

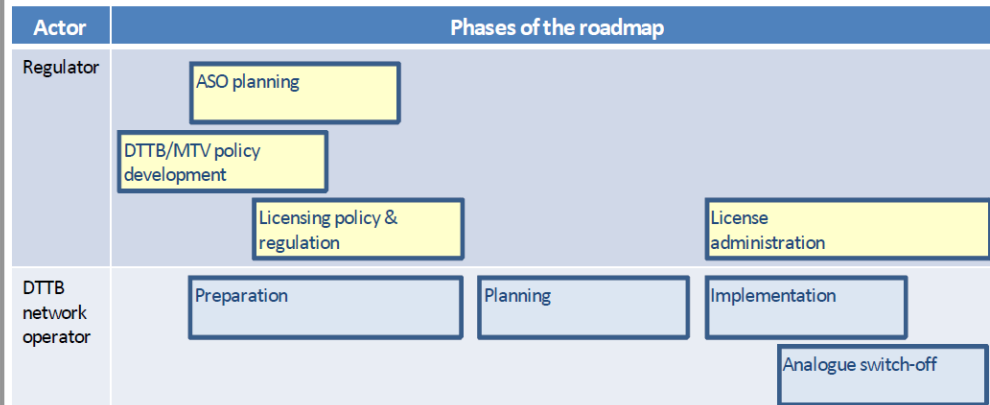
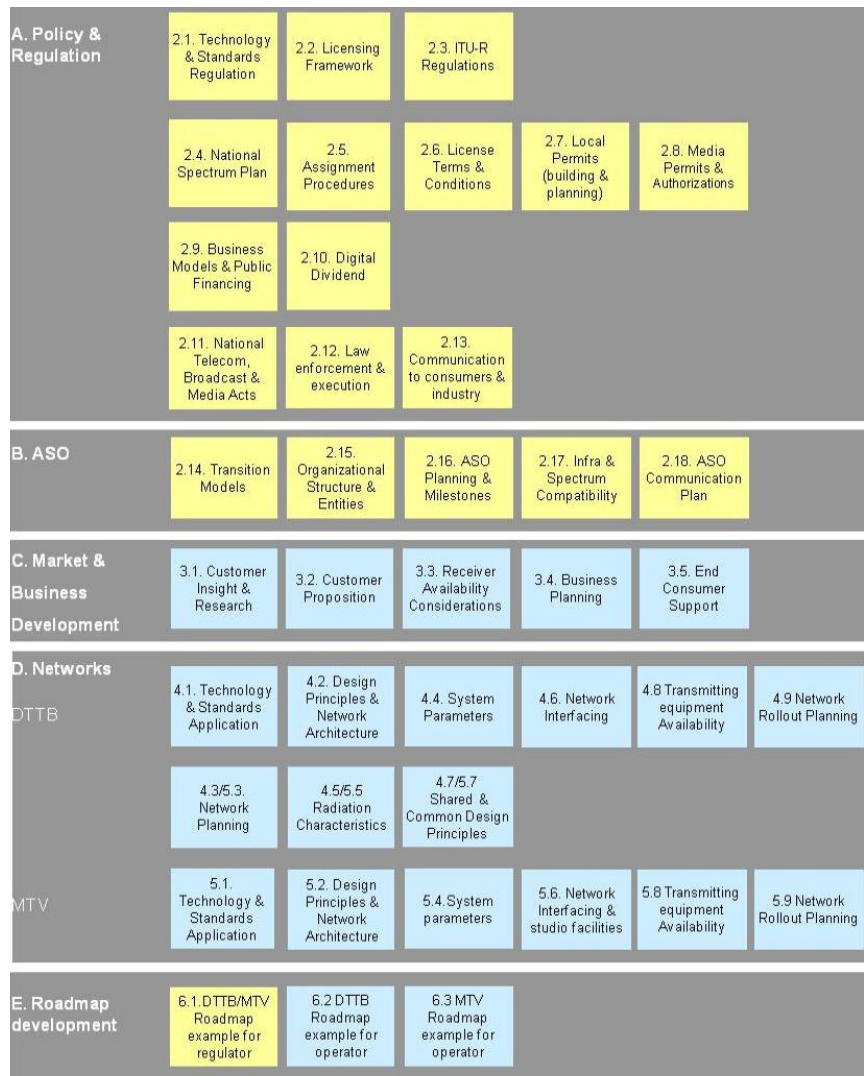


# DIGITAL MIGRATION: STATE OF READINESS

10 March 2015



**SENTECH**  
connecting You

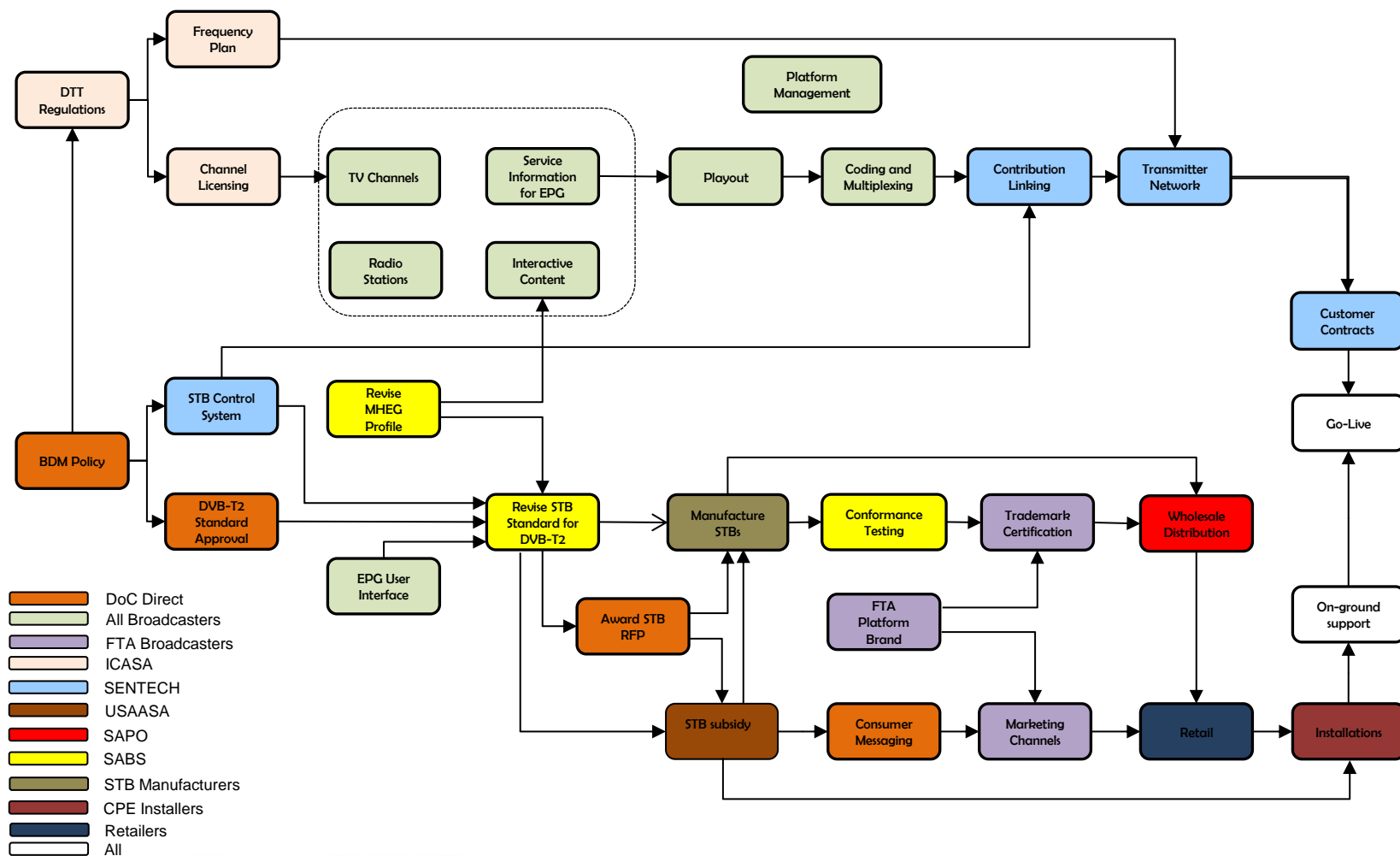


The ITU released international guidelines to assist member countries in covering the most important aspects of a national migration program and also in managing interactions between and within stakeholder groupings and general functions. The guidelines are not dissimilar to what SENTECH has been using over the years.

SENTECH will in particular make use of the network-related guidelines to benchmark itself against the readiness of both the network and network services to support commercial operations.

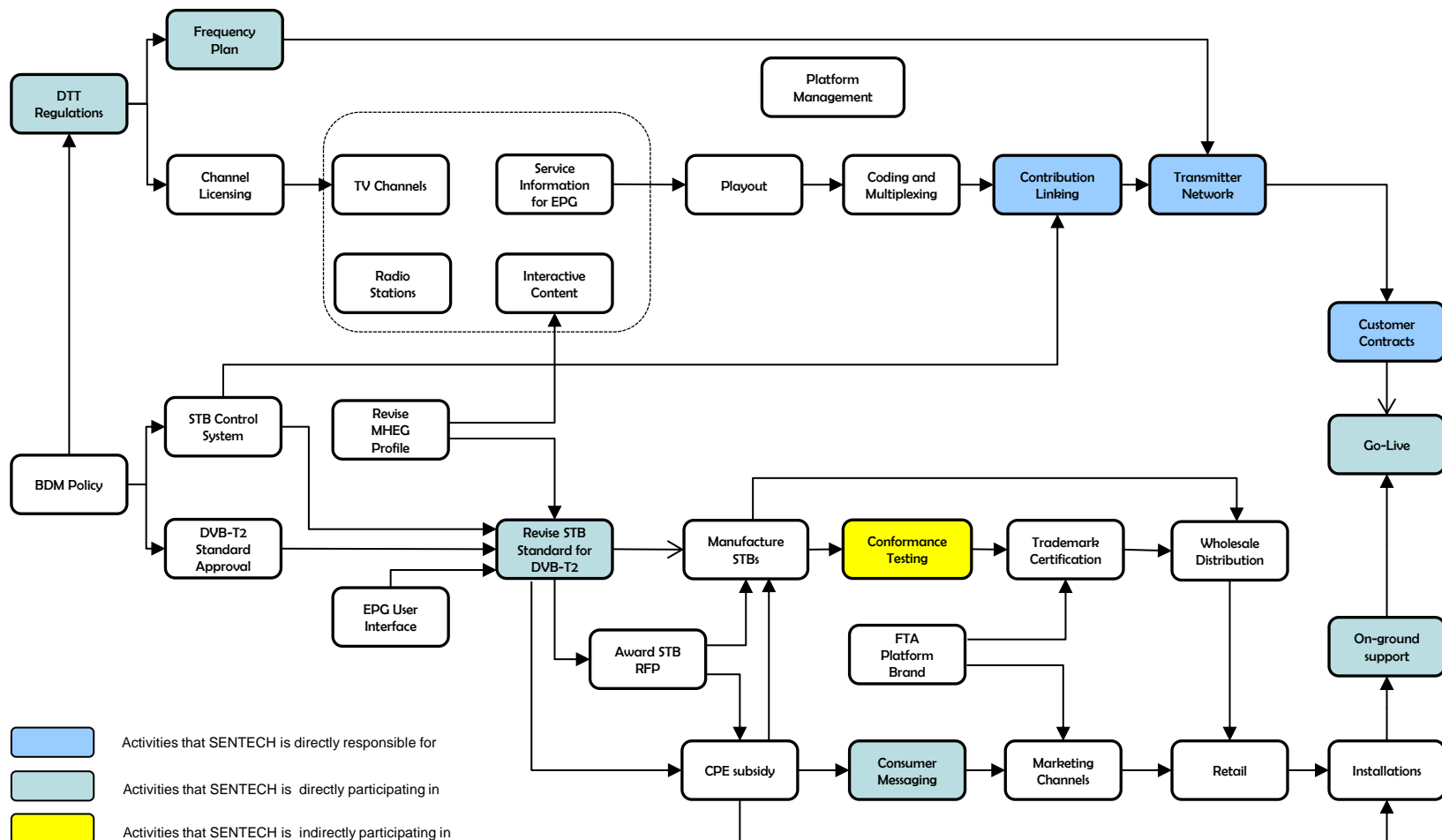
SENTECH hopes that the industry will also draw on some of the issues raised in the guidelines to create an effective program for ASO and also for the release of the digital dividend.

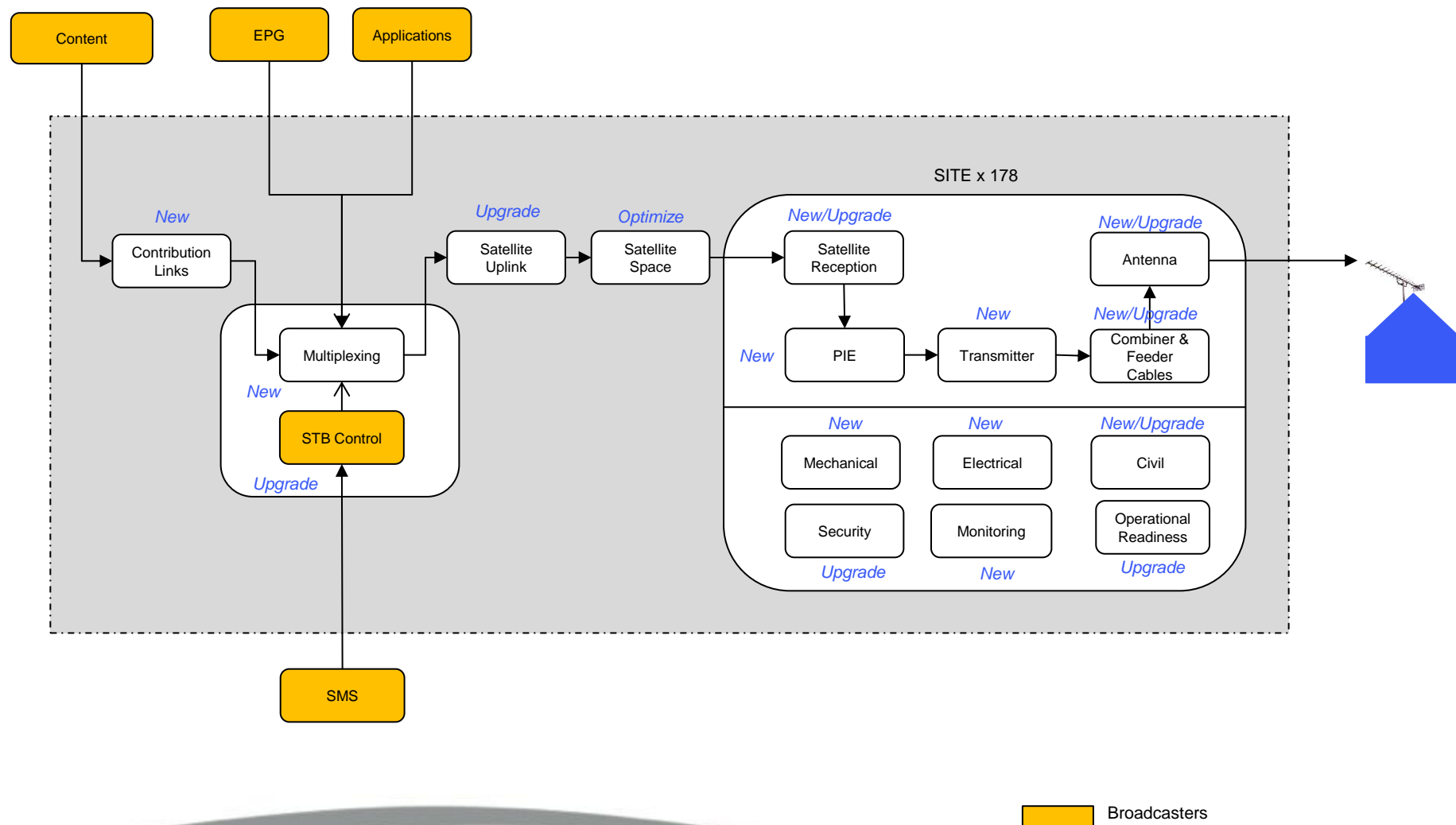
# DTT MIGRATION MAP: A Complex Ecosystem That Requires Central Coordination

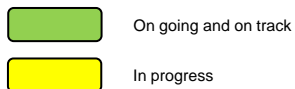
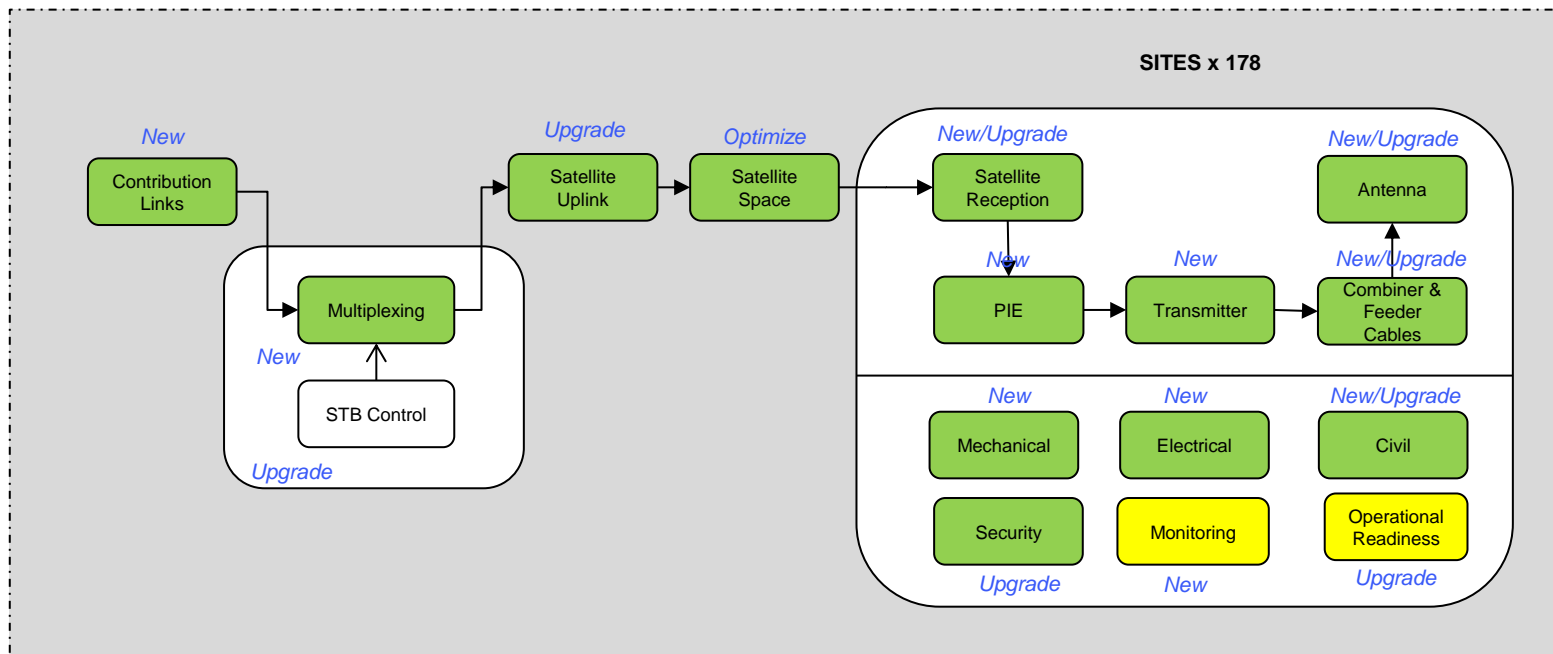


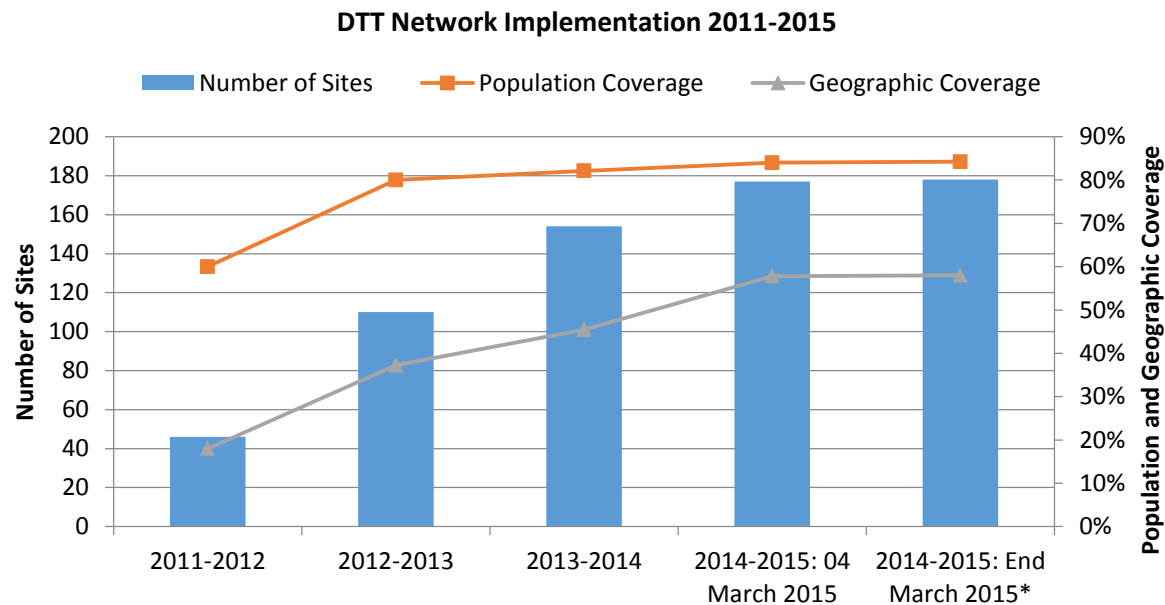
Acknowledgement: SABC

# DTT MIGRATION MAP: SENTECH Primary Activities







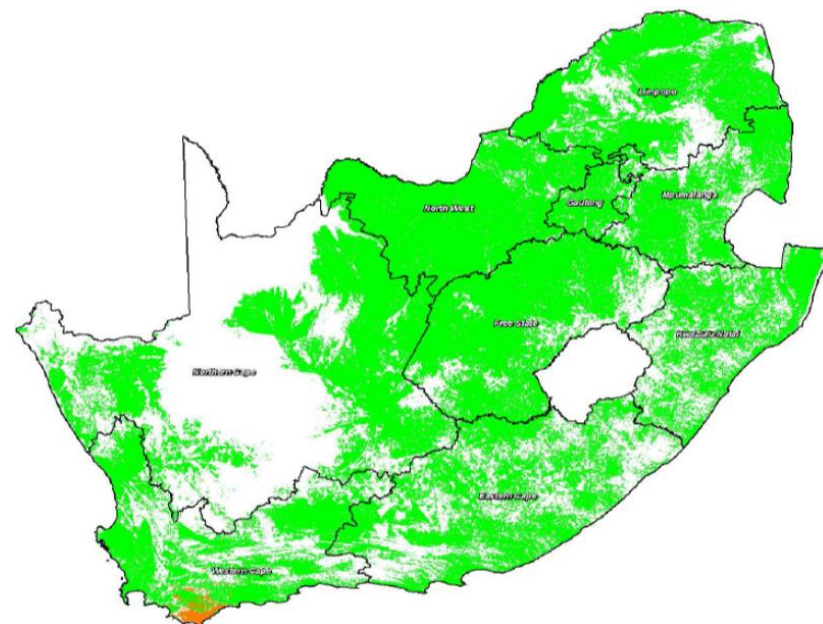


As at 04 March 2015, the company had completed the rollout of digital infrastructure at 177 out of 178 of the analogue sites, providing 84.01% population coverage and 57.82% geographic coverage.

SENTECH is on target to complete the DTT Network Rollout to 178 sites by the end of March 2015. This will result in population coverage of 84.23% and a geographical coverage of 57.99%.

Thereafter, the Company will focus on further optimization and stabilization for commercial readiness. In addition, the Company will align its current ASO technical plans with the overall national ASO plans. Finally, the Company will continue with the rollout of the 4 greenfield digital sites.

Province	Total Number of Sites	Completed Sites	Number of Sites in Progress	Percentage of Sites Completed	Names of Sites in Progress
Free State	13	13	0	100%	
Gauteng	12	12	0	100%	
Kwazulu Natal	29	29	0	100%	
Limpopo	10	10	0	100%	
Mpumalanga	13	13	0	100%	
North West	16	16	0	100%	
Eastern Cape	33	33	0	100%	
Northern Cape	17	17	0	100%	
Western Cape	35	34	1	97.14%	Napier
<b>TOTAL</b>	<b>178</b>	<b>177</b>	<b>1</b>	<b>99.44%</b>	
Napier scheduled to be on air during March					

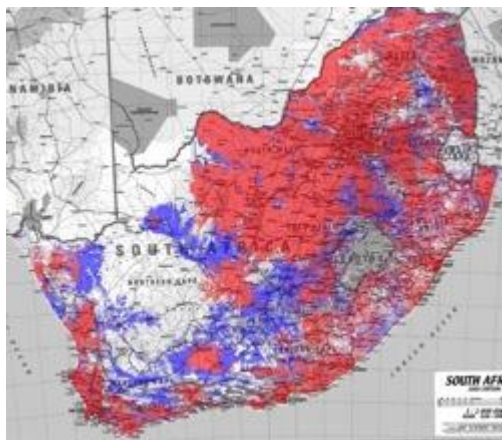


The remaining site in Napier is currently challenged by persistently severe weather conditions.

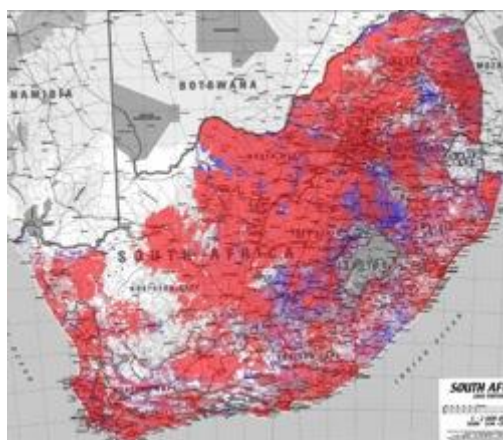


- We have had fruitful discussions with the incumbent broadcasters and have agreed on tariffs with SABC, M-net, e.tv and TBN.
- We are now in the process of finalizing the Master Service Agreements (MTAs) with these broadcasters, but in most cases, these agreements will not be signed until there is clarity on critical milestones such as the last date of ASO.
- We have had initial discussions with the DTPS regarding challenges that are faced by other community broadcasters (i.e. other than TBN) in respect of DTT tariffs.
- Specifically, the DTT tariffs of these community broadcasters have changed significantly as a result of the effects of the national frequency plan.

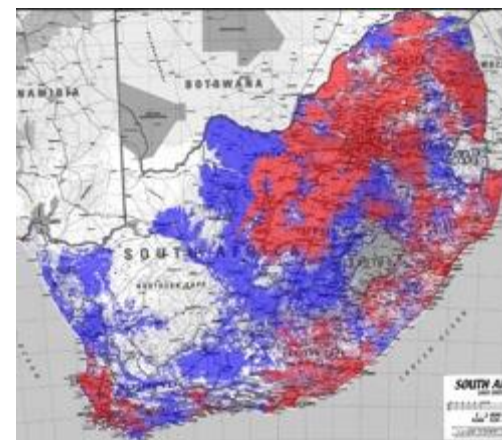
All SABC channels will be transmitted from the same sites, with varying degrees of increases in both population and geographic coverage.



	SABC 1	DTT Mux 1
Population Covered	40 711 270	43 970 922
% of Total Population	81.4	87.9
% Change	8%	
Geographic Coverage (km²)	581 940	789 020
% of Total RSA Area	45.8	62.1
% Change	36%	
Number of sites	146	183



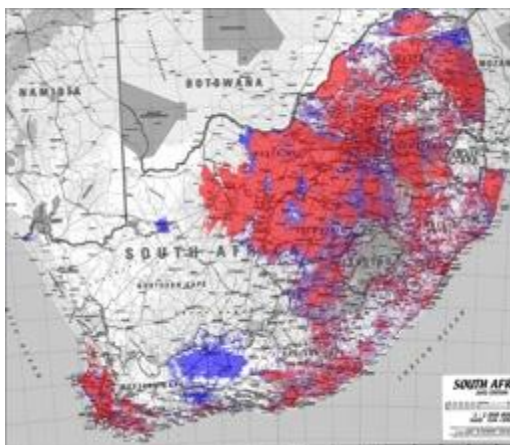
	SABC 2	DTT Mux 1
Population Covered	41 268 816	43 970 922
% of Total Population	82.5	87.9
% Change	7%	
Geographic Coverage (km²)	742 390	789 020
% of Total RSA Area	58.4	62.1
% Change	6%	
Number of sites	179	183



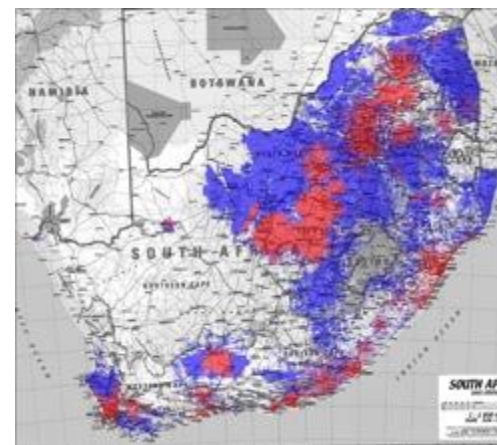
	SABC 3	DTT Mux 1
Population Covered	37 580 832	43 970 922
% of Total Population	75.2	87.9
% Change	17%	
Geographic Coverage (km²)	377 770	789 020
% of Total RSA Area	29.7	62.1
% Change	109%	
Number of sites	104	183

DTT
  Analogue TV

There has been agreement between SENTECH and the two commercial broadcasters on Mux 2 on various coverage and asset utilization issues and as a result, there is no need for any intervention in respect of underutilization of assets and under-recovery of capital costs by SENTECH.



	e.tv	DTT Mux 2*
Population Covered	34 737 660	40 682 924
% of Total Population	69.5	81.4
% Change	17%	
Geographic Coverage (km <sup>2</sup> )	407 530	548 660
% of Total RSA Area	32.1	43.2
% Change	35%	
Number of sites	95	102



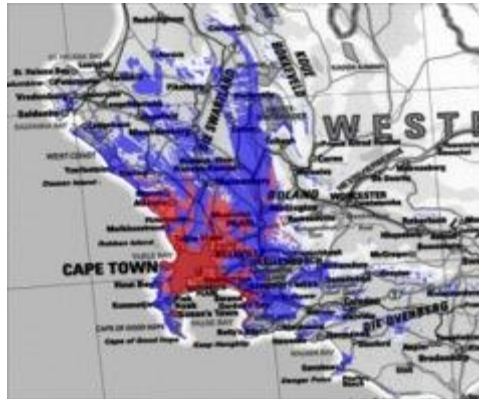
	MNET	DTT Mux 2
Population Covered	27 574 880	40 924 682
% of Total Population	55.1	81.4
% Change	48%	
Geographic Coverage (km <sup>2</sup> )	155 060	548 660
% of Total RSA Area	12.2	43.2
% Change	254%	
Number of sites	58	102



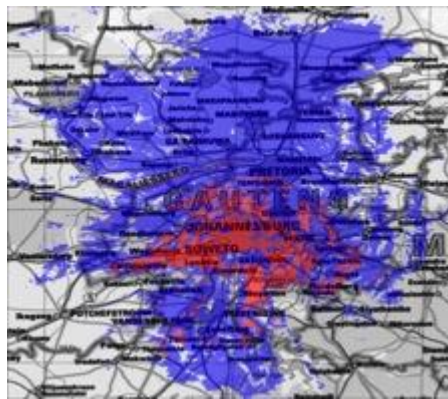
DTT



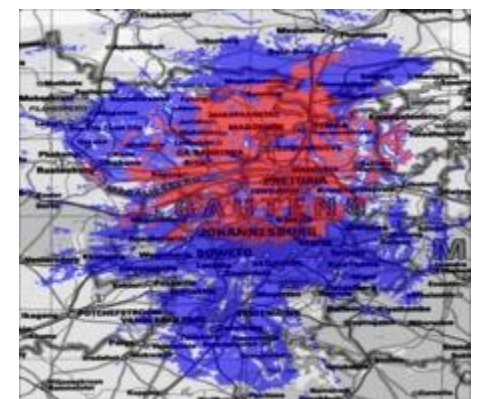
Analogue TV



	Cape TV Analogue	DTT Mux 1 – minimum sites required
Population Covered	3 194 922	3 974 835
% of Total Population	6.4%	7.95%
% Change	-	24%
Geographic Coverage (km <sup>2</sup> )	2 194	9 626
% of Total RSA Area	0.17%	0.76%
% Change	-	347%
Number of sites	1	12

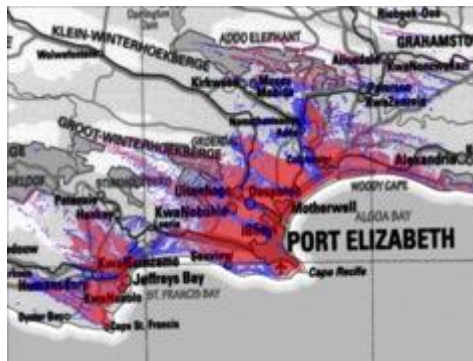


	Soweto TV Analogue	DTT Mux 1 – minimum sites required
Population Covered	4 417 763	12 270 810
% of Total Population	7.85	24.54%
% Change	-	213%
Geographic Coverage (km <sup>2</sup> )	3 732	31 001
% of Total RSA Area	0.29%	2.44%
% Change	-	731%
Number of sites	1	10

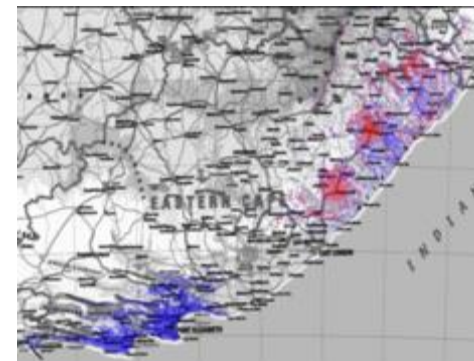


	Tshwane TV Analogue	DTT Mux 1 – minimum sites required
Population Covered	4 136 553	12 270 810
% of Total Population	8.27%	24.54%
% Change	-	197%
Geographic Coverage (km <sup>2</sup> )	8 677	31 001
% of Total RSA Area	0.68%	2.44%
% Change	-	259%
Number of sites	1	10





	Mandela Bay TV Analogue	DTT Mux 1 – minimum sites required
Population Covered	987 384	1 203 331
% of Total Population	1.97%	2.4%
% Change	-	22%
Geographic Coverage (km <sup>2</sup> )	2 596	4 654
% of Total RSA Area	0.2%	0.37%
% Change	-	79%
Number of sites	1	3

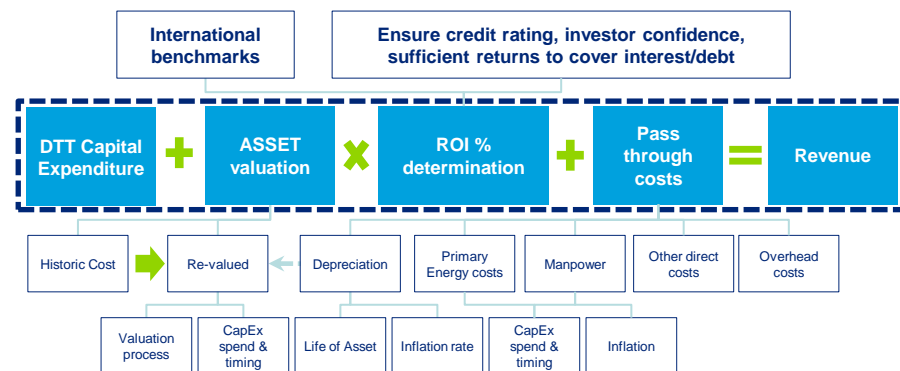
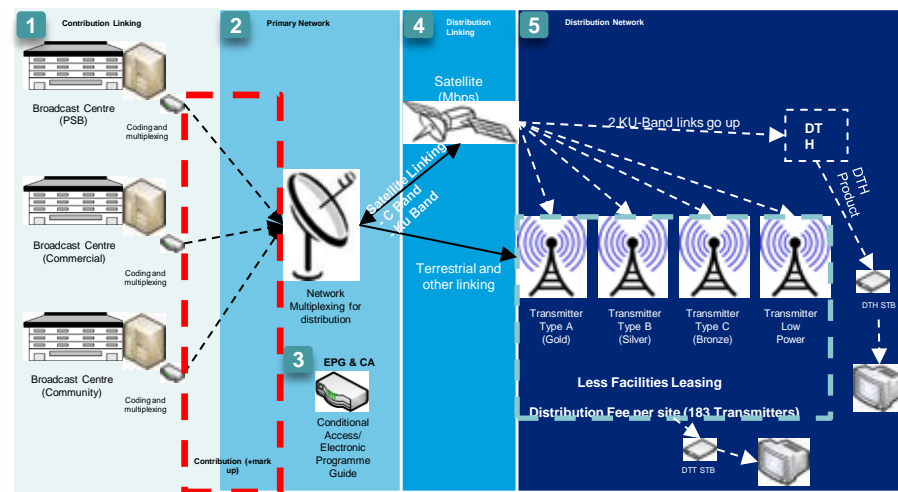


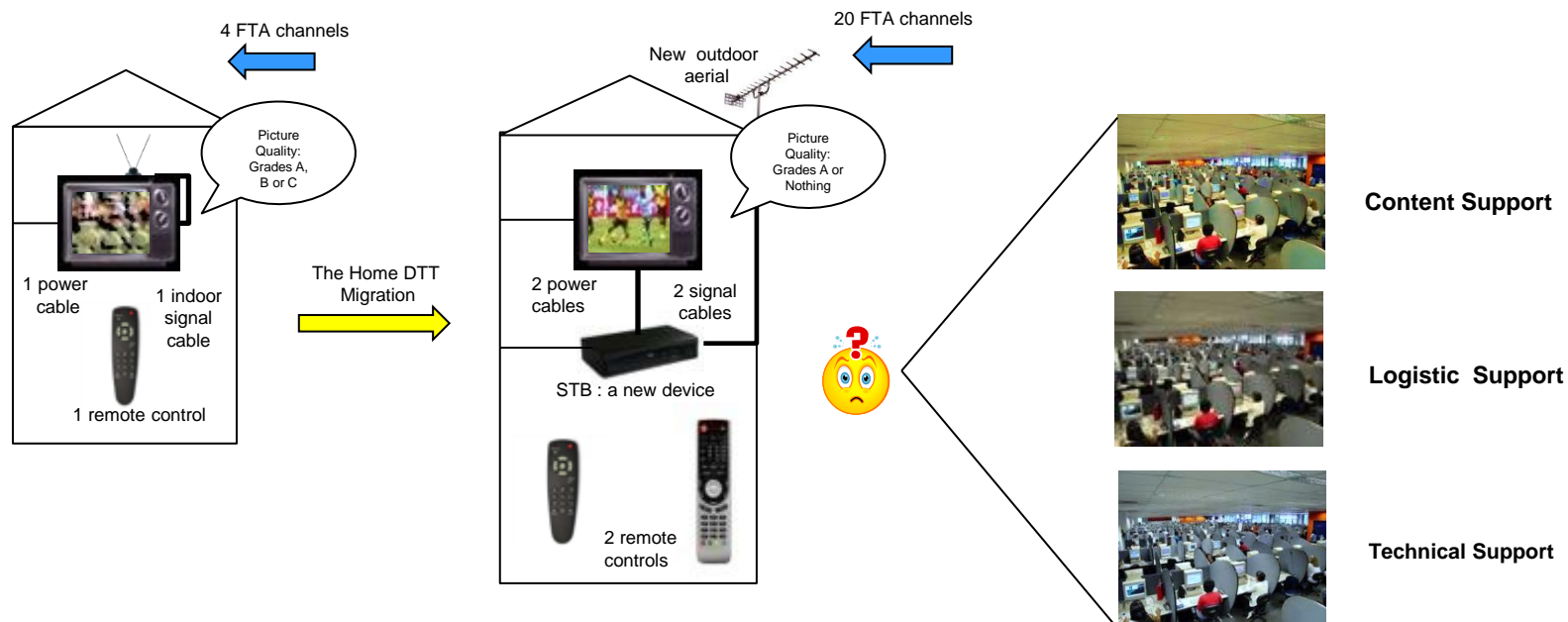
	TBN Analogue	DTT Mux 1 – Negotiated Sites
Population Covered	1 027 541	3 197 562
% of Total Population	2.05%	6.39%
% Change	-	211%
Geographic Coverage (km <sup>2</sup> )	6 556	22 080
% of Total RSA Area	0.5%	1.74%
% Change	-	237%
Number of sites	6	14

# CUSTOMER ENGAGEMENTS:

## Broadcasters: Tariff Principles And Model

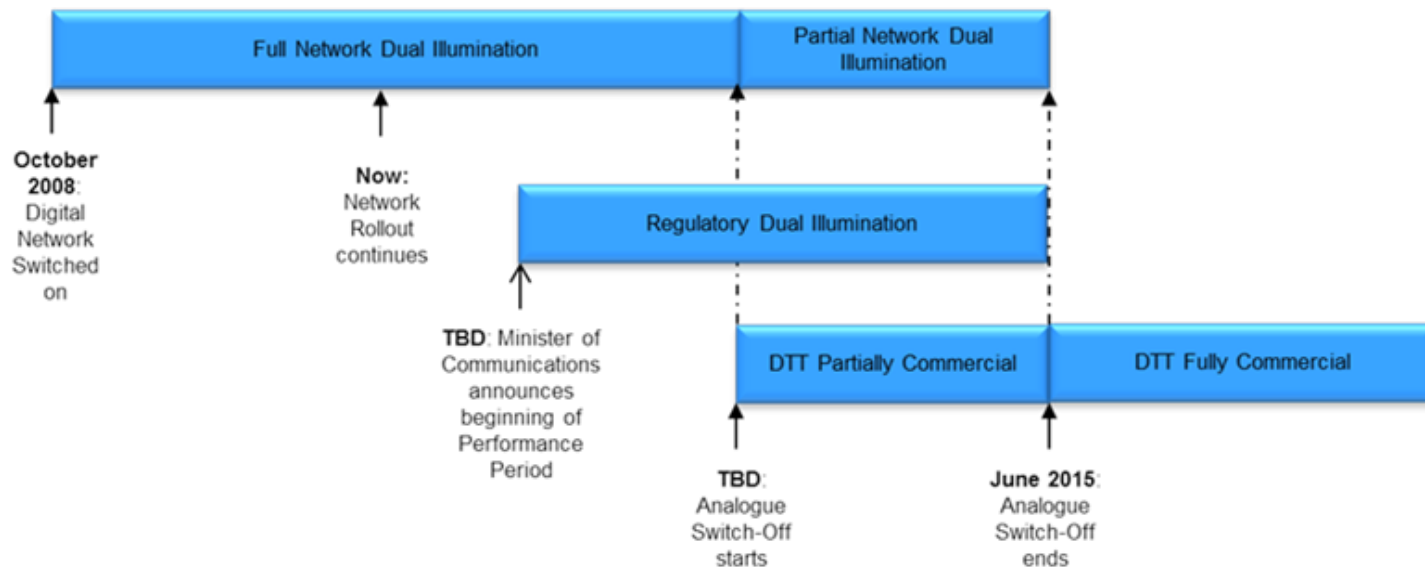
- The tariff model is based on consideration of a number of factors, including but not limited to:
  - the acceptance of the discretion that broadcasters retain on the elements of the SENTECH network that they may choose to use;
  - shared assets and operating costs; and
  - costs that vary depending on multiplexor allocations and coverage areas.
- The model is based on re-valuation of assets and consideration of operating costs specific to DTT and SLA commitments.
- The tariff model has been shared with Broadcasters and the Regulator.





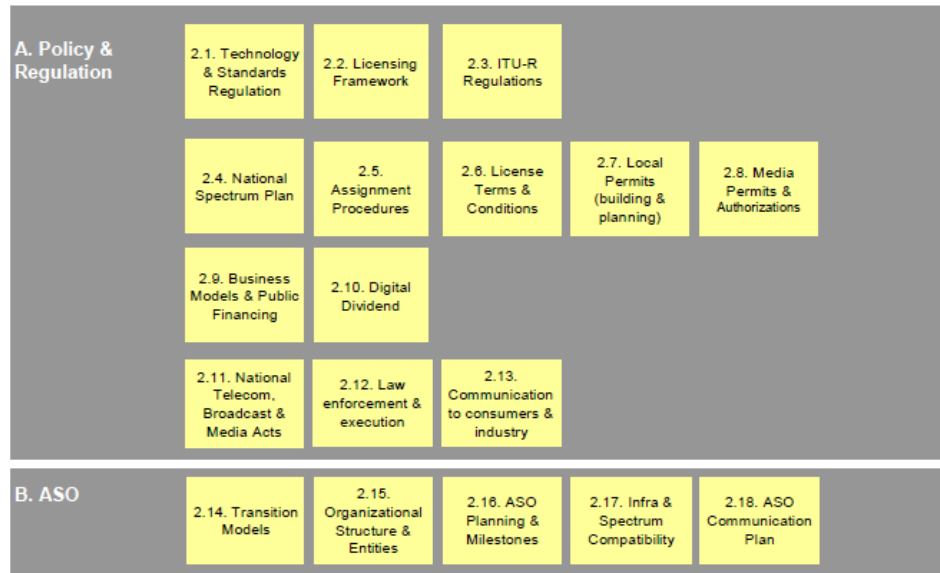
- SENTECH has been asked by the DTSPS to assist in the establishment of a Contact Center that will provide Citizen support on all matters technical, including but not limited to matters related to signal reception and the general increased technical complexity of the home environment.
- Some of the key considerations that SENTECH is taking into account in modelling the Contact Center are:
  - Only 5million of 12 million TV owning households are used to the complex home environment that will come with digital terrestrial television;
  - The remaining 7 million households will need support as they get used to the increased complexity in the homes;
- The funding for the build and operation of the Contact Center has not been confirmed yet, and as a result, SENTECH has not yet commenced with the build.

# STATUS UPDATE: DTT Project Funding Status: Dual Illumination



- The Company has secured some funding for dual illumination during financial year 2015/2016 but not thereafter.
- The concern going forward is whether there will be continued support for dual illumination funding; should this not be the case, then the company would have to fund the dual illumination phase out of its own cash reserves since some of the costs are non-discretionary; this will disable the Company from pursuing some of its obligations in terms of its current operations.





1. The figure below illustrates the three basic decisions:

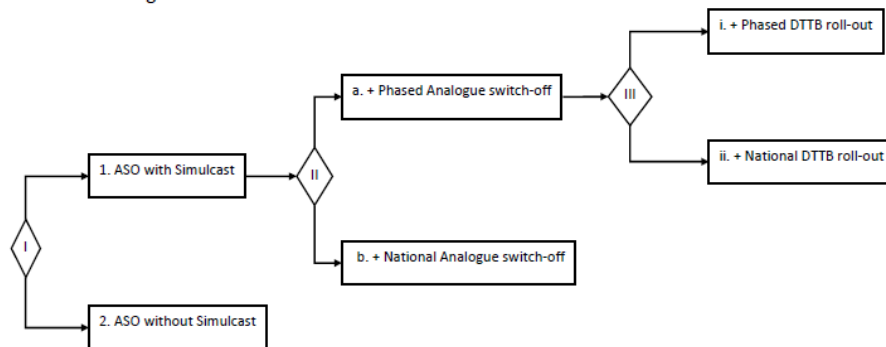


Figure 2.14.1 Decision tree for ASO transition models.

There is a specific section in the ITU Migration Guidelines dealing with ASO governance and program execution. The key message in this section is i) the need for Governments to drive the program; ii) decisions on ASO transition models and iii) involvement of a number of stakeholders in a formal governance structure.

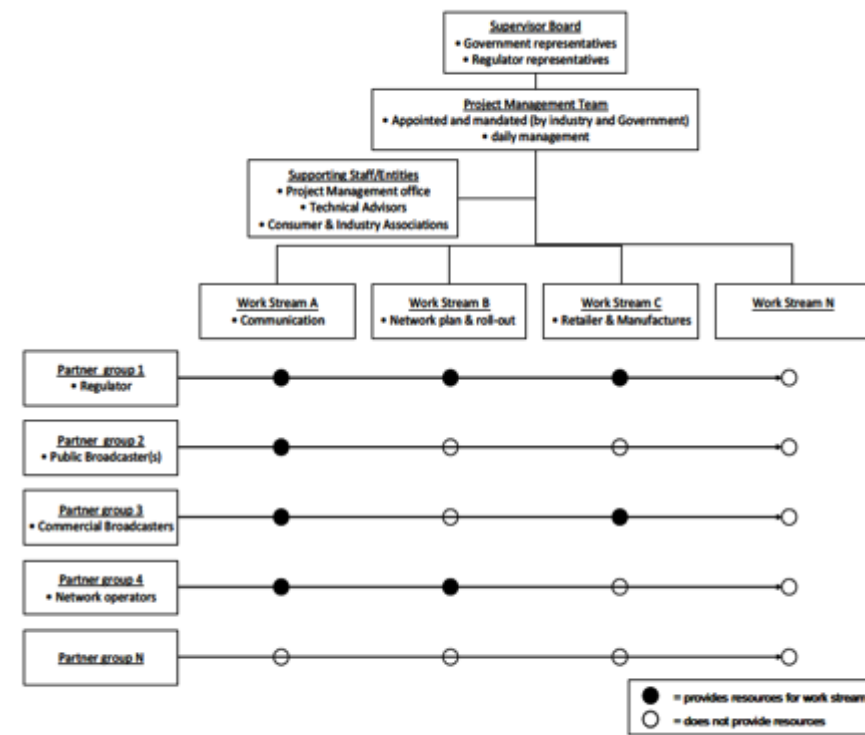
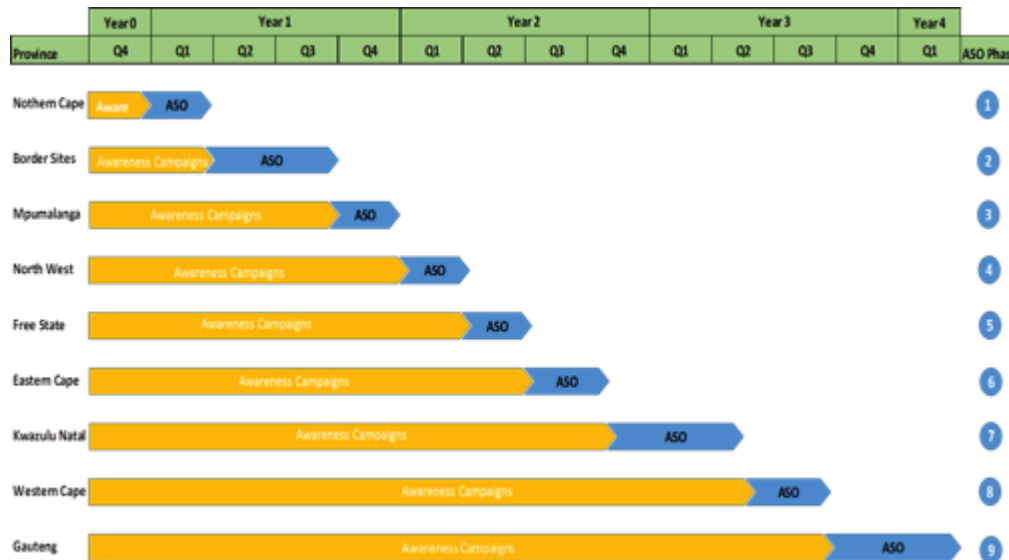


Figure 2.15.1 An example ASO organizational model.

- The national project currently runs ASO in simulcast mode (dual illumination) (ITU Guideline Model I(1)), with the ASO starting after a national network rollout (ITU Guideline Model III(ii)). For the actual ASO, SENTECH proposes adoption of a phased approach (ITU Guideline Model II(a)). In the phased approach, the analogue switch-off (ASO) takes place in a given province or region at a time before moving onto the next province. A phased approach provides several benefits and below are some advantages regarding the phased provincial approach;
  - South Africa will apply the lessons learned from one province to the other to improve processes and approaches for the next province.
  - In a case of something going wrong, the impact will be limited to one province.
  - This approach apportions scope and also allows focus and concentration of human and financial resources per province and will eventually enable smooth and manageable ASO.
- Based on the scope related to STB rollout and viewer migration, June 2015 ITU deadline and the Astronomy Geographic ACT of 2007, SENTECH developed a logical regional ASO plan to ensure compliance with the AGA act and protect services from the likely cross border interference considering time required to migrate viewers.

Province Priorities	Population Impact	% of Populat	TV Households	Duration (Months)
Northern Cape	1,162,900.00	2.19%	280,946.74	2.00
Borderline areas (including Limpopo)	14,301,024.00	26.99%	3,455,005.61	6.00
Mpumalanga	596,253.00	1.13%	144,049.65	3.00
North West	1,296,037.00	2.45%	313,111.50	2.00
Free State	1,085,803.00	2.05%	301,611.94	2.00
Eastern Cape	6,064,302.00	11.45%	1,465,083.72	4.00
Kwazulu Natal	9,730,381.00	18.37%	2,350,777.18	6.00
Western Cape	6,016,900.00	11.36%	1,453,631.80	4.00
Gauteng	12,728,400.00	24.02%	3,075,073.04	6.00
<b>TOTAL</b>	<b>52,982,000.00</b>	<b>1.00</b>	<b>12,839,291.19</b>	<b>35.00</b>



The Company has worked on several technical details of a phased ASO. The main drivers of the model that the Company has worked on are the distribution and logistics programmes from SAPO and USAASA.

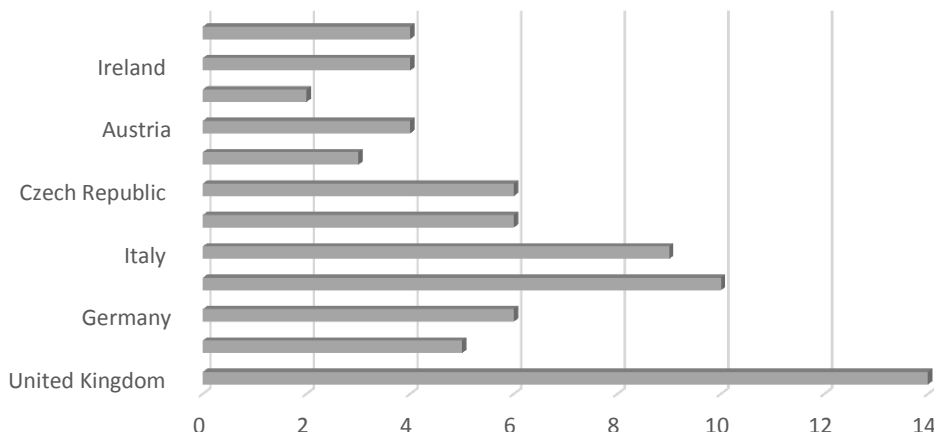
The model also allows for compliance in the SKA area in the Northern Cape and protection of services along the border areas.

Further consideration has been made on the need to start with smaller and less complex provinces, to draw lessons learned and reduce general impact per ASO activity.

Overall, based on the above, the estimate is that ASO will take about 3.5 years to complete.

It must be mentioned that the period can be compressed if the period for STB distribution and related logistics is shortened. This applies to both retail and subsidized STBs.

Dual Illumination Durations



**Table 2.15.1 National ASO organizations.**

Country	ASO organization	Website
Estonia	Committee for DTV Transition	n/a
France	France Télé Numérique	n/a
Germany	Ueberallfernsehen	<a href="http://www.ueberallfernsehen.de">http://www.ueberallfernsehen.de</a>
Italy	Italia Digitale	n/a
Netherlands	Signaalopdigitaal	n/a
Norway	NTV	<a href="http://www.ntv.no/">http://www.ntv.no/</a>
Sweden	Digital SwitchoverCommission	<a href="http://www.digitaltvoergangen.se">http://www.digitaltvoergangen.se</a>
United Kingdom	Digital UK	<a href="http://www.digitaluk.co.uk">http://www.digitaluk.co.uk</a>
United States	NTIA	<a href="http://www.dtv.gov">http://www.dtv.gov</a>

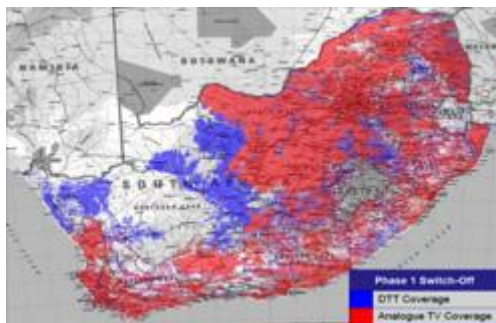
Our estimates of the ASO period have also been benchmarked against countries that have completed their migrations in Region 1.

In general, the ASO periods are affected by a number of issues, including but not limited by:

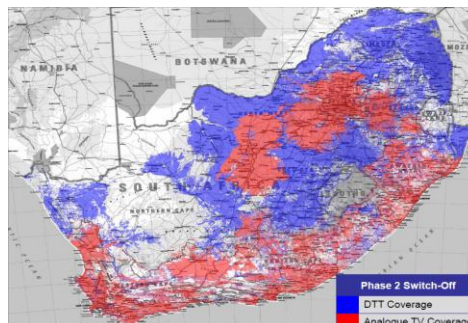
- The role of the Public Broadcaster and how the migration program is funded;
- The existence of Government/Industry bodies to drive the different aspects of the migration project;
- The extent of the terrestrial television network compared to other media for delivering broadcasting services.

In order to shorten the ASO period, SENTECH proposes the establishment of a Government-driven ASO coordination committee (ASOCC) similar to the one suggested in the ITU Guidelines (i.e. ASO Supervisory Board) and the ones implemented in the Region 1 countries that have completed their programs.

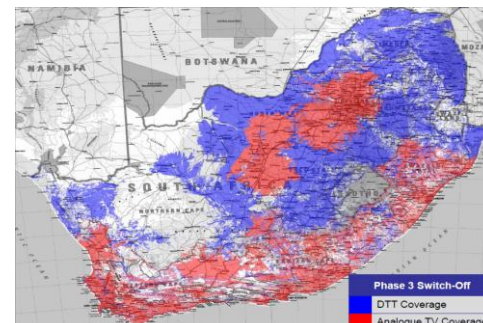




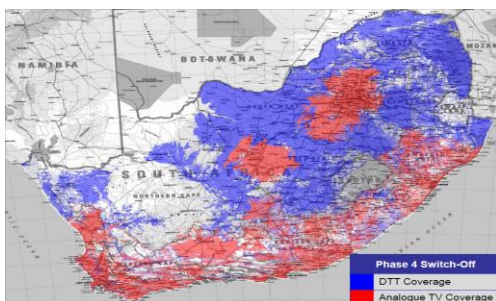
Phase 1: Northern Cape



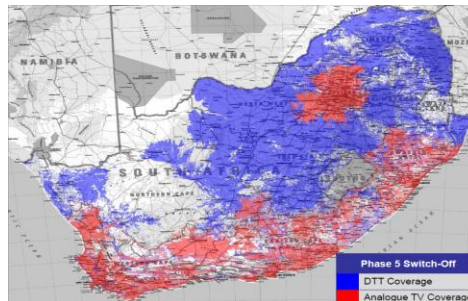
Phase 2: Border sites & Limpopo



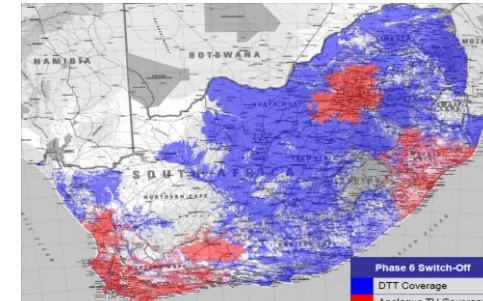
Phase 3: Mpumalanga



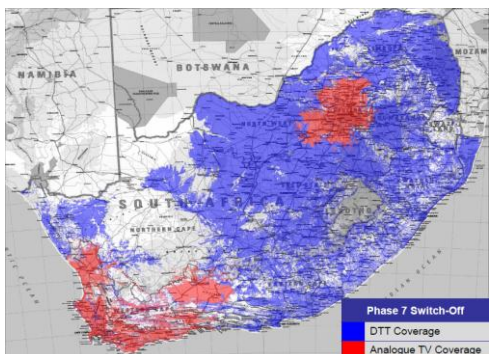
Phase 4: North West



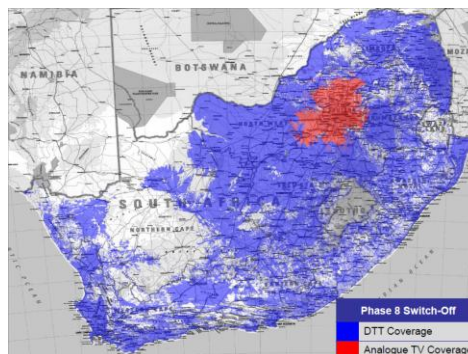
Phase 5: Free State



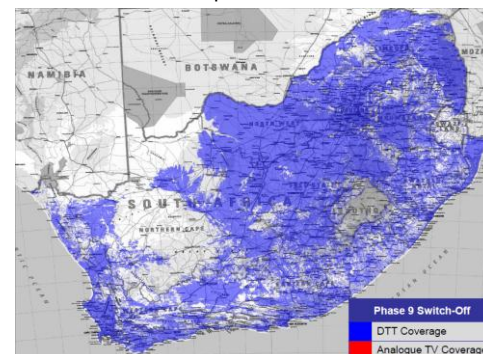
Phase 6: Eastern Cape



Phase 7: KZN



Phase 8: Western Cape



Phase 9: Gauteng

- At WRC12, South Africa presented at principle stand that the country will reserve the frequency bands 694 – 790 MHz (DD2) and 790 – 862 MHz (DD1) for IMT deployment. From April 2012, South Africa participated in terrestrial broadcasting frequency re-planning workshops arranged by the ITU and ATU. The outcome for South Africa from the workshop is the ICASA published Terrestrial Broadcasting Plan Regulations of 2013 as amended in September 2014. Of importance in the frequency plan is the following, inter alia;
  - Annexure G: DTT frequency plan;
    - The plan clearly has frequency channel assignments from channel 21 to 68 (470 – 854 MHz);
    - Including the amendments made to the plan in September 2014, this is the plan SENTECH's DTT Network is based on.
    - This is the plan SENTECH has been providing regular updates on, regarding the implementation status.
  - Annexure J: 7 Multiplex UHF DTT frequency plan;
    - This is the plan that has necessitated the DTT-to-DTT migration requirement to ensure that broadcasting services are accommodated in the UHF band 470 – 694 MHz.
    - The successful implementation of this plan will ensure that the bands 694 – 790 MHz (DD2) and 790 – 862 MHz (DD1) will be available for the deployment of IMT services.

- SENTECH is concerned with the ICASA decision-making process, as outlined in the IMT Roadmap and the Draft Radio Frequency Spectrum Assignment Plans. Unfortunately, the proposals contained in these two documents will throw the broadcasting industry in turmoil. SENTECH supports the principles of the South Africa Connect: Creating Opportunities Ensuring Inclusion South Africa's Broadband Policy. SENTECH's concern is mainly limited to the following;
  - Timelines suggested by ICASA;
  - Cost implications;
  - Funding requirements and responsibilities; and
  - The expected immediate negative impact on the terrestrial viewers and listeners nationally (television (analogue and television) and radio(FM)) should the Authority proceed as proposed in the Draft Radio Frequency Spectrum Assignment Plans;
- In line with the Broadcasting Digital Migration Policy, the ICASA Terrestrial Broadcasting Plan Regulations of 2013 and the ICASA Digital Migration Regulations of 2012, IMT services can only be practically deployed in the frequency bands 694 – 790 MHz (DD2) and 790 – 862 MHz (DD1) post DTT-to-DTT migration as per Annexure J: 7 Multiplex UHF DTT frequency plan of the ICASA Terrestrial Broadcasting Plan Regulations of 2013.

- In order to ensure that there is a speedy and resolute DTT-to-DTT migration process, the following issues must first be addressed and dealt with;
- The DTT-to-DTT migration process will require that 93% of the current DTT network be reconfigured for a successful second migration process. SENTECH estimates that this process will take anytime between 12 and 18 months to complete. Consequently, it is imperative that the restacking detailed planning principles are discussed and agreed upon early and prior to the DTT-to-DTT migration process in order to minimize implementation risks and ensure that the digital dividend is made available as quickly as possible.
- A Policy Directive is also required to provide guidance regarding the funding model for the DTT-to-DTT migration, i.e.
  - Disruption of terrestrial television services;
  - Retuning and installation of combiners;
  - Recalibration and re-commissioning of transmitters;
  - Broadcast antenna replacements;
  - Changing antenna patterns in line with the September 2014 updates, Annexure G and J, of the Terrestrial Broadcasting Frequency 2013.
  - Dual illumination;
  - Replacement of STLs affecting Commercial, Community and Public FM services;



**SENTECH SOC Limited**