr>
<td>MC 02-01-93</td>
<td>Rules and Regulations Governing the Registration and Licensing of Satellite Television Receive Only (TVRO) Stations in the Philippines</td>
<td>NTC</td>
<td>Operation of a Commercial and Non-Commercial TVRO station requirements.</td>
</tr>
<tr>
<td>MC 05-02-94</td>
<td>Registration and licensing of all Television Receive Only (TVRO) station</td>
<td>NTC</td>
<td>Register and license any TVRO station</td>
</tr>
<tr>
<td>MC 6-6-96</td>
<td>Procedure to follow in processing Motions / Applications for increase of Power and a change of Location of Radio / TV stations.</td>
<td>NTC</td>
<td>Procedure for increase of power and change location of Radio / TV stations</td>
</tr>
<tr>
<td>MC 10-10-2003</td>
<td>IRR Governing Community Antenna/Cable Television (CATV) and Direct Broadcast Satellite (DBS) Services to Promote Competition in the Sector</td>
<td>NTC</td>
<td>Promote fair and healthy competition in the industry</td>
</tr>
<tr>
<td>MC 03-03-2005a</td>
<td>Amendment to the Rules &amp; Regulations on Broadcast Messaging Service Dated March 15, 2005.</td>
<td>NTC</td>
<td>General measures and guidelines on push messaging as well as handling of spam related complaints</td>
</tr>
<tr>
<td>MC 1-3-2006</td>
<td>Program Standards for Radio &amp; TV Broadcast &amp; Cable TV Stations</td>
<td>KBP</td>
<td>Adopting the existing program standards of KBP as set forth in the KBP Radio and Television Codes and in other relevant KBP circulars</td>
</tr>
<tr>
<td>MC 05-06-2008</td>
<td>Mandatory Taping of Radio and Television Programs</td>
<td>NTC</td>
<td>Preserve the tape/recording of a Radio/TV/CATV program for 30 days or more</td>
</tr>
<tr>
<td>MC 04-06-2008</td>
<td>Enjoining radio and TV stations and CATV facilities Compliance with Department Order No. 5 series of 1948 and Department Order No. 88 series of 1973.</td>
<td>NTC</td>
<td>The requirement of employment a licensed radio operator/technician on an eight hours shifting mode and must be under the supervision of registered Electronics and Communication Engineer (ECE)</td>
</tr>
<tr>
<td>MC 07-11-2008</td>
<td>Amending and/or modifying MC 04-06-2008</td>
<td>NTC</td>
<td>By employing a license radio operator/technician at all time during and while in operation and must be under the supervision of a Professional ECE or a registered ECE</td>
</tr>
<tr>
<td>MC 02-06-2010</td>
<td>Standard for Digital Terrestrial Television (DTT) Broadcast Service</td>
<td>NTC</td>
<td>Selection of the most appropriate and suitable DTT standard</td>
</tr>
<tr>
<td>MC 05-11-2013</td>
<td>Standard for Digital Terrestrial Television (DTT) Broadcast Service</td>
<td>NTC</td>
<td>Formal adoption of ISDB-T as the Philippines' DTT standard</td>
</tr>
<tr>
<td>MC 07-12-2014</td>
<td>Rules and Regulations for Digital Terrestrial Television (DTT) Broadcast Service</td>
<td>NTC</td>
<td>Introduction of the digital technology in the broadcasting service</td>
</tr>
<tr>
<td>MC 02-03-2016</td>
<td>Sale and Labelling of ISDB-T Receivers</td>
<td>NTC</td>
<td>Formulating rules and regulations in the sale and labelling of ISDB-T receivers in the country</td>
</tr>
</tbody>
</table>

1.5 The Broadcasting Transmission Standard

Digital Terrestrial Television Broadcasting (DTT-B) is an improvement of the standard analog television. It provides clear reception and has the capability to expand the nature of the TV service with data and alerts in both visual and aural.

The Philippines with issuance of NTC memorandum Circular No. 05-11-2013 officially adopted Japan's Integrated Services Digital Broadcast-Terrestrial (ISDB-T) as the sole standard in the delivery of DTT services in the country. The corresponding Implementing Rules and Regulations (IRR) for the DTT standards (broadcaster side) and the Sale and Labelling of ISDB-T Receivers were through NTC MC No. 07-12-2014 and NTC MC No. 02-03-2016, respectively. Most of the major broadcasters particularly those broadcasting under VHF are now conducting DTT test broadcast in selected service areas.
1.5.1 Technical Considerations

Specific technical details for terrestrial transmission include the transmission power of the station, antenna coverage patterns, location of transmitters, among others, which have a determining effect on reception coverage on the capability for indoor reception and interference with other users of the radio spectrum. To this effect, technical evaluation shall be within the boundaries of approved authorizations, laws, and existing promulgations on the extent of coverage that shall be supported by technical feasibility studies subject to the scrutiny of applicable governmental agencies in the possession of reference documents/standards stating the emission limits compliant with the prepared Frequency and Channel Plan of the National Telecommunications Commission for the country.

Non-compliance or violations shall be dealt with within the realms of applicable laws and regulations. The government reserves the right to apply/modify the penalties at any given time subject to the applicability, severity, and demand.

Such intent to implement DTTB must pass technical scrutiny and compliance to the Channel Plan supported by Feasibility Studies provided by the applicant, such that the theoretical technical study should it be approved shall still be subject to a real-world verification and documentation by both the applicant and the regulator, and any deviation from the desired emission limits shall be adjusted for conformance subject to existing and would be promulgated regulations whenever the need arises.

Technical implementations to enhance the efficiency of DTTB coverage within the approved service area such as SFN utilizing gap fillers or Broadcast Wave Relays (BWR) shall consists of a detailed technical study subject to scrutiny and verification on the compliance to the interference study and emission limits as defined in the Channel Plan.

Migrating into Digital TV should continue to provide fast, reliable and free information to the public at large as it has been in analog TV broadcast. ISDB-T adopts unique and high-performance transmission technology, termed Band Segmented Transmission - Orthogonal Frequency Division Multiplexing (BST-OFDM) with Frequency and Time Interleaving. Time interleaving scheme is a key technology for mobile reception and is effective to cope with impulse noise degradation. This transmission technology enables many advantages OFDM modulation scheme is suitable for DTTB in real broadcast circumstances.

Due to the time-interleaving function of ISDB-T and diversity reception technology, even though far from transmitter station, very stable pictures can be enjoyed due to the added impulse noise immunity. The same HDTV broadcast for fixed receiver can be viewed in motor vehicle, and no more than a single channel or a single transmission equipment is required, therefore becoming a cost-effective system.

The One-Seg service for handheld receivers makes use of robust modulation and coding over interferences to provide HDTV and mobile service which can be, as said, transmitted simultaneously using a single transmitter. There is no need to have overlapping investment in transmission facility for fixed, mobile, and handheld TV services.
Annexed to the issued series of Memorandum Circulars on DTTB adoption are the corresponding technical specifications for both for ISDB-T transmitters and receivers, which the broadcasters, receiver manufacturers/suppliers and other related industry stakeholders shall comply with.

1.5.2 Choosing ISDB-T

The NTC has issued Rules and Regulations for Digital Terrestrial Television (DTT) Broadcast Service\(^\text{12}\) to lay the groundwork for the Philippines’ shift from analog to Digital TV using the Japanese standard, ISDB-T. This was prompted by the goal to help the country prepare for calamities and mitigate disaster situations, the ISDB-T’s proven capability of Early Warning Broadcast System (EWBS). Also, as a result of critical technical considerations, as well as localization of technology, the ISDB-T standard was chosen because of its capability to provide three (3) levels of hierarchical modulation of audio, video and data services for use with fixed, portable and mobile devices, without the necessity of installing any further supplementary transmission facility. ISDB-T also provides datacasting services (weather, traffic, sports), interactivity, and especially Emergency Warning Broadcast System, which were previously not available through analog TV broadcast, and are unrivalled by any other Digital TV standard.

The figure above is a possible matrix of the different service configurations a broadcaster may be able to offer in terms of terrestrial broadcast, data broadcast, mobile broadcast as well as other ways of contents distribution streamlined over business considerations, the industry competency and revenue streams.

Moreover, ISDB-T is more economical since broadcasters only need a single infrastructure to broadcast to Fixed, Mobile and Handheld receivers while other DTV standards need separate transmission facility to broadcast to Mobile and Handheld receivers. It carries both fixed and mobile reception in one transmission. ISDB-T is very robust when it comes to multipath interference and error correction, employing BST-OFDM, time-interleaving, etc. ISDB –T allows HDTV (high quality image and sound service), multi-SDTV, EPG, Datacasting (simple retrieval of program and information at any time), internet access (communications services), mobile reception, ISDB-T enabled cell phone TV, among others.

\(^{12}\) Memorandum Circular 07-12-2014, National Telecommunications Commission, Republic of the Philippines
Rationale for Digital TV Migration
2.0 Rationale for Digital TV Migration

The superior technical and economical features of ISDB-T not only pave the way for the Filipino to fully enjoy the benefits of advanced broadcasting technologies such as HDTV services, but also empowers citizens with information through a built-in and proven Emergency Warning Broadcasting System (EWBS) to help save lives and reduce damage to properties by providing timely alerts through Datacasting, and such cannot be replicated as seamlessly by other Digital TV standards.

EWBS promptly transmits disaster information over a wide area. The premise of Digital TV broadcasting being able to send clear images even in remote places so that Filipinos can be better equipped with the information on calamities such as typhoons, earthquakes, among others, which is beneficial for disaster risk, reduction and management. The influx of mobile devices capable of receiving DTV broadcast also makes possible information dissemination even when there is a power outage.

In order to achieve this, handheld/portable receivers must be compliant to ensure smooth reception of EWBS in times of emergency. This further aligns with the Philippine government’s objective of setting up a robust disaster communication network so as to realize zero-casualty in times of calamities.

The protocols among various governmental agencies on the proper and efficient utilization of the EWBS service shall be issued in order to allow smooth introduction and use of such service for the specific benefit of the Filipino people. Such protocols and manner of delivery shall be mandatory to all broadcasters in compliance to their franchises of delivering public service to the people above all other.

2.1 Alignment to the National Development Agenda

The Philippine Digital Strategy 2011-2016 highlights Digital TV Migration as a priority as it will potentially free up used spectrum and reallocate such digital dividend, for mobile broadcasting and/or broadband. This sizeable amount of frequency spectrum is sufficient to allow broadcasters to better their services in terrestrial delivery, while at the same time expanding access to broadband applications.

The Memorandum Circular No. 07-12-2014 released by the National Telecommunication Commission (NTC), otherwise known as the rules and regulations for DTT Broadcast Services, has been set as guidance in the country’s migration from analog television to Digital Terrestrial Television (DTT). This highlights that Digital TV is aligned to the government’s overall digital economy objectives.

While most countries have defined a specific Analog Switch off (ASO) date as a way of driving digital broadcaster roll-out and receiver uptake, the Philippines regards public service and thus it will not be possible to switch off TV services unless a critical mass percentage of DTV uptake has been achieved, subject to annual review/assessment of digital broadcast services and receiver deployment. Initially set on 31 December 2023, ASO assessment shall be conducted to facilitate TV viewers to embrace Digital TV.
2.2 Bridging the Digital Divide

Careful consideration must be given to ensure that continued delivery of television as public service and as such, shall remain free and accessible to households and individuals whose main information source is TV.

From the figure on the right, fully ready TV HHs have their own integrated Digital TV or have procured STBs. The first column also included those who have Pay TV subscription, as they may be ready for the Digital TV migration. TV HHs (middle column) with devices not capable of receiving DTV signals include those who are partially ready to embrace migration upon procurement of digital receivers. Lastly, TV HHs which are not ready will be considered an urgent priority; as social inclusion is key to a successful DTTTB implementation.

In an effort to speed up the adoption of Digital TV receivers, the government may provide subsidies for the provisioning of set-up-boxes (STBs) for the vulnerable sectors of society through existing and would be introduced governmental interventions typified in major undertakings such as the Conditional Cash Transfer (CCT) program of the DSWD, in coordination with other concerned National Government Agencies (NGAs) and other entities such as Non-Government Organizations (NGOs), subject to inter-departmental cooperation based on defined and approved budget appropriations.

From a technical standpoint, the frequency band can be used for the existing radio and television services as well as the high definition television services. The National Telecommunications Commission (NTC) as regulator may correspondingly release a definitive roadmap as to how the freed-up spectrum arising from the DTTB migration will be utilized, subject to corresponding public hearing and stakeholders’ consolations.

Additionally, the freed-up spectrum, as said, may be re-purposed for the bidirectional medium to low power networks, such as wireless broadband access and high speed mobile data access depending on the country’s existing regulations and commitment to international standards. As digital divide does not only tackle access technologies, every stakeholder should also be provided with the necessary skills and knowledge to benefit fully from the migration to Digital TV broadcasting.
Digital TV allows broadcasters to deliver superior audio and video quality to viewers, enhancing their experience whether watching at home, in a vehicle or on their mobile devices. Because of ISDB-T’s superiority in providing Fixed and Mobile TV broadcast services, it empowers citizens to have access to FTA TV media and other information whenever necessary.

Digital TV is poised to increase access to information and services for viewers especially noting that data broadcast makes available supplementary programming information. These may be contents linked to the program accessible while the show is on air or stand-alone information services not linked to any programs and accessible anytime. It may also include transmitting weather forecast diagrams and various alarms utilizing Datacasting mechanism by which it is possible to send characters and illustrations to TV receivers using Broadcast Markup Language (BML). Currently the description language is in BML format, which was mandated as per MC 07-12-2014 due mainly to easy creation of contents, as well as facilitating convergence via the internet. Datacasting opens up new modes of service delivery and revenue bearing schemes can be explored to provide more business opportunities for broadcasters.

Subject to stakeholders’ consultation and issuance of the corresponding rules and regulations, the government may allow operation of Conditional Access System (CAS) for DTTB. The NTC is in the process of consultation with the stakeholders. This supplementary service may be permissible subject to prevailing decrees, acts and laws, as well as rules and regulations set and promulgated by the NTC.

As Pay TV will be a valuable resource stream for broadcasters and a mechanism to provide premium content to consumers, the stand of the government is to make more available free broadcast content to the people. However, the policy and rules and regulations for the introduction of Pay TV services for DTTB has yet to be formulated, developed and issued should the regulator allow such operation. If implemented, it is ideal to have a common CAS by all broadcasters so that a single STB may be able to access premium contents from all broadcasters assuming a common ground can be struck among stakeholders.
2.4 Reinforcing National Identity of Disaster Resilience

DTTB coverage reinforcement through SFN is recommended to ensure universal access for any people in the nation, which contributes to emergency mitigation. Providing the Datacasting and EWBS capability on mobile, portable/handheld reception even at remote areas to deliver government advisories is an advantage.

Different DTTB systems have been implemented in other countries for a number of different reasons ranging from country-specific considerations, technical specifications, or service needs. For ISDB-T, it evolved from a particular set of objectives responding to the relative occurrence of disasters and provision of emergency information. By adopting this standard, the Philippines adhere to harmonize its DTTB implementation with encoding and decoding, transmission and reception, channel assignment and service information, among others.

With ISDB-T, the Emergency Warning Broadcasting System (EWBS) is a mandatory feature in the Philippines in pursuance to Memorandum Circular 07-12-2014 and thus, upon completion of the announcement protocol, EWBS is expected to alert the public via visual cues and audible tones, and in some instances, automatic turn on of DTTB receivers.

The figure above highlights the importance of terrestrial TV broadcast in times of disaster. Such service can deliver reliable information over a non-congested communication media.

Additionally, EWBS will automatically activate receivers when a disaster occurs, while at the same note deliver warning information instantly to everyone in the receiver reach, thereby able to provide emergency information to many people. There are also prototype modules being developed so that One-Seg receivers can receive EWBS distress signals. In such cases, when the telecommunication infrastructure is down, viewers are still able to receive DTV on One-Seg devices for users to get information about evacuation routes, among other information. This makes mobile devices important terminals which could save lives and properties.

To reiterate, ISDB-T paves the way for the expeditious delivery of warning advisories from various government agencies directly to the people. This feature is in actual operation and proven only on ISDB-T standard. As a precedent to ensure global competitiveness, DTTB migration and EWBS implementation are powerful statements that the Philippines as a nation keeps up to the demands of time as well as positions itself in the forefront of recent technology and utilizing such for the benefit of the Filipino citizens.
With the support from the broadcasters, inter-agency coordination and collaboration will be done for the formulation and issuance of protocol on the detection and delivery of the relevant warning signals through EWBS. Broadcasters have the inherent responsibility to deliver such warnings to the people after being triggered by the duly authorized issuing governmental agency.

Through the leadership of the Presidential Communications Operations Office (PCOO), the People’s Television Network Inc. (PTV), being the government TV network shall pilot the implementation of the EWBS issuance protocol and mechanisms of issuance to ensure the smooth and efficient utilization of this technological feature.

2.5 Development of the Local Content Industries

Aside from developing the platform, the challenge now is slowly shifting to providing the best content across all media platforms. DTTB allows for flexible broadcasting services through hierarchical transmission, premised on more efficient use of the frequency since the spectrum used for a single analog SDTV channel can now accommodate multiple digital SDTV channels, and a combination of services for several types of reception in one frequency channel.

The broadcast networks have moved to digital, and content is a key component for general uptake as more programs are being provisioned by broadcasters to enhance the TV service, and generate new revenue streams. Also, with new programming in-line, the content industry is expected to flourish in the next years. For broadcasters, the multi-program feature enables updated content to proliferate, and paves the way to introduce a new business model subject to regulations.

While the technology in production and transmission as well as access to content evolves, competition is increased in acquiring foreign-produced programming and films, along with broadcasting rights to popular foreign TV shows and films. However, with the rise of recent technologies, more premium on the quality of locally produced content is expected. The challenge for the broadcast industry is to come up with new ways of engaging the audience and to keep up with the viewers’ need to access to programs and services.

2.6 Managing the Radio Frequency Spectrum

As spectrum is a scarce natural resource, there are advantages in encouraging a fast and smooth migration and targeting an early ASO, which necessitates a balance between network roll-out speed, costs, and quality (expressed in coverage probability, signal availability and number of multiplexes).

The re-allocation of the band 470 MHz – 512 MHz will allow spectrum to be utilized for the DTTB Migration of duly authorized Analog VHF TV Networks without the risk of interference from any existing broadcaster.
The Public Telecommunications Act and NTC rules and regulations require the periodic review of the radio frequency spectrum allocation and assignment to attain an equitable share of telecommunications and broadcast services. Thus, an optimal balance must be ensured in the use of the spectrum, which should be managed and regulated to attain efficient utilization of available bands granted to the industry under certain conditions and technical constraints. Said condition requires such frequencies to be assigned to those institutions which will use it efficiently and effectively to meet public demand for telecommunications and broadcast services.

Foremost in implementation of the Framework of the DTTB Migration Plan, the DICT shall lead the consultative development of a Spectrum Roadmap for the country which will provide overall governance for frequency management based on international policy and harmonized regulations on a regional approach to effectively maximize the use of spectrum for public access, industry standardization, and disaster communications, among several others.

Further, the Framework of the DTTB Migration Plan with the NTC's Frequency Plan is to become the broadcast industry's guidance for the smooth implementation of digital TV broadcasting in the Philippines, the periodic updating of the National Radio Frequency Allocation Table (NRFAT) by the National Telecommunications Commission shall be in consonance with the Spectrum Roadmap to be crafted by the DICT in a consultative process with key stakeholders not only from broadcast networks but also with from telecommunications industry, equipment manufacturers and other spectrum users.

### 2.7 Realization of New Services

The Philippines will benefit in the migration process as the nation will be able to utilize the spectrum more efficiently, which shall pave the way for the introduction and realization of new services. The country will take advantage of the freed-up spectrum for broadband connectivity to span vast distances and cover large areas more efficiently, subject to corresponding government policies, rules, and regulations. DTTB will eventually be a platform in delivering basic content services.

Realization of safer road traffic is also possible through Intelligent Transportation System and Road Traffic Information Systems over ISDB-T. Subject to issuance of corresponding rules and regulations, this is done by securing the radio waves for accident prevention systems, which can be utilized to avoid collision accidents, vehicle-to-vehicle communication, and roadside communication devices, among others. Technology promises faster, safer, and smarter travels in the future, with its main tenet of information being available for commuters to decide. Advanced technologies serving as decision support platforms are gaining traction in many fields, such as integration with broadcast systems.

Along with these services, DTTB migration also allows for the realization of enhanced mobile phone service, advanced functions, and large data transmission, among others. Expansion of new multimedia services is also possible in which it provides various kinds of information to mobile terminals. It will become possible to receive disaster information with detailed localized information.
The Philippine Transition from Analog to Digital Television
3.0 The Philippine Transition from Analog to Digital Television

3.1. Consideration for Different Switch Off Approaches

Analog Switch off (ASO) is the process of shutting down analog terrestrial TV transmission and switching over to Digital TV signal. ASO requires the upgrade of existing TV broadcast network infrastructures as well as changing or augmenting the TV receiver equipment – done either by connecting a digital converter or Set Top Boxes, or replacing altogether the TV set into an integrated Digital TV receiver. While the determination of ASO requires a complex balance between the maturity of the market and the availability of digital receivers that will be discussed later, ASO remains to be a government initiated policy, which ultimately aims to achieve spectrum efficiency – bringing in consumer and industry benefits, and at the same time, reducing the risk of disenfranchising existing analog TV viewers.

3.1.1 ASO Factors

There is currently no universal approach to ASO as each country may be following its own switch off path, carried out depending on the local situation, international obligations and the government’s policies and objectives. The ITU has identified a set of key independent factors that will determine the approach for choosing the appropriate ASO process for a country. These factors include:

<table>
<thead>
<tr>
<th>Factors</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of analog terrestrial television viewers</strong></td>
<td>Determine the potential number of affected viewers, particularly those relying on FTA television to reduce the risk of disenfranchising viewers. The Philippines has 16.392 million TV households/families (76.5% of total households/families) from which 87.5% are terrestrial TV viewers.¹³</td>
</tr>
<tr>
<td><strong>Availability of spectrum</strong></td>
<td>There is still a need to assess the available spectrum to determine the capacity to conduct simulcasting and the length of the ASO process. This aspect has been covered extensively by the study done by the NTC along with the industry stakeholders and experts from Japan, this study is called the Channel Plan which identifies the available spectrum and the emission limits that needs to be complied with by the broadcasters to prevent interfering existing analog operations while undergoing DTTB migration.</td>
</tr>
<tr>
<td><strong>DTTB service uptake</strong></td>
<td>As consumers are one of the major stakeholders in the DTTB migration, it is usually the speed of uptake that will determine the length of the ASO process. Note that the service uptake is a function of the cost of the technology, the available new content that will act as an incentive to consumers and availability of the technology (STBs). Education and promotion shall be an essential activity of the DICT to disseminate the DTTB information to the people for them to establish appreciation on the need to switch to Digital TV and the benefits it will bring them.</td>
</tr>
</tbody>
</table>

3.1.2 Analog Switch off Models

Analog Switch Off (Off) varies from country to country, therefore, the ITU has recognized three ways in which it may be accomplished as follows:

Table 5. ITU Analog Switch-Off Models

<table>
<thead>
<tr>
<th>Phased switch off of analog services</th>
<th>Nationwide switch off of analog services</th>
<th>Partial switch off of analog services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog switch off takes place by region</td>
<td>All analog terrestrial television services are shut off at the same time</td>
<td>Some analog terrestrial television services are shut off</td>
</tr>
<tr>
<td>Recommended when the cost of operation of ASO is large and spectrum is limited</td>
<td>There might be difficulty in coordination and management given the country’s geography</td>
<td>This approach removes the need for the longer simulcasting</td>
</tr>
</tbody>
</table>

In the implementation of a Migration Plan, a thorough determination of the available spectrum and interference study needs to be established that will form as a backbone for the various modes of Analog Switch off (ASO) approaches. The general concept in the introduction of new DTTB services is that existing analog services shall be protected from any interference that may be introduced. DTTB services will have to co-exist with the legacy services until ASO before new channels are to be allocated to new applicants desiring to introduce DTTB services on the freed-up spectrum.

1. **Phased switch off of analog services** - It can be the case that DTT broadcast is also rolled-out by phased approach or DTT is already broadcasted at a national coverage before the first switch off. The benefits of this approach are that lessons learned in one region can be applied to improve the migration in another region, the released frequencies can be re-used in neighboring region, and planners are able to manage the cost and effort of migration.

2. **Nationwide switch off of analog services** – This approach allows all viewers to simultaneously benefit from the advantages of digital switch off. With this approach, government can avoid viewer’s confusion on different switch off dates, all viewers are treated equally and the spectrum is freed up faster.

3. **Partial switch off analog services** – In order to make frequencies available for digital broadcasting, viewers will temporarily lose access to some service until they are restored on the digital platform. This approach is the least preferred since a disservice will be incurred to the viewers and if such decision is to be made by the broadcaster, due notice of at least one (1) month with daily announcements to the public shall be made to prepare the viewers for the appropriate action.

Considering the relatively huge number of analog terrestrial TV viewers, the migration process will be undertaken through a phased analog switch off approach. As for the aspect of ensuring that broadcasters compliance to meet the planned ASO on 31 December 2023, the government shall provide mechanisms for financial support through loan facilities for commercial broadcasters and the facilitation of Official Development Assistance (ODA) for the government TV network.
3.2 Geographic Aspects of Switch Off

Based on the data of the large population to be affected by the migration and disparity in the level of preparedness of different regions, it is recommended that the Philippines take the phased analog switch off approach to migration. The Philippines is more likely to take the scenario of an ASO with simulcast period, phased approach to ASO and phased DTTB rollout.

Driven by the market and to be decided by the DTTB Migration Committee in coordination with broadcasters, initially possible three (3) pilot areas for early ASO are to be identified. However, the broadcasters are not limited to introducing DTTB services on the above mentioned pilot sites, in fact, broadcasters are encouraged to implement in various Regions/Cities in addition to the pilot areas.

3.3 Setting the ASO Deadline

Based on global studies and experience, the ITU has determined two major determinants and precondition for migration and consequently for setting the deadline for ASO, such that in the initial phase, the existence of the transmission service predicates the existence of the receivers to which one becomes a pre-requisite of the other. Once this stage has been surpassed, the cycle of the introduced DTTB service coupled with the take-up of the receivers will be subject for monitoring and routine evaluation from the regulator and the stakeholders:

1. There should be sufficient service coverage of DTTB among households (whether majority of households have access to DTTB services); and
2. There should be a mass uptake of digital receivers (sufficient number of households have already adopted the DTTB)

Therefore, the government should undertake the primary task of monitoring DTTB service uptake and address issues encountered to speed up migration. In addition, there should be close coordination with all the stakeholders such as the broadcast and manufacturing industry as well as non-governmental organizations that will continuously create awareness and consumer education.
### 3.3.1 Pilot Test Locations

Choosing areas with high population densities, such as Mega Manila (which includes Metro Manila and parts of the nearby provinces of Rizal, Laguna, Cavite and Bulacan) provides for the higher probability of penetration and acceptance among the TV HHs resulting in an invigorated migration exercise that can easily be replicated in various regions. The frequency and channel plan will be the reference for the broadcasters implementing DTTB as a solid foundation for technical guidance. A successful implementation in key areas can accelerate the adoption of the DTTB services elsewhere in the country.

On the other hand, choosing locations with low population densities lowers the impact of migration and localizes problems and experience, dealing with them through a multitude of tests before scaling up and expanding to large population centers.

Another option is to target pilot test locations, which can either be one of the above said characteristics. The thorough evaluation of such pilot tests will ultimately guide and extend to the actual ASO realization for the country. Determination of pilot test locations limits the risk of DTTB migration failure. However, it might lengthen the ASO process thereby resulting to higher operational cost implications for broadcasters, but will also demand for an intensive communication plan to be executed by the DICT to properly convey to TV viewers the correct information to minimize, if not to avoid consumer confusion regarding the ASO process. Note that a higher operational and maintenance cost will be incurred if broadcasters are already in simulcast mode which will warrant a faster ASO.

### 3.3.2 Analog Switch off Date

Setting a firm switch off date, in the Philippines being 31 December 2023, is a key element in the ASO process and is necessary because viewers tend to purchase STB just weeks prior to the deadline. The identified period of the migration and eventual ASO is to happen within four (4) to six (6) starting from the Ceremonial DSO held at the Digital TV Summit on 14 February 2017. Generally, there are two policy options for the ASO, which the government can choose from:

1. **Conditional** – ASO will occur when a certain percentage of the population has already migrated, the proposed percentage of DTTB penetration is 95% per service area. If the percentage of penetration has been achieved earlier than the scheduled ASO date, a certain amount of time shall be scheduled to inform the people that the analog service shall be terminated.

2. **Committed** – the set date shall be followed whether there is a critical mass of households that migrated or not.

While there is a call for intensive migration to Digital TV, broadcast networks may still be allowed to continue to provide Analog TV services during the simulcast period. As for the planned ASO, an evaluation shall be conducted periodically to determine the take-up of Digital TV services and readiness of the FTA viewers given the termination of Analog TV services. This would allow the policy and regulatory agencies of the government to make informed decisions whether to hasten or extend the ASO date, as well as expand coverage of awareness strategies.
3.4 Socioeconomic Impacts of Migration

The DTTB Migration will have socioeconomic implications on the major stakeholders, i.e. the government, the broadcasters, the manufacturers/suppliers, and the consumers/viewing public, as costs and benefits are unevenly distributed across stakeholders. As highlighted, the very competitive TV market in the Philippines adds to the challenge of a successful DSO. The success of which is achieved when the costs for the government, the broadcasters and the viewers are kept at a minimum.

Table 6. Cost Benefit Analysis due to Migration

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Costs</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadcasters</td>
<td>Investment costs for digitization of infrastructure</td>
<td>Savings on transmission operational and maintenance costs after ASO</td>
</tr>
<tr>
<td></td>
<td>Increased operating costs for both analog and digital during simulcast</td>
<td>Added economic activity</td>
</tr>
<tr>
<td></td>
<td>Marketing costs</td>
<td>New opportunities as broadcasters would be able to offer other features possible in DTTB.</td>
</tr>
<tr>
<td></td>
<td>Cost in the creation of new content or the acquisition of additional content.</td>
<td></td>
</tr>
<tr>
<td>Consumers / Public</td>
<td>Procurement of Set-top box</td>
<td>Additional services, more programs to choose from and better viewing experience</td>
</tr>
<tr>
<td></td>
<td>Added domestic energy cost (for the set-top box)</td>
<td>Access to new service offering or multimedia content depending on the DTTB receiver acquired.</td>
</tr>
<tr>
<td></td>
<td>Cost of antennas (HH may need to replace their antennas)</td>
<td>Emergency Warning Broadcast System during disasters</td>
</tr>
<tr>
<td></td>
<td>New Digital TV (instead of buying STB)</td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>Possible Government intervention through subsidies for the remaining percentage of the population to meet the ASO date</td>
<td>Revenues from digital dividend through licensing and Spectrum Utilization Fees.</td>
</tr>
<tr>
<td></td>
<td>Stakeholder consultation and information and education campaigns</td>
<td>Digital broadcasting would present huge social gains for government especially where the technology could be used for distant learning</td>
</tr>
<tr>
<td>Manufacturers</td>
<td>Royalties</td>
<td>New market for local manufacturers and suppliers</td>
</tr>
<tr>
<td></td>
<td>Input and production costs</td>
<td>Market competition</td>
</tr>
</tbody>
</table>

Source: National Economic Development Authority

The Philippine market is a very cost sensitive market. Analog only TV’s are an important segment of the TV market in the Philippines. Many consumers will use their TV sets for non-Terrestrial TV related activities such as gaming, watching movies, as well as portals for Satellite and Cable TV. However, if terrestrial broadcasters will be allowed to encrypt additional contents for Pay TV applications, an authority from the National Telecommunications Commission must be obtained pending the deliberation and creation of an Implementing Rules and regulation with the stakeholders and Congress for the Pay TV franchise. This will make the digital tuners in many TVs redundant, as consumers will need to purchase broadcaster STBs to watch encrypted content regardless if an integrated DTTB receiver has already been purchased by the viewer.

For the purposes of the migration process, in its first 4 to 6 years, the Philippine government, to champion inclusiveness, allows the market to decide if citizens are willing to invest in an integrated Digital TV or prefer to pay lower cost by acquiring a STB for their Analog TV instead. As the Philippines migrate to Digital TV and taking into consideration and advantages with other countries’ experiences, technology is being gradually integrated into new receivers. In a few years, prices will have fallen when all new receivers are capable of receiving digital signals thereby eliminating the need for the Set Top Box.
The Digital Migration Policy for the Philippines
4.0 The Digital Migration Policy for the Philippines

The DTTB Migration Plan sets the parameters and addresses policy, regulatory, technical issues, and fiscal considerations for the country's migration to digital broadcasting system. The policies were developed through a consultative process with concerned government agencies, private entities, and the industry stakeholders. It draws on the key recommendations, inputs and comments as well as outputs made by the DTTB Migration Committee, broadcasters as well as inputs received from stakeholders such as civil society groups, receiver manufacturers, and suppliers.

4.1 Guiding Principles

The guiding principles in developing DTTB migration policies have been derived from the Philippine Development Plan that intends to pursue rapid and sustainable economic growth and development, improve the quality of life of the Filipino, empower the poor and marginalized, and enhance our social cohesion as a nation.

Further, the DICT gave emphasis and consideration during policy development the principal law governing the Philippine broadcast industry which is the Public Service Act\(^{14}\) that stipulates that the term "public service" encompass owning, operating, managing, controlling in the Philippines, for hire or compensation, with general or limited clientele, whether permanent, occasional, or accidental, and done for general business purposes, wire or wireless broadcasting stations.

The main principle is to ensure that all analog viewers will transition to digital television broadcasting with the premise of Free-to-Air TV broadcasting as a Public Service. And as a matter of philosophy, there should be no one left behind.

4.2 Policy Statement

The Government of the Republic of the Philippines with the DICT and with strong collaboration with broadcasters, concerned government agencies and stakeholders commits itself to champion the process of migration from analog to digital broadcasting system in line with the target Analog Switch off (ASO) within four (4) to six (6) years after the Ceremonial Digital Switch-On last February 14, 2017.

4.3 Policy Goals

The main goal of this policy is to achieve efficient and effective utilization of frequency/spectrum. The government also intends to have a well-coordinated, effectively managed digital migration process, with the following specific objectives:

1. To develop digital broadcasting market structure and licensing framework;
2. To ensure equitable access to quality broadcasting services;
3. To ensure efficient use of frequency/spectrum;

\(^{14}\) Commonwealth Act. No. 146, as amended
4. To ensure environmental protection during the migration and beyond;
5. To promote local content development;
6. To protect the general public against unfair practices during the transition and beyond; and
7. To ensure that no one is left behind in terms of Free-to-Air (FTA) television access.

### 4.4 Policy Areas of Action

The issues can be generally classified according to the stage of DTTB development. These are a) Preparatory or Pre-Implementation Stage, b) Digital Switch On Stage, c) Simulcast Stage, and d) Analog Switch off (ASO) Stage. At every stage, conduct of evaluation is necessary to appropriately address pending/identified implementation issues and to assess the overall success of DTTB migration in the country. It may be possible that some of the major issues on DTTB migration will only emerge after the ASO stage has been fully implemented, such as, failure of several TV Households to migrate after ASO and the issue on the release/allocation of the analog TV frequencies.

![Figure 14. DTTB Migration Development Stages](image)
4.4.1 Preparatory or Pre-Implementation Stage

4.4.1.1 Need for an Institutionalized Stakeholder Group

To ensure that the Digital TV migration shall be handled smoothly, a DTTB Migration Committee Technical Working Group (TWG) has been created. It is initially composed of representatives from:

1. **National Government Agencies (NGAs):** Department of Information and Communications Technology (DICT), National Telecommunication Commission (NTC), Department of Science and Technology (DOST), Philippine Information Agency (PIA), National Economic Development Authority (NEDA), Department of Finance (DOF), Department of Environment and Natural Resources (DENR), Department of Interior and Local Government (DILG) Department of Social Welfare and Development (DSWD), Office of Civil Defense (OCD), and Department of Trade and Industry (DTI);

2. **Industry Organizations:** Kapisanan ng mga Brodkaster ng Pilipinas (KBP) and Philippine Appliance Industry Association, Inc. (PAIA); and

3. **Civil Society Groups:** Institute of Electronics Engineers of the Philippines (IECEP), Philippine Association of Government Electronics Engineers (PAGE) and DTV Pilipinas and the likes.

The committee shall work ensuring wider stakeholder focus and shall assist, develop, finalize, and implement the DTTB Migration Plan. When necessary, the DICT may create DTTB Steering Committee to conduct yearly assessment of the migration process and updates on the implementation of the Framework of the DTTB Migration Plan to determine possible issues at will be incurred during migration and identify available remedies upon recommendation of the DTTB Migration TWG.

4.4.1.2 Frequency Planning and Review of Existing Allocation

Radio frequencies are a scarce natural resource. At present, the need to use advanced electronic communications services increases the demand for radio frequencies. Thus, frequency planning is beneficial in ensuring the efficient use of radio frequencies and avoids radio interference between different communication systems. This is done in accordance with the determination of radiation characteristics of DTV transmission system and the calculation of the coverage and possible interference. This is the portion where the Channel Plan establishes the baseline technical reference.

With a national frequency plan, the regulator will be able to ensure effective and efficient spectrum utilization as well as compliance with global standards. This will also allow the country to project future intended use of spectrum based on the current usage and allocation, with some conditions on policy, regulatory and business issues to be determined in advance. The stipulated assignment procedures for various services and updating the National Radio Frequency Allocation Table (NRFAT) by the NTC must be a priority.

Under MC 07-12-2014, NTC allocated Channels 21 to 51 for the implementation of the DTTB service. A bandwidth of 6MHz shall be assigned for each authorized DTTB Service per service area. Where it is technically feasible, Single Frequency network (SFN) shall be allowed.
Under MC 04-06-2016, NTC has re-allocated the 470 MHz – 512 MHz band for DTTB services in the Philippines for existing and duly authorized VHF television networks and their transfer shall be governed by Rule 603 of Memorandum Circular No. 3-3-96. This MC has been issued in relation to the current allocation for UHF broadcast from 512 MHz – 698 MHz which is insufficient to support all broadcasters to provide both analog and digital TV services, as such, re-allocating 470 MHz – 512 MHz for the migration will provide room for the smooth introduction of DTTB services.

**4.4.1.3 Timing and Implementation of DTTB Trials**

The NTC issued Memorandum Circular No. 05-11-2013 setting ISDB-T as the sole standard in the delivery of DTT service in the country, with its Implementing Rules and Regulations (IRR) on Digital Terrestrial Television (DTT) Broadcast Service (NTC MC No. 07-12-2014) issued on 16 December 2014. The IRR states that the country’s broadcasters must start broadcasting in digital fifteen days after the issuance of the said circular. The country had the official Digital Switch On (DSO) in 1 January 2015, while the Ceremonial DSO was held 14 February 2017. Meanwhile, the IRR for the Sale and labeling of ISDB-T receivers (NTC MC No. 02-02-2016) was issued on March 14, 2016.

*Figure 15. Key Milestones in DTTB Philippine History*

The Framework of the DTTB Migration Plan of the country was officially launched during the first ever Digital TV Summit conducted on February 14-15, 2017.

Since the EWBS is an integral part of the adoption of ISDB-T as the DTTB standard for the Philippines, field trials must be set up to ensure compliance of receiver devices, and as such, EWBS test signals and programs are to be broadcasted monthly for manufacturer testing in close coordination with various broadcast networks.
4.4.1.4 Licensing Framework

The licensing framework is the comprehensive set of required licenses, authorizations and permits for a market and public introduction of DTTB services. The objective of any licensing framework is to implement the defined policy objectives for the introduction of DTTB and Mobile TV services, including the analog switch off (ASO) date of 31 December 2023.

The IRR for DTTB Service (NTC MC. No. 07-12-2014) states that the following entities which are duly enfranchised broadcasters offering FTA TV broadcasting service may apply for an Authorization to Operate a DTTB Service in their specific franchise area:

a. Existing Duly Authorized Analog Operators;
b. Entities with pending petitions for the issuance of authorizations to provide analog TV service desiring to amend their respective petitions for the issuance of authorization to provide DTTB service; and
c. Entities with no existing petition for the issuance of an authorization for analog TV service.

NTC will not grant petitions for analog or applications for new DTTB service until all existing duly authorized analog operators have been granted of their applications and assigned their DTT frequencies. As necessary and as a general rule, NTC shall issue Demonstration Permits to all VHF broadcasters for digital test broadcast.

Existing UHF analog broadcasters, on the other hand are not afforded transitional channels due to frequency scarcity. These UHF analog broadcasters are allowed to directly broadcast DTT service without simulcast may decide to switch off their analog service, subject to the approval of the NTC and the corresponding public information has been undertaken in advance and due time specified by the NTC.

4.4.1.5 Technology and Standards

Harmonization of standards is essential for the smooth migration to digital broadcasting as this will ensure interoperability and compatibility of digital television services. There is no single worldwide standard for digital broadcasting. Different markets have developed or adopted different standards. This policy promotes the adoption of common technical standards and ensures consumer protection. To achieve this, the Philippine Government has adopted the following key system elements of a DTTB network:

b. TV presentation formats: Standard Definition Television (SDTV) and/or High Definition Television (HDTV). HDTV is encouraged to keep pace with the latest technology.
c. **Compression Technology**: MPEG4 is selected because of the following characteristics, however, future developments in Compression Techniques may warrant the NTC with due consultation with the stakeholders to re-evaluate the consideration of newer compression technology whenever it applies:

- Developed for multimedia streaming applications on the Internet
- MPEG-4 compression is an improvement over MPEG-2 format
- Encoding method of choice for portable devices and online use
- MPEG4 requires less bandwidth for streaming compared to MPEG2

d. **User Interaction**: Interaction happens between the TV viewer and the DTTB content, which involves developing a middleware. This can be accomplished in different ways, depending on which part of the DTV system is concerned.

e. **ISDB-T Receivers**: The Government should ensure protection of the consumer and guarantee access to information. To implement this measure, the Government should:

- Mandatory EWBS function for all ISDB-T devices including One-Seg receivers.
- Mandated Broadcast Markup Language (BML) for smooth implementation of EBWS
- Require manufacturer’s or distributor’s self-declaration to ensure compliance with the minimum requirements for ISDB-T receivers
- Require STB dealers to establish wide sale points for STBs and ensure the consumers acquire STBs at a competitive and fair price.
- Ensure that free-to-air program channels are accessible on all DTTB receivers.
- Ensure availability of affordable STB’s by providing fiscal incentives on importation and manufacture of the STBs and integrated digital televisions, subject to existing government policies, rules and regulations.

f. **Sale and Labelling of ISDB-T Receivers**: The guidelines require manufacturers and importers of brand new TV to indicate in each unit that it could receive analog or digital signals only. It would also require STBs to have appropriate labelling indicating that the receiver is EWBS- capable. In compliance with NTC MC on the Sale and Labelling of ISDB-T receivers, the following type of ISDB-T receivers shall be labelled by the manufacturers/distributors:

- Analog TV Receivers;
- Digital TV Receivers with ISDB-T tuner;
- Digital TV Receivers with automatic switch-on;
- Digital TV Receivers with EWBS;
- Digital TV Receivers with BML;
- Set-top-box (STB) with ISDB-T tuner only;
- Set-top-box (STB) with EWBS;
- Set-top-box (STB) with BML; and
- Set-top-box (STB) with automatic switch-on
Broadcasters and manufacturers must comply with the published technical standards and obtain authorized Network ID’s, service ID’s and Program ID’s from the NTC including the EWBS codes and the standard UTF-8 for the BML to ensure that the correct specifications of STBs are available and capable of handling the services of all the different broadcasters.

4.4.1.6 Signal Coverage and Other Transmission Parameters

Broadcasters should match the coverage of their analog TV service and improve reception in traditionally weak areas within the authorized service area in the most spectrum-efficient manner to ensure that all existing TV viewers would have access to DTV programs. Subject to prior authorization from the NTC, broadcasters will be allowed to transmit digital signals exceeding their reference analog coverage, and should be strictly in accordance with the NTC authorized frequency based on the Channel Plan that establishes the emission limits and prevention of interference. Thus, the government should ensure that the geographical coverage of DTTB of each broadcaster must be within the authorized service area issued by the NTC.

Further, the transmission network and the schedule for starting digital broadcasting in each region should be publicly announced in each region. Infrastructure sharing should also be carefully considered in the interest of public service as discussed in the succeeding section.

4.4.2 Digital Switch On Stage

4.4.2.1 Measures for Areas with No or Poor Reception

In remote areas, the government should ensure that the TV signals reach the viewing public and help citizens to solve any difficulties in their receiving system. This includes technical supports through consultations on a shared receiving system particularly in areas where broadcast signals are blocked by mountains or hills or apartment complexes. This aspect covers the areas that are classified as missionary areas which has the least commercial benefits from the broadcasters.

UHF antenna for analog TV can be used for receiving Digital TV signals but may need some adjustment or replacement. As an additional measure, in the border area of analog broadcasting coverage where the received signal level is very weak, the government should facilitate a shared receiving facility or replace antennas to high-gain antennas.

4.4.2.2 Infrastructure Sharing and Competition in the DTTB Market

Competition among broadcasters will need to do more than just responding to technology changes. They should be able to see the emerging trends and opportunities that will affect the existing business models and direct the future of Philippine television.

The current analog TV receiving antenna is not receiving optimal signal coming from all broadcasters at the same time due to the differences in the transmitting tower locations, power, and frequency. In the future DTTB transmitter sites and considering that DTT migration can be implemented using a single infrastructure, the design principle is recommended to be situated in a common site and a common infrastructure to obtain better reception condition and identical coverage. As such, the government, subject to necessary rules and regulations may allow and encourage infrastructure such as antenna tower, equipment building and transmitting antenna...
system, among others. However, this approach is an ideal concept which requires strong multi-stakeholders (government, broadcasters, etc.) engagement to discuss varying commercial consideration particularly among broadcasters.

**4.4.2.3 Co-existence between Digital TV and Other Service Providers in Other TV Services**

Other than free-to-air-TV, the most familiar technologies are Cable TV (CATV) and direct-to-home (DTH) satellite systems. Another way is IPTV, which is receiving TV via Internet Protocol, relying on broadband technology. However, due to the enormous internet traffic and availability of required bandwidth from telecommunications companies / Internet Service Providers (ISPs), the government conforms with the available resources highlighted therein.

Subject to additional rules and regulations to be issued, the government may allow realization of new services that can be made available by DTTB such as Conditional Access System (CAS), Mobile TV, among others. These may include Pay TV as a means of delivering premium content implemented through Video on Demand, as contrast to free mobile over-the-air broadcast like One-Seg. In terms of copyright protection, the government shall issue appropriate guidelines, rules and regulations. As measure for example, watermarking can be used to prevent unauthorized copying and viewers are unable to receive or record Digital TV streams unless device permission has been granted.

As the case may be, the government will be conducting further collaborations with the broadcasters, CATV operators and concerned stakeholders for the eventual drafting of guidelines for CAS and Pay TV. As noted, this requires extensive discussion and consultation particularly between and among TV broadcasters and stakeholders.

**4.4.3 Simulcast Stage**

**4.4.3.1: Simulcast Period**

In accordance and subject to the provisions of NTC MC on the IRR for DTTB Service (NTC MC 07-12-2014) and other pertinent rules and regulations that NTC may issue, with, all analog VHF TV operators are required to simulcast their DTTB service together with the analog TV service within one (1) year upon the grant of Authority to provide DTTB service. If any VHF TV operator is unable to simulcast, other qualified UHF TV operators may be allowed to use their simulcast frequency assigned to the VHF operator that is unable to simulcast.

---

**Figure 16. One Seg and Video on Demand**
Analog UHF TV operators may go directly to DTTB service anytime during the simulcast period of 4 to 6 years from the Ceremonial DSO using the assigned analog UHF-TV frequency, provided that a notice or advisory to the viewing public shall be given at least one month before the start of operations of the DTTB service.

As noted, simulcasting is dependent on the availability of spectrum, and such privilege is only extended to the existing VHF TV Networks. Although the government targets four (4) to six (6) years of ASO after digital ceremonial switch-on, the optimal period for simulcast should be carefully studied by the government as this will be a trade-off between the added cost of simulcasting for broadcasters and the opportunity cost of delay in the release of the spectrum.

4.4.3.2 Analog Switch off Model

Phased ASO with simulcast simply means that the ASO will be implemented by phase (e.g. from major cities to rural areas). And no ASO shall be done without prior authorization from the government and corresponding official notices and information campaign has been made accordingly.

The government adopted the ASO with simulcast phased approach in consideration of test broadcast, underlying principle, technology, footprint and service uptake, among others. There exists 72 analog service areas and ASO will be initially implemented in three pilot areas determined by the DTTB Migration Committee. Subject to further study and depending on the results of DTTB Migration TWG and upon close collaboration with the broadcasters, the initial/pilot locations for early ASO may be Metro Manila, Metro Cebu and Metro Davao, then to other areas.

4.4.4 Analog Switch off (ASO) Stage

4.4.4.1 ASO Threshold

Setting the switch off date of 31 December 2023 is a key element in the ASO process. One of the factors in selecting the ASO date is the percentage of the TV household that has already migrated to digital television. Ninety five percent (95%) penetration of the TV Households in each service area is considered sufficient for ASO. This means that if 95% of analog viewers have already migrated to digital, then ASO can be done in that specified area.
4.4.4.2 Assistance for the Most Vulnerable

The migration to digital television will have a great impact to the most vulnerable citizens – the poor, the elderly, the disabled, and those with language barriers. It is necessary that the government consider the establishment of a DTTB Migration assistance scheme to assist the extremely poor and vulnerable to ensure that no citizen of the Philippines currently watches television will be deprived of that right due to the digital television migration. As such, this help scheme shall be designed as part of the Department of Social Welfare and Development (DSWD) program for the poor in collaboration with Department of Finance (DOF), Local Government Units (LGUs) and other concerned government entities.

The government will roll out assistance scheme for low-income families through set-top box and antenna funding and installation assistance. Subject to budget appropriations, a subsidy may be provided to the vulnerable members of the society to speed up the deployment of STBs and to minimize disservice for the consumers. Such subsidies shall undergo thorough evaluation through DTTB Migration Committee and various agencies, stakeholders and concerned sectors. Due consultations will form basis of the strategy to address such issue/s.

The ability of the most vulnerable citizens to cope with DTTB migration process includes both replacing analog TV technologies with digital and their ability to use the same, to the same extent is where the real danger lies. The government should provide equipment and initial support to help safeguard the vulnerable people. This further requires close coordination among broadcasters, government and community organizations.

4.4.4.3 Ecological Waste Management

Whether people decide to get an IDTV or an STB, there is a need for new electronic equipment. The significant downside of the migration to digital television is that the migration is expected to send thousands or millions of analog TV sets to waste. Some consumers will resort to dumping as a common mode of garbage disposal while others will prefer keeping or selling obsolete or defective appliance and gadgets.
Analog CRT television sets contain toxins like chromium, lead, and mercury that are hazardous to health and the environment, thus a need for proper e-waste management is critical. The government shall ensure that the environment is protected during and after the transition period.

The following measures shall be implemented:

a. Require Department of Environment and Natural Resources (DENR), local government units (LGUs) and other relevant regulators and government agencies to collaborate and develop regulations to protect the environment and avoid technical dumping;

b. Promote reduction, reuse and recycling of e-waste; and

c. Ensure regulations are in place to stop importation of analog television sets, among others.
Implementation Framework
5.0 Implementation Framework

The need for information is cut across various segments of the society and therefore, all stakeholders have a role to play in the implementation of the DTTB Migration Plan. There is also a need to review the legal framework to ensure that law supports the implementation.

5.1 Role of Different Stakeholders

For a successful implementation, the transition from analog to digital broadcasting underlines the importance of consensus building among stakeholders. Each of these sectors of society will play a significant role in making the policy direction, technology adoption and economic uptake of ISDB-T as the sole DTTB standard in the Philippines; bringing faster, more efficient, and socially inclusive process of migration.

To facilitate the implementation of the DTTB Migration Plan, the following stakeholders have been identified with their corresponding strategic roles in ensuring that appropriate ways and means are established for broadcasters, manufacturers and other players in the TV industry are able to comply with the migration timeline set forth in order to maintain global broadcasting ecosystem competitiveness.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Specific Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Government</strong></td>
<td><strong>Department of Information and Communications Technology</strong></td>
</tr>
<tr>
<td></td>
<td>• Draft an Executive Order (EO) on the DTTB Migration Plan Comprehensive Nationwide Implementation, with a timeline of activities, for a smooth migration into Digital TV</td>
</tr>
<tr>
<td></td>
<td>• Lead in the development of the TV industry ecosystem, in stimulating demand for Digital TV and ensuring that consumer markets are ready to embrace DTTB</td>
</tr>
<tr>
<td></td>
<td>• Ensure that facilities are available in areas deemed by broadcasters not commercially viable, or to make available practicable support in setting up said infrastructure to bridge industry gaps</td>
</tr>
<tr>
<td></td>
<td>• Ensure that current TV HH are ready to migrate by establishing capacity building programs and public education campaigns</td>
</tr>
<tr>
<td></td>
<td>• Provide public communications strategies and mechanisms for promoting Digital TV features and applications, such as spearheading Roadshows, Summits and Caravans, participation in Seminars, Workshops, Conferences, and setting up DTTB Laboratories, Booths and Exhibitions</td>
</tr>
<tr>
<td></td>
<td>• Conduct TV Industry and Broadcasters FGD on Possible Support and Technical Advisory</td>
</tr>
<tr>
<td></td>
<td>• Establish a Task Force on Comprehensive Nationwide Implementation</td>
</tr>
<tr>
<td><strong>National Telecommunications Commission</strong></td>
<td>• Draft, finalize and release all rules and regulations pertinent to the technical adoption and specifications of digital broadcasting transmission equipment and reception devices, including appropriate certifications, labelling and other related guidelines</td>
</tr>
<tr>
<td></td>
<td>• Ensure that radio monitoring systems are available to ensure compliance of transmissions within licensed, and shall ensure that interference is avoided and appropriate measures are implemented to prevent future occurrences of service disruptions brought about by signal interference</td>
</tr>
<tr>
<td></td>
<td>• Provide guidance to broadcasters and manufacturers regarding the channel assignment and the frequency plan</td>
</tr>
<tr>
<td></td>
<td>• Determine the necessary market conditions and assess technical capacity of broadcasters to implement 1seg, CAS, and MUX, and shall issue corresponding rules and regulations</td>
</tr>
<tr>
<td><strong>Government Financial Institutions</strong></td>
<td>• The specific agencies must ensure that platforms for tax incentives, soft loans and fiscal assistance are available for commercial companies that demonstrate interest coupled with technical expertise and industry experience in rolling out DTTB systems and related transmission/reception technologies</td>
</tr>
<tr>
<td></td>
<td>• Have frameworks in implementing policies upon discussion of STB Subsidies and Financial Support Interventions</td>
</tr>
</tbody>
</table>
## Stakeholders and Specific Roles

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Specific Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Government</strong></td>
<td>Department of Interior and Local Government</td>
</tr>
<tr>
<td>- Participate in the commissioning and implementation of EWBS, and provide support to pilot locations identified to host community receivers for disaster alert information.</td>
<td></td>
</tr>
<tr>
<td>- Provide directives that will enjoin the Local Government Units to disseminate information and conduct awareness drives about the migration, focusing on EWBS, and its corresponding implementation, in accordance with reports from the Task Force regarding availability of Digital TV signals in the area.</td>
<td></td>
</tr>
<tr>
<td>- Provide logistical support to the Task Force when deemed necessary for information campaigns/roadshows spearheaded by the DTTB Migration Committee.</td>
<td></td>
</tr>
<tr>
<td>- Identify funding institutions and mechanisms the LGUs may be able to tap to facilitate smooth migration to DTTB, and deploy community EWBS alert terminals, within targeted timelines.</td>
<td></td>
</tr>
<tr>
<td><strong>Department of Social Welfare and Development</strong></td>
<td>- Consider introducing technical support interventions in addition to financial subsidy to the vulnerable sectors of society wherever practicable in ensuring that compliance to the migration timeline is met specifically in priority areas where ASO is targeted to commence.</td>
</tr>
<tr>
<td><strong>Philippine Statistics Authority</strong></td>
<td>- Update the census in order to aggregate baseline data on the penetration, adoption and issues faced by consumers in the migration into Digital TV.</td>
</tr>
<tr>
<td><strong>Presidential Communications Operations Office</strong></td>
<td>- Lead in the nationwide awareness campaign and message for the implementation of Digital TV.</td>
</tr>
<tr>
<td>- PTV4 shall prioritize roll out of key Digital TV technologies in its roadmap, considering ODAs and foreign support interventions in establishing a fully digital TV network and delivering public services.</td>
<td></td>
</tr>
<tr>
<td>- The PCOO and its attached agencies shall consider EWBS and its implications as the key drivers for adopting DTTB in building a culture of resilience and disaster preparedness of Filipinos.</td>
<td></td>
</tr>
<tr>
<td>- Advocate the efforts towards ensuring a smooth migration into DTTB.</td>
<td></td>
</tr>
<tr>
<td><strong>Department of Environment and Natural Resources</strong></td>
<td>- Provide platforms of recycling, upcycling and/or disposal of TV appliances including screens, antenna, power supply that will adequately address the migration into DTTB, as well as upgrading of the broadcast networks into Digital TV systems.</td>
</tr>
<tr>
<td>- Provide mechanisms as to the storage, shipment, and eventual disposal of said electronic waste to minimize the impacts to the environment.</td>
<td></td>
</tr>
<tr>
<td><strong>Department of Trade and Industry</strong></td>
<td>- Formulate appropriate plans in catalyzing investments in the broadcast industry and shall make available investments for the broadcasting sector by identifying key areas for investor intervention, which may include the transmission side, content and even the receivers.</td>
</tr>
<tr>
<td>- Ensure compliance of equipment used by the TV HH to receive Digital TV Signals to the certifications, fire hazard and relative product safety standards, power consumption, and so forth.</td>
<td></td>
</tr>
<tr>
<td>- Advocate the efforts towards ensuring a smooth migration into DTTB.</td>
<td></td>
</tr>
<tr>
<td><strong>Office of Civil Defense / National Disaster Risk Reduction and Management Council</strong></td>
<td>- Lead in the development and deployment of EWBS and corresponding implementation nationwide.</td>
</tr>
<tr>
<td>- Movie and Television Review and Classification Board</td>
<td>- Ensure content broadcast via Digital TV have been reviewed in a regime supportive of the migration for the broadcast networks.</td>
</tr>
<tr>
<td><strong>Broadcasters</strong></td>
<td>- Conduct necessary tests to ensure that broadcast service is in the best quality.</td>
</tr>
<tr>
<td>- Support the government’s activity on public relations and marketing campaigns on the migration from analog to digital television either through donated airtime, industry-led advertisements or in-program announcements.</td>
<td></td>
</tr>
<tr>
<td>- Provide timely communication on the use of the spectrum for other digital services aside from broadcast data on technical deployments and details on the coverage area in compliance with the Channel Plan.</td>
<td></td>
</tr>
<tr>
<td>- Participate in the development of an announcement protocol of a unified Early Warning Broadcast System to be adopted by the Philippines.</td>
<td></td>
</tr>
<tr>
<td>- Do studies on potential new markets and the type of services/applications and business models that may be proposed due to the introduction of DTTB services.</td>
<td></td>
</tr>
<tr>
<td><strong>Manufacturers</strong></td>
<td>- Produce and distribute fully compliant ISDB-T receivers.</td>
</tr>
<tr>
<td>- Set up assistance/contact centers for device – specific complaints and issues.</td>
<td></td>
</tr>
<tr>
<td>- Comply with the specifications and proper labeling of Digital TV receivers.</td>
<td></td>
</tr>
<tr>
<td><strong>Civil Society</strong></td>
<td>- Serve as checks and balances for coverage issues, market structure and regulatory framework.</td>
</tr>
<tr>
<td>- Assist in public Information dissemination.</td>
<td></td>
</tr>
<tr>
<td>- Convene technical monitoring committees or societies and submit recommendations to the government for possible intervention.</td>
<td></td>
</tr>
<tr>
<td><strong>Public</strong></td>
<td>- Enjoin the community to prefer fully compliant ISDB-T receivers than substandard receivers.</td>
</tr>
<tr>
<td>- Be responsible in waste disposal of decommissioned TV sets and other analog receivers.</td>
<td></td>
</tr>
<tr>
<td>- Keep up to date with public service announcements on signal disruptions and software updates.</td>
<td></td>
</tr>
<tr>
<td>- Be aware of the features of Digital TV such as EWBS and datacasting.</td>
<td></td>
</tr>
</tbody>
</table>
5.2 Consensus Building and Consultation

5.2.1 The Digital TV Broadcasting Migration Committee

In addition to DTTB Migration TWG, the DICT shall create Digital Terrestrial Television Broadcasting (DTTB) Migration Committee to ensure smooth implementation of the DTTB Migration Plan in the country. The DICT shall be the principal implementer of the DTTB migration that will organize groups and/or sub-groups to implement any actions related to the migration. The following are the ultimate objectives for the creation of the DTTB Committee in the country’s migration from analog to digital broadcasting:

- Citizens and households would be protected from losing their rights to watch free-on-air television. In this vein:
  a. Existing analog terrestrial free-on-air TV transmissions must continue for a reasonable period after digital transmissions have been introduced to enable citizens to have ample time for the analog switch off.
  b. Citizens should be well informed of the migration process and all the options available to make them ready for analog switch off.
  c. Equipment for converting digital signals for viewing on existing analog television sets should be broadly available and affordable.

- Spectrum should be used efficiently as a scarce natural resource.

- The democracy of the Philippines shall be deepened by the increasing availability of information and interactivity through the opportunities offered by digital broadcasting.

- Fairness, equitable access and an enabling environment for growth and profitability shall be promoted in the broadcasting industry.
Table 7. Role of DTTB Migration Committee Members

<table>
<thead>
<tr>
<th>Migration Committee Members</th>
<th>Lead Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Information and Communications Technology (DICT)</td>
<td>Lead implementer</td>
</tr>
<tr>
<td>National Telecommunication Commission (NTC)</td>
<td>Policy governance and implementation</td>
</tr>
<tr>
<td>National Economic and Development Agency (NEDA)</td>
<td>Broadcast licensing, regulation and frequency planning</td>
</tr>
<tr>
<td>Department of Trade and Industry (DTI)</td>
<td>Review of socioeconomic impacts</td>
</tr>
<tr>
<td>Office of Civil Defense – Department of National Defense (DND)</td>
<td>Industry readiness and market competitiveness</td>
</tr>
<tr>
<td>Department of Science and Technology (DOST)</td>
<td>Regional cooperation and Emergency Warning protocol</td>
</tr>
<tr>
<td>Department of Finance (DOF)</td>
<td>Implementation of EWBS and Integration with PAGASA and PHIVOLCS</td>
</tr>
<tr>
<td>Department of Environment and Natural Resources (DENR) – Environmental Management Bureau (EMB)</td>
<td>E-waste disposal and management plan</td>
</tr>
<tr>
<td>Philippine Information Agency (PIA)</td>
<td>Consumer protection and awareness</td>
</tr>
<tr>
<td>Department of Social Welfare and Development (DSWD)</td>
<td>Identification of vulnerable portions of the society</td>
</tr>
<tr>
<td>Industry Organizations – Kapisanan ng mga Brodkaster ng Pilipinas (KBP)</td>
<td>Migration monitoring and evaluation</td>
</tr>
<tr>
<td>- Philippine Appliance Industry Association, Inc. (PAIA)</td>
<td></td>
</tr>
<tr>
<td>Civil Society Groups – Institute of Electronics Engineers of the Philippine (IECEP)</td>
<td>Public Awareness</td>
</tr>
<tr>
<td>- Philippine Association of Government Electronics Engineers (PAGE)</td>
<td>Migration monitoring and evaluation</td>
</tr>
<tr>
<td>- DTV Pilipinas</td>
<td></td>
</tr>
</tbody>
</table>

5.2.2 Implementation Timetable for Migration

Migration to DTTB involves three phases or stages of planning and implementation. It is important to note that each of these phases presents its own important considerations and challenges and that the failure of one stage would be detrimental to the success of the other.
Digital Switch On (DSO) refers to the initial launch and introduction of DTTB services (01 January 2015) in the country including the development of digital broadcasting infrastructure (based on Memorandum Circular 07-12-2004 issued 16 December 2014). In addition, a Ceremonial DSO was marked by a pulling of lever from Analog to Digital shall mark as the comprehensive implementation of Public Communications Strategies and shall signal the intensive campaign in preparation for the planned ASO in 4 to 6 years.

Simulcast Period refers to simulcasting for Analog and Digital which is done to ensure that there would be no service disruption in the reception of analog TV programs to give the public enough time to plan their own migration. Also, this is to ensure viewers maintain access to television programming while the broadcasters are testing the quality and coverage of digital transmission. This finally ensures that there is enough time and capacity for the retail industry to supply receivers and distribute them across the country.

Termination of analog transmission, called the Analog Switch off (ASO) assumes the completion of the switch off process. ASO should occur after satisfaction of the criteria set by the government, i.e. at least 95% of the TV HH in each service area has a DTTB receiver. The speed of the ASO process is determined largely by the duration of the simulcast period, which is driven by the time viewers have been informed and has purchased digital receivers.
Public Communications Strategy
Another essential consideration in the migration process is the conduct of a consumer awareness campaign. This can be achieved through the joint effort of the government, broadcasters, the manufacturing industries and civil society groups.

Consumers need to be well-informed on what they need to do and the options they may have for TV access during migration. This also include the timing and consequences of switch off so that they can make their own decisions on services and equipment that may better suit their needs. Clarity and sufficiency of information about the purchase of digital equipment, coming from reputable sources, especially the government, should also be given consideration.

A number of receivers including Integrated Digital TV sets, One-Seg handsets and Set-Top Boxes (STBs) are already available in the market. The benefits of proper installation of antennas, interactive features and enhanced picture quality to reap the advantages of digital TV are being communicated to the viewers.

Sufficient information should be provided regarding the available options for choosing access to DTTB reception (choice of platform, functionalities, prices, modes of services, certified/accredited suppliers, and other technical requirements). Possible options to continue receiving TV broadcast during transition and for the household/family to be digitally-ready is discussed in Table 8 below:

### Table 8. Possible Options for the DTTB Viewers

<table>
<thead>
<tr>
<th>Options</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep the current TV set and obtain a STB as buying a Digital TV might be too expensive for the households/families at the onset.</td>
<td>While this solution is perhaps the easiest option to enjoy FTA Digital TV transmission, an important drawback however is that consumers cannot enjoy High Definition resolution and other more advanced features of DTTB using their analog TV sets.</td>
</tr>
<tr>
<td>Buy a new TV set that is digital ready. Subscribe to pay TV service with a cable or satellite provider.</td>
<td>This option is a little more expensive than the STB option. There is a monthly recurring expense as compared to a one-time cost for digital migration using FTA DTTB services.</td>
</tr>
</tbody>
</table>

A possible dilemma would be that some households may opt to wait until the very final time for the switch off. Hence, public Information and Education Campaign (IEC) is crucial to highlight the merits and reason of DTTB migration, not only because it would be inevitable to shift but more importantly because the people will greatly benefit from it.

Similar to other countries best practices and initiatives, cooperation of all available media channels for information and education campaign such as advertisements on TV, print publications and radio will be undertaken. This will include Internet where a dedicated website for DTTB will be created providing consumers advice about the important aspects of the migration. A contact center needs to be established to assist the public about relevant information on the use of DTTB.
6.1 Communications Plan

There is an urgent need for an extensive communication campaign to increase the viewing public's awareness of the mandatory digital migration, given that majority of viewers are still analog television users. This can be done through the joint effort of the government, broadcasters and manufacturers.

Informing the public and the TV industry in areas of policy, regulation and technology remains to be a government led task. Communication is a very important element of policy execution, and that provision of timely, relevant and adequate information will help facilitate the DTTB uptake in the light of ensuring a smooth transition. This section focuses on communication to the public and will address communication strategy and communication.

6.2 Communication Strategy

There are several successive stages in any communication strategy. These stages run from creating ASO awareness through measuring satisfaction after ASO. Left side figure shows the communication strategy for ASO transition. This shall be used in designing communication messages in each stage of the ASO transition and in determining key performance indicators to monitoring ASO progress.

The speed of the ASO process is determined by several factors aside from the duration of the simulcast period which in turn is driven by the time viewers need to be informed and purchase a digital alternative. Setting a firm ASO date is mandatory as viewers tend to delay the purchase of STB or IDTV weeks before the deadline. It is very important in phased ASO to measure the readiness of the viewing public to convert especially to the first pilot region. The lessons learned from this region shall and can be used in the other regions.

Continuous study on market take-up and the people’s appreciation of the DTTB migration and introduction of DTTB services by the broadcasters shall be done periodically to assess the areas for improvement. This will allow the modification of the existing strategies for maximum efficiency.

To determine the take-up of DTTB receivers for the 95% threshold as defined in previous chapters, the DICT shall seek the support of relevant government agencies such as the PSA and may engage in surveys to determine the market acceptance.
6.3 Communication Tools

One important consideration during the ASO planning is the strategies to keep the people aware of the benefits of DTTB and provide support in case of queries on anything about the DTTB. As an example, communication messages for consumers, industry players and broadcasters are detailed below:

<table>
<thead>
<tr>
<th>For consumers</th>
<th>For Industry Players</th>
<th>For Broadcasters</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High quality video and audio</td>
<td>• New opportunity for new services</td>
<td>• Lower operational cost compared to analog</td>
</tr>
<tr>
<td>• New services</td>
<td>• Generate sales of receivers</td>
<td>• Capacity for new programming/channels</td>
</tr>
<tr>
<td>• Free To Air</td>
<td>• Public Awareness</td>
<td>• Better coverage and viewership</td>
</tr>
<tr>
<td>• Help Scheme for the Needy</td>
<td>• Collaboration between broadcasters, manufacturers, NGAS, regulators</td>
<td>• Competition Policy</td>
</tr>
<tr>
<td>• Timeline for DSO and ASO</td>
<td></td>
<td>• Public Awareness</td>
</tr>
</tbody>
</table>

*Figure 24. Communication Messages*

The DICT, similar to some of the best practices on the communication platforms for the effective ASO implementation, will consider:

- Creation and launching of Digital TV migration website
- Provision of Digital TV migration hotline numbers; and
- Creation and visibility of DTTB migration logo and mascot during the campaign and transition.

### 6.3.1 Website Portal

Websites with information on digital migration will be set-up in close collaboration with concerned government and private entities. It is important that information between the official DTTB website, network operators and broadcasters are synchronized.

The official DTTB website shall include at least the following information:

- Online coverage map to show viewers where the expected coverage areas is
- Information on the list of channels broadcasting in digital in a specific area
- Link to self-help videos on how to install antenna and other troubleshooting instructions
- Ways on how to contact the DTTB hotline and the location of assistance desks
- Frequently Asked Questions (FAQs) about Digital TV migration

### 6.3.2 Mascot

Despite the most genuine intention, people are psychologically an image driven race, therefore, an image of the mascot would easily remind them of the technology and the government’s programs for the DTTB migration. Especially with children, a mascot provides a natural trigger for interest and fascination leading to a following that would be a multiplicative effect for the promotions.

For the country’s DTTB migration, a tarsier named “DigiTar” will be visible in most of the communication campaigns. The name **DigiTar** is a combination of “digital” and “tarsier”, the transition to which the country is adopting the ISDB-T standard, and a Filipino fauna icon known for its enormous eyes, endemic in central Philippines.
The Philippine tarsier, *Tarsius syrichta*, is a small animal. In fact, it is one of the smallest known primates, no larger than an adult man's hand (bohol.ph). Its eyes are disproportionately large, having the largest eye-to-body size ratio of all mammals. These huge eyes provide this nocturnal animal with excellent night vision, compared to DTV in a way that digital signals reproduce crystal-clear picture and sound without much fading or interference.

6.3.3 Logo and Labeling

The use of logos is important for consumers to relate easily to the digital migration process. Combining a check mark with the mascot guarantees that the digital receiver to bearing the logo will work with ISDB-T. Digital receivers bearing such logos are compatible with digital terrestrial broadcasting.

6.3.4 Call Center

Another way for the public to seek awareness is through call centers. No matter how much the government and the stakeholders have promoted awareness, there will be some who will wait until the last minute or even later so there should be an inbound call centers to answer inquiries and provide information that the public might need. Trained call centers agents should answer basic questions right away or refer the caller to websites for troubleshooting documents and videos. Aside from a hotline activated call centers, there should be a dedicated text line for mobile subscribers as well.

The Philippine Information Agency (PIA) is responsible for information dissemination for government programs, however, the broadcasters are encouraged to take an active role in providing relevant information about DTTB to the viewers periodically as part of their public service.

6.3.5 Social Media

In a short period, social media has made its mark in the field of communication. Social networking sites and applications have fast become an effective medium for communication campaigns due to its efficiency in simultaneously connecting to individuals and groups, effective determination and tracking of audience interests, and pervasiveness on various mobile devices such as laptops, tablets, and phones.
Social networking gathers a larger amount of user information which makes it easier to reach intended audiences in wider variety of ways than other online platforms. It also opens the door to deeper interest, behavioral and connection-based targeting methods by stretching beyond general demographic and geographic data.

In the Philippines, frequent use of social media is evident among various generations, making the country the social media capital of the world. Specifically, most Filipinos tend to use Facebook, Twitter and Google+ when interacting with others through the Internet. There is no denying that reaching users through mobile devices, like smartphones and tablets, is the next big thing in disseminating information to the public. Mobile users check social accounts multiple times a day so advertising within those apps is the best way to reach the public without being pushy and disruptive.

6.3.6 Print Matter

The print media is composed of newspapers, community newsletters, magazines, and other publications. Billboards, transit ads, direct mail, brochures, and some specialty ads are also considered print. It is an easy medium to spread awareness or advertise to any geographical area.

6.3.7 Broadcast Advisory

The most critical communication tool is the affected television services broadcasted by public and commercial analog terrestrial broadcasters. The best way to reach the relevant viewers is through the television services that will be affected. Intensive communication on these services will be crucial for informing the viewers.

Public announcements shall be made through the analog broadcasting programs. The government should provide updates and latest statistics to show viewers that digitalization is making steady progress.

Broadcasters should notify viewers about the end date of analog programming through all channels at the same time (soft test). They should insert a superimposed image on the screen showing the days remaining until the day of the ASO as a final effort to inform the viewing public.

Also, as a basic information campaign, the word “analog” shall be superimposed on analog TV broadcast while the same does not appear on Digital TV streams, to specifically differentiate reception mode and necessitate the need to upgrade receivers. Broadcasters are encouraged to On-Air superimposition of the broadcast format labelling, one (1) year after the Ceremonial Digital Switch On.
• All programs in analog shall bear the superimposed logo of “Analog” to be visible on the top left corner of the TV screen.
• A time down-counter shall be found at the bottom of the “Analog” logo which shall expire at 12 Midnight of the date the ASO has been targeted and scheduled.
• All Digital Terrestrial Television Broadcast shall bear the logo “Digital” at the top left corner of the TV screen during the simulcast.

Broadcast Advisories may include:

• **Nationwide TV and radio plugs**
  A commitment from the broadcasters may be requested by the government that at least one (1) hour a day, in aggregation will be utilized to insert plugs/announcements about DTTB spread through the various time zones.

• **TV and Radio Plugs**
  Special TV and radio announcements for the cities outside of Metro Manila where an impending promotional activity is scheduled. All TV and radio broadcasters are encouraged to bombard the airwaves one (1) week prior to the event proper.

• **NEWS publication and NEWS Reports**
  Self-initiated to soft mandated, volunteered news plugs, reports and even documentaries from broadcasters narrating the DTTB migration is expected considering that they are the end beneficiary of the technology. Ten (10) minutes of pre-produced 15 and 30 second plugs per day on relevant timeslots is encouraged and will be classified as a minimum with particular note to the compliance of private broadcasters that certain number of hours per day of the broadcast service should contain announcements from the government.

6.3.8 **Support Centers**

The government may consider provision of consultation offices close to people who are not familiar with digital technology preferably in places where people converge such as malls, markets, local government unit halls, in cooperation with broadcasters, manufacturers and electricians in every province, municipality or city. Question and answer (Q&A) booths to support people who have yet to switch to Digital TV could be set up as well in LGUs. Having booth personnel on hand to answer the viewer questions is a great opportunity to connect with audiences and to market DTTB.

6.3.9 **Roadshows**

The success of the DTTB migration of the Philippines relies on the full industry cooperation and awareness of the people that would lead to a fast and smooth migration invigorating the retail economy, freeing up spectrum, creating a multiplier effect for the number of Free-To-Air (FTA) contents leading to greater broadcast service and increased revenue in form of taxation for the government.
Promotional activities will help by attracting the attention of the people in return would compel broadcasters to implement DTTB services where a substantial number of potential viewers exist. In this regard, the DICT, in close collaboration with the broadcasters will conduct roadshows and will consider the so called missionary areas where no significant commercial values for the broadcasters exist, the government TV network is mandated to provide FTA services all over the country.

<table>
<thead>
<tr>
<th>Description of the Role</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulations and Policy Creation</td>
<td>DICT, NTC, DTI</td>
</tr>
<tr>
<td>Airing of TV and Radio Plugs at least ten (10) minutes per day</td>
<td>Broadcasters</td>
</tr>
<tr>
<td>Publication of the DTTB Migration Materials</td>
<td>Print Advertisements</td>
</tr>
<tr>
<td>TV receivers and STB’s promotion with samples</td>
<td>Manufacturers</td>
</tr>
<tr>
<td>Roadshow Promotions</td>
<td>Volunteers, Broadcasters, PAGE</td>
</tr>
<tr>
<td>Professional Organization’s support through participation in the national and local level</td>
<td>IECEP, PAGE, KBP</td>
</tr>
<tr>
<td>Technology Beneficiaries giving talks about the benefit</td>
<td>NDRRMC, OCD, PAGASA, MMDA, Local City DRRMC</td>
</tr>
<tr>
<td>Support Activities</td>
<td>Others</td>
</tr>
<tr>
<td>Educational dissemination in various colleges and universities</td>
<td>Academe, IECEP, PAGE</td>
</tr>
</tbody>
</table>

Conduct of roadshows may include, among others:

- **Motorcade**
  A parade throughout the city to spur interest among the people culminating into a congregation in a public place where all the industry stakeholders (broadcasters, manufacturers and governmental agencies) will be present to make shot statements. The mascot is a key component on this activity since young people can easily associate with a character.

- **Manufacturers and STB’ vendors**
  Exhibition of their products to the public including posters shown in strategic locations will help in creating a market demand for the DTTB receivers.

- **Authorized government representative**, DICT, Local Government Units, PAGASA, OCD, NDRRMMC hosting promotions with talks and Open Forum for the people.

Participation from beneficiary governmental agency through the technology should send a representative that would be able to deliver presentations about the benefits of the DTTB migration and how it would improve peoples’ lives.
6.3.10 DTTB Ambassador

As part of the country’s DTTB promotions of the Department of Information and Communications Technology, each TV Network is encouraged to appoint a DTTB Ambassador and participate in the information dissemination activities in Print, Social Media, FTA broadcast plugs and if possible to the scheduled roadshows in key cities around the country.

The DTTB Ambassador shall be:

- The “Face” of the TV Network in the official promotional activities of the DICT together with the other DTTB Ambassadors.
- Part of the DTTB TV plugs that will be produced by the Philippine Government through PIA and PTNI that will be shown on all TV stations.
- A recognizable character that the Filipinos can easily associate with in the DTTB education and information dissemination.
- The image of the Network’s pursuit for progress and support of the Government’s efforts towards Digital TV migration implementation.

6.4 Mechanics and Synergy for the Promotions

The key components in a successful promotion must consist of the stakeholders, the broadcasters, the consumers, the government, and the manufacturers, these four must work hand in hand to ensure a faithful transition and migration.

Components of the Promotions

1. Private broadcaster’s support in the form of TV and radio plug production and airtime.

   Broadcasters are expected to air the TV and radio plugs produced by the PIA and PTV but are not restricted from producing their own, Government agencies such that of the OCD/NDRRMC, PAGASA, NTC, DTI, DOF and MMDA for their corresponding technological concerns and interest. The various governmental agencies shall exert all effort to be active participants in every promotional activity and shall be ready to make a presentation about the end benefits of the technology to the betterment of the country.

2. Local governments for the mobilization and city coordination for the scheduled promotions.

   The local government’s participation will be concentrated on the traffic coordination for the motorcade, assembly in a public space, the information dissemination of the activity and the preparation of the facilities required in the DTTB Migration Plan promotions.

3. DICT’s print, TV, Radio, and social media advertisements

   DICT will be in-charge in preparing the TV and radio plugs including the posters, flyers, stickers, collaterals and the mascot of the DTTB migration. Regional promotional activities shall be handled and organized by the DICT with the support of all the NTC regional offices, broadcasters, stakeholders, and the local government.
4. PIA and PTNI’s production of TV and radio plugs for national and local airing.

PIA and PTNI will co-produce the standard 15 second and 30 second TV and radio plugs that will form as the standard plug to all broadcasters for airing at no cost to the government. The private broadcasters have the option to produce their own plug if it conforms to the theme and message of the promotions.

The co-production shall not be exclusive to the PIA and PTNI, and it is encouraged that the private broadcasters play an active role in the production of the TV and radio plugs which will be the universal plug to be used for the DTTB Migration.

5. Each broadcaster shall appoint an Ambassador for the DTTB Migration Plan promotion.

All ambassadors from various TV networks will be part of a universal DTTB Migration Plan TV plug. The universal TV and Radio plug shall assign a main character for the plug specific to their TV network. The plug with all the ambassadors shall show solidarity and universal support to the government’s move to Digital Terrestrial Television Broadcasting. The ambassadors are by default expected to participate in the nationwide promotions with the consent of their respective TV networks.
Conclusion

In the Philippines, migration to Digital Terrestrial TV Broadcasting has been in full swing ever since the Ceremonial Digital Switch on (DSO) was held last February 14, 2017 on the occasion of the Digital TV Summit 2017 led by the Department of Information and Communications Technology (DICT). Several broadcasters are simulcasting to give way for viewers to embrace digital TV fully in the next four to six years before the envisaged phased Analog Switch Off (ASO).

DTTB is expected to provide accelerated growth in the core business through both enhanced content experience and opportunities to introduce other products and services to TV households. However, digitizing the broadcasting network consists not only of upgrading existing analog TV systems but also incorporates achieving novel broadcasting services which are key to expanding digital terrestrial TV for viewers.

The migration scenario for various countries are unique; experience however has proved that it is necessary to meet the following conditions to ensure smooth implementation of DTTB migration: strong leadership from government, firm decision that sets the analog switch off approach, close cooperation between the regulator and market parties, clear and timely regulatory framework, and, adequate information and assistance to viewers.

The Filipino people are entitled to reap the benefits from the newest technology offerings of broadcast companies, aided by government leadership, and supported by enabling market structures. Note that advancement in technology would require capitalization and as such, broadcasting industry must be able to address this in terms of financial capacity as well as additional infrastructure, which small players might not be able to easily adapt to.

The Philippine broadcasting industry is evolving and is keeping up to the demands of time. This is affirmed by advancements in production and transmission facilities, but altogether highlighted by the transition from analog to digital broadcasting. Indeed, technology plays a significant role in the evolution of delivering basic services to the public, as it also enables consumers to have a wider range of services to choose from.

Consideration of case analyses, business models, industry best practices and appropriate government interventions in the formulation of strategies for the development of broadcasting ecosystem spells the success of the DTTB Migration. As with any other change, migration is an iterative process. It is bound by stages, of new possibilities along the way, and what must remain constant is the continued support to the different public communications strategies peculiar to the Philippines.
References and Acknowledgments

a. Related Papers, Studies, Publications and Articles

b. Websites, Homepages, Portals

c. Other Documents

The Department acknowledges the contribution of the following government agencies, broadcasting companies, equipment manufacturers, professional organizations, technical councils, among others:

- 90 Degrees North
- Hanabishi
- Omni
- Sony
- Dentsu
- ABS - CBN
- Hot Disk Corp.
- PAGASA-DOST
- Swara Sug Media
- Village Island
- ADTEL Inc.
- CTI
- PAIA
- TCL
- NHK ITEC
- Avid Technology
- IEC EP
- UNTV
- TV5
- HDSD
- Panasonic
- MASPRO - ATI
- Skyworth
- DiBEG
- LG
- Cignal TV
- NEC Philippines
- ProAce HK
- KPMG Consulting
- Electro Pacific
- B&M Global
- Kolin
- PNB
- NERA
- JapanCableCast Inc.
- Samsung
- Konka
- RACI
- ZIQ Trading Inc
- IPS Inc
- Cosmic
- DTV Pilipinas
- Sharp
- Nikkei Inc.
- Haier
- Genlock Inc.
- Magic 89.9
- SMNI TV39
- CBN Asia
- GMA Network Inc.
- Aliw Broadcasting
- Huawei Technologies
- Philippine Cable TV Association
- Trends & Technologies
- Hitachi Kokusai Electric
- Media5 Marketing
- iPLUS Intelligent Network Inc.
- Philippine Bloggers Network
- Asian Vision Cable Holdings
- Rappler
- Catholic Media Network
- Transmission Specialists Inc.
- Office of Civil Defense
- Solar Entertainment Corp.
- Cable Link & Holdings Corporation
- Department of Finance
- Oriental Consultants
- Sonshine Media Network International
- Christian Era Broadcasting Service
- Philippine Association of Government ECEs
- Ministry of Internal Affairs and Communications
- Kapisanan ng mga Brodcasters ng Pilipinas
- House of Representatives
- Smart Communication
- Corporate Directions
- People’s Television Network
- Transmission Specialists Inc.
- Office of Civil Defense
- Solar Entertainment Corp.
- Cable Link & Holdings Corporation
- Department of Finance
- Oriental Consultants
- Sonshine Media Network International
- Christian Era Broadcasting Service
- Philippine Association of Government ECEs
- Ministry of Internal Affairs and Communications
- Kapisanan ng mga Brodcasters ng Pilipinas
- House of Representatives

59
Annex

IMPLEMENTATION PLAN
PHILIPPINES' DIGITAL TERRESTRIAL TELEVISION BROADCASTING (DTTB) MIGRATION

About the DTTB Migration Plan

The DTTB Migration Plan addresses policy, regulatory and technical issues as well as fiscal considerations, industry and consumer support interventions, and other measures necessary for the country’s migration to Digital TV Broadcasting, including the Public Communications Strategies in preparation for the planned Analog Switch off (ASO) on 31 December 2023. It is geared to provide reference to the broadcasters, manufacturers, content producers and of course, the televiewers of the benefits, advantages, and features of Digital TV.

Accordingly, the National Telecommunications Commission (NTC) shall issue additional Rules and Regulations to ensure compliance of concerned entities/individual to the provisions of the DTTB Migration Plan.

Major Deliverables for its Comprehensive Nationwide Implementation

Following the launching of the Framework of the DTTB Migration Plan and the Ceremonial Digital Switch On (DSO) during the Digital TV Summit 2017 on February 14-15, 2017 in Manila, and upon the plan’s official release and publication, the DICT shall prioritize to achieve the identified major deliverables within the specific timeframe, viz:

• **Executive Order on the Implementation of the DTTB Migration Plan**

  This is to ensure the smooth implementation of the DTTB Migration Plan nationwide. The EO will specifically instruct concerned government agencies and stakeholders to comply and perform the tasks specified in the plan within the targeted timeline of activities. The DICT as lead implementer will immediately convene a meeting to jumpstart EO compliance.

  *Timeline: Q3-Q4 of 2017*

• **Task Force for the DTTB Migration Plan Implementation**

  The Task Force shall be led by the DICT and the NTC with the members coming from different government agencies, broadcasters, and receiver manufacturers, among others. The Task Force shall lead the implementation of the activities provided in the plan, ensuring wider stakeholders participation, conduct periodic assessment/monitoring of the migration process, identify available remedies on the issues that may be incurred and provide recommendations for updating the migration plan accordingly.

  *Timeline: Q2-Q3 of 2017*
• **DTTB Public Communications Program**

The DTTB Public Communications Program aim to provide mechanisms for promoting Digital TV features and applications, such as spearheading roadshows and caravans, participation in seminars, workshops, conferences, setting up DTTB laboratories, booths and exhibitions, and activation of website, social media applications, mascots, among others.  
*Timeline: ongoing until ASO*

• **Focus Group Discussions with related Broadcast Industries**

Regular focus group discussions with the broadcasters aims to tackle possible support and technical advisories the government may extend to broadcast industry to ensure their compliance and adoption to the country's migration to DTTB within the targeted timeline.  
*Timeline: ongoing until ASO*

• **Capacity Building Programs**

Capacity building programs and public education campaigns aim to ensure readiness of current TV household (HH) to migrate, make them aware of available options to enjoy the digital TV technology.  
*Timeline: ongoing until ASO*

• **EWBS Protocol**

The DICT to closely collaborate with the National Disaster Risk Reduction and Management Council (NDRRMC), Office of Civil Defense (OCD), broadcasters and concerned government agencies and private entities for the development and issuance of EWBS protocol. The DICT to closely coordinate the EWBS protocol Implementation with concerned agencies and entities.  
*Timeline: within 2017*

**Major Roles of Stakeholders**

To implement the DTTB Migration Plan, the following stakeholders have been identified with their corresponding strategic roles in ensuring that appropriate ways and means are established for broadcasters, manufacturers and other players in the TV industry are able to comply with the migration timeline set forth in order to maintain global broadcasting ecosystem competitiveness.
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Specific Roles/Activities</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>Department of Information and Communications Technology</td>
<td></td>
</tr>
<tr>
<td>• Executive Order (EO) on the DTTB Migration Plan Comprehensive Nationwide Implementation drafted, for President’s approval</td>
<td>Q4 2017</td>
<td></td>
</tr>
<tr>
<td>• Enhance the existing DTTB Migration Plan Technical Working Group (TWG) to serve as a Task Force on the DTTB Migration Plan Comprehensive Nationwide Implementation</td>
<td>On Going</td>
<td></td>
</tr>
<tr>
<td>• Implement public communications strategies and mechanisms for promoting Digital TV features and applications, such as spearheading Roadshows, Summits and Caravans, participation in Seminars, Workshops, Conferences, and setting up DTTB Laboratories, Booths and Exhibitions</td>
<td>On Going</td>
<td></td>
</tr>
<tr>
<td>• Conduct capacity building programs and public education campaigns that will ensure that current TV HH are ready to migrate</td>
<td>Q4 2017</td>
<td></td>
</tr>
<tr>
<td>• Conduct TV Industry and Broadcasters FGD on Possible Support and Technical Advisory</td>
<td>Q4 2017</td>
<td></td>
</tr>
<tr>
<td>• Lead in the development of the TV industry ecosystem, in stimulating demand for Digital TV and ensuring that consumer markets are ready to embrace DTTB</td>
<td>Q4 2017</td>
<td></td>
</tr>
<tr>
<td>• Issue policies that will ensure facilities are available in areas deemed by broadcasters not commercially viable, or to make available practicable support in setting up said infrastructure to bridge industry gaps</td>
<td>Q4 2017</td>
<td></td>
</tr>
<tr>
<td>• Identify funding institutions and mechanisms the government may extend to broadcast industry to ensure their compliance and adoption to the country’s migration to DTTB within the targeted timeline</td>
<td>Q4 2017</td>
<td></td>
</tr>
<tr>
<td>National Telecommunications Commission</td>
<td>• Promulgate additional rules and regulations pertinent to the technical adoption and specifications of digital broadcasting transmission equipment and reception devices, including appropriate certifications, labelling and other related guidelines</td>
<td>Q4 2017</td>
</tr>
<tr>
<td>• Provide guidance to broadcasters and manufacturers regarding the channel assignment and the frequency plan</td>
<td>On Going</td>
<td></td>
</tr>
<tr>
<td>• Ensure that radio monitoring systems are available to ensure compliance of transmissions within licensed, and shall ensure that interference is avoided and appropriate measures are implemented to prevent future occurrences of service disruptions brought about by signal interference</td>
<td>Q4 2017</td>
<td></td>
</tr>
<tr>
<td>• Identify funding institutions and mechanisms the government may tap to facilitate public communications mechanism for televiewers’ compliance and adoption to the country’s migration to DTTB within the targeted timeline</td>
<td>Q4 2017</td>
<td></td>
</tr>
<tr>
<td>Department of Interior and Local Government</td>
<td>• Participate in the commissioning and implementation of EWBS, and provide support to pilot locations identified to host community receivers for disaster alert information</td>
<td>Q4 2017</td>
</tr>
<tr>
<td>• Provide directives that will enjoin the Local Government Units to disseminate information and conduct awareness drives about the migration, focusing on EWBS, and its corresponding implementation, in accordance with reports from the Task Force regarding availability of Digital TV signals in the area</td>
<td>Q4 2017</td>
<td></td>
</tr>
<tr>
<td>• Provide logistical support to the Task Force when deemed necessary for information campaigns/roadshows spearheaded by the DTTB Migration Committee</td>
<td>(As Scheduled)</td>
<td></td>
</tr>
<tr>
<td>• Identify funding institutions and mechanisms the LGUs may be able to tap to facilitate smooth migration to DTTB, and deploy community EWBS alert terminals, within targeted timelines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government Financial Institutions</td>
<td>To be discussed</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>• The specific agencies must ensure that platforms for tax incentives, soft loans and fiscal assistance are available for commercial companies that demonstrate interest coupled with technical expertise and industry experience in rolling out DTTB systems and related transmission / reception technologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Have frameworks in implementing policies upon discussion of STB Subsidies and Financial Support Intervention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Identify funding institutions and mechanisms the GFIs may be offer to the TV Industry Players, such as broadcasters, to fast track deployment/expansion of the Digital TV Network in urban and rural communities, within timeline guided by ASO target</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Department of Social Welfare and Development</th>
<th>To be discussed</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Introduce technical support interventions in addition to financial subsidy to the vulnerable sectors of society wherever practicable in ensuring that compliance to the migration timeline is met specifically in priority areas where ASO is targeted to commence</td>
<td></td>
</tr>
<tr>
<td>• Adopt frameworks in implementing policies upon discussion of STB Subsidies and Financial Support Intervention</td>
<td></td>
</tr>
<tr>
<td>• Identify funding institutions and mechanisms the government may extend to manufacturers and citizens to ensure their compliance and adoption respectively to the country’s migration to DTTB within the targeted timeline with emphasis on providing support to identified vulnerable sectors of society</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Philippine Statistics Authority</th>
<th>To be discussed</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Update the census in order to aggregate baseline data on the penetration, adoption and issues faced by consumers in the migration into DTV</td>
<td></td>
</tr>
<tr>
<td>• Provide the Task Force with reports on income per area for guidance of DSWD and GFIs on establishing the support mechanism for vulnerable sectors of society</td>
<td></td>
</tr>
<tr>
<td>• Identify funding institutions and mechanisms the agency may tap to facilitate analytics on data gathered to provide decision support mechanisms for the Task Force towards adoption to the country’s migration to DTTB within the targeted timeline</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presidential Communications Operations Office</th>
<th>On Going</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Take a primary role in the nationwide awareness campaign, in print, online, radio and TV, and messaging for the implementation of Digital TV</td>
<td></td>
</tr>
<tr>
<td>• Advocate the efforts towards ensuring a smooth migration into DTTB</td>
<td></td>
</tr>
<tr>
<td>• The PCOO and its attached agencies shall utilize EWBS and its implications as the key drivers for adopting DTTB in building a culture of resilience and disaster preparedness of Filipinos</td>
<td></td>
</tr>
<tr>
<td>• PTV4 shall prioritize roll out of key Digital TV technologies in its roadmap, consider ODA’s and foreign support interventions in establishing a fully digital TV network to deliver public services</td>
<td></td>
</tr>
<tr>
<td>• Identify funding institutions and mechanisms the government may utilize to deliver DTTB benefits to the citizens within the targeted timeline, to lessen the impacts of ASO</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Department of Environment and Natural Resources</th>
<th>(As Scheduled)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide platforms for the recycling and/or disposal of TV appliances including screens, antenna, power supply that will complement the migration into DTTB,</td>
<td></td>
</tr>
</tbody>
</table>
The DICT has identified other stakeholders such as civil society groups to encourage the general public to shift to Digital TV by means of preference of fully compliant ISDB-T receivers and value of EWBS in disaster management, as well as datacasting.

### Other Stakeholders

<table>
<thead>
<tr>
<th><strong>The DICT</strong></th>
<th><strong>On Going</strong></th>
</tr>
</thead>
</table>

The DICT will initially discuss with each group (government agencies, broadcasters, manufacturers, civil society, etc.) the specific roles and activities that are assigned to them within the second quarter of 2017. Thereafter, the DICT will convene a meeting for all the stakeholders to identify key issues and action points, for synchronization and to jumpstart the DTTB Migration Plan Implementation. Following a synergized timeline, it will also serve as a best practices forum, tasked to craft a unified vision to complete migration within four to six years target.
DigiTar, Philippine Digital TV Mascot