Network & Service Licensing and Auction
Insights and lessons learned

ITU/NBTC Workshop
4 December 2014

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Presentation Overview

1.   Licensing framework

2.   Network licensing
- o   Reference Offers
- o   Multiplex loading scenarios
- o   Coordinated network deployment

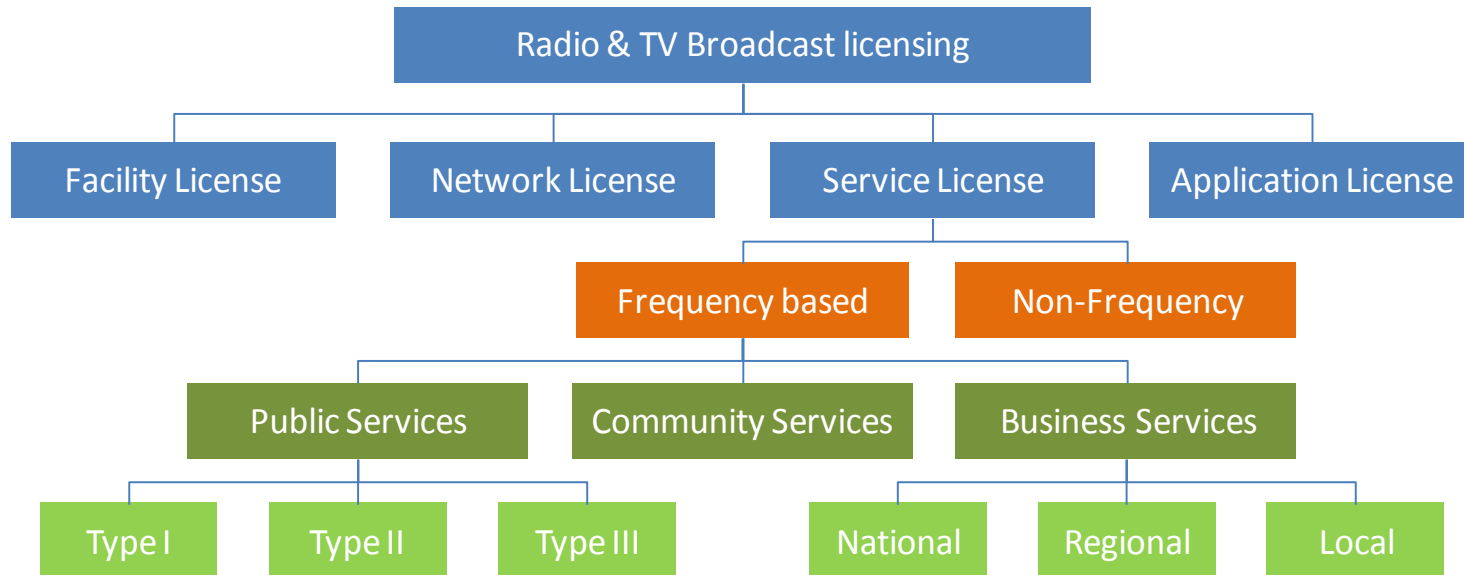**3.   Service licensing**
- o   Auction results

1. Licensing framework

1. Licensing framework

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                    ┌──────────────────────────────────┐
                    │  Radio & TV Broadcast licensing  │
                    └──────────────────────────────────┘
        ┌──────────────────┬───────────────┴───────────────┬──────────────────┐
┌───────────────┐  ┌───────────────┐  ┌───────────────┐  ┌───────────────────┐
│Facility License│  │Network License│  │Service License│  │Application License│
└───────────────┘  └───────────────┘  └───────────────┘  └───────────────────┘
                              ┌──────────────┴──────────────┐
                      ┌───────────────┐            ┌───────────────┐
                      │Frequency based│            │ Non-Frequency │
                      └───────────────┘            └───────────────┘
              ┌───────────────┬──────┴────────┬───────────────────┐
      ┌───────────────┐ ┌───────────────┐ ┌───────────────┐
      │Public Services│ │Community      │ │Business       │
      │               │ │Services       │ │Services       │
      └───────────────┘ └───────────────┘ └───────────────┘
      ┌──────┬──────┬──────┐              ┌──────────┬──────────┬──────────┐
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   │Type I││Type II││Type III│          │National││Regional││ Local  │
   └──────┘└──────┘└──────┘           └────────┘└────────┘└────────┘
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Source: NBTC

- Licensing framework assigns three basic rights
  - Content rights ➔ Service license
  - Spectrum rights ➔ Service license
  - Operating rights ➔ Network license
- Facility license assures long term availability of 'essential facilities'
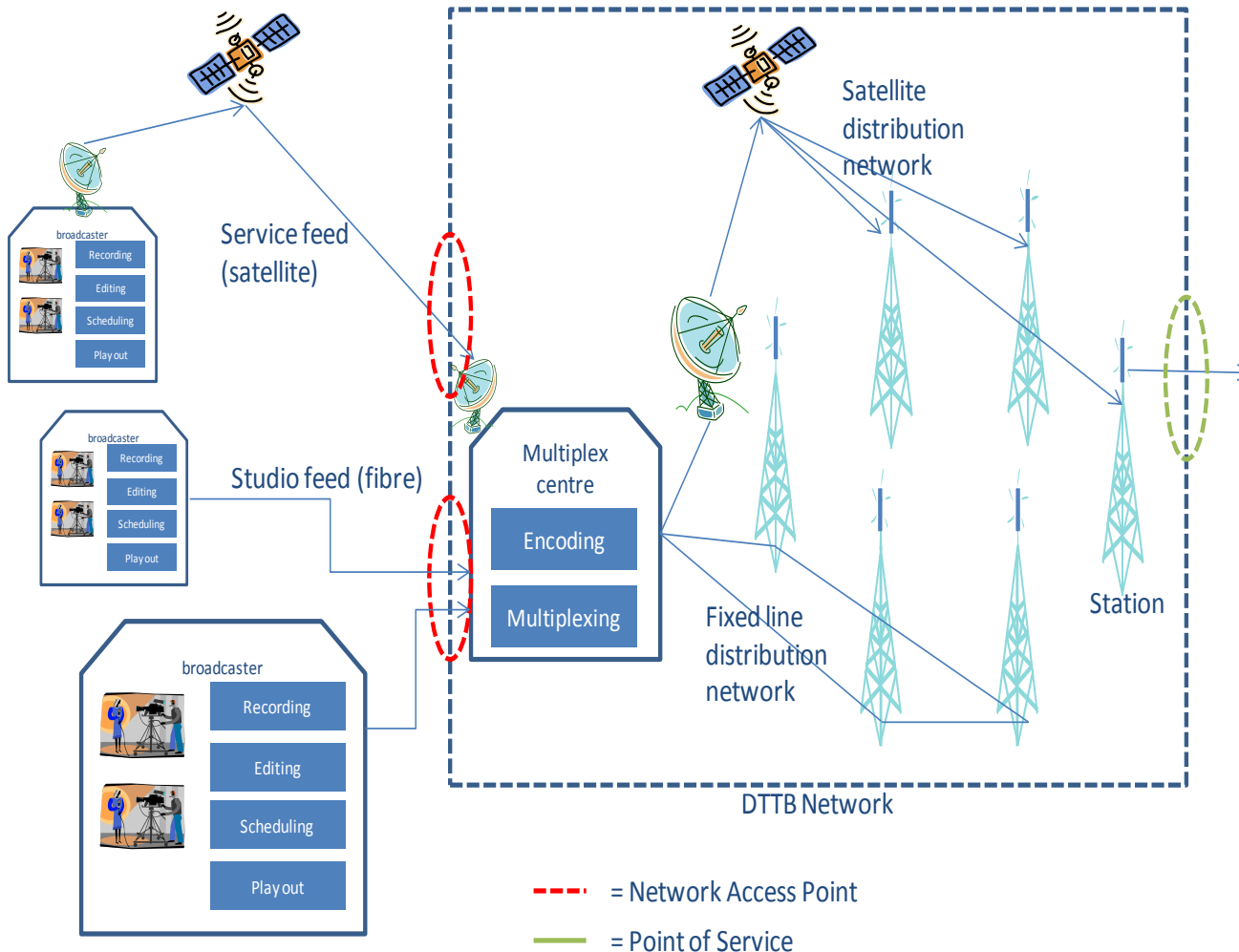
2. Network licensing

2. Network licensing: *reference offer*

- • Minimum service:
  - o Encoding & multiplexing of service feeds
  - o Distribution of T2 compliant HD/SD services
  - o Not exceeding max. powers
  - o Auxiliary services:
    - o E.g. studio feeds

Diagram labels:

- Service feed (satellite)
- Studio feed (fibre)
- broadcaster — Recording, Editing, Scheduling, Play out
- Multiplex centre — Encoding, Multiplexing
- Satellite distribution network
- Fixed line distribution network
- Station
- DTTB Network
- ---- = Network Access Point
- —— = Point of Service

Source: ITU, NBTC

2. Network licensing: *reference offer*

$$LRIC\ of\ the\ minimum\ service = \frac{(Cost\ of\ providing\ the\ minimum\ service - Cost\ without\ the\ minimum\ service)}{Total\ number\ of\ services\ in\ the\ network/multiplex}$$

- The cost of the *minimum service* comprises:
  - o Capital expenditure (CAPEX) and Operating expenditure (OPEX) directly relevant to the provision of minimum service;
  - o Reasonable (??) return on capital, calculated on the basis of weighted average cost of capital (WACC);
  - o Common cost relevant to the business operation but cannot be directly or indirectly allocated to minimum service – mark-up model (EPMU)
- For non public entities WACC was set at 11% (loan interest rates ~7 – 8% in Thailand)

2. Network licensing: multiplex loading

Source: ITU

- (a form of) Load balancing needed due to multiple network operators
- Many load scenarios possible

2. Network licensing: *multiplex loading*

Pros	Cons
1. Balanced client portfolio between commercial network providers	1. Less (10) community services
2. One network with local insertion	
3. Capacity available for (future) additional services or improved picture quality[1]	
4. 10 Community services (10/51 = 20%) or (10/47 = 21%)	
5. Sixth PBS HD service	
6. All Network operators carry their own national service	
7. Simulcast of all incumbent services without limiting the number of SD PBS licenses that can be directly assigned	

- Market or regulator led load balancing?
- Need for DSO communications

2. Network licensing: *site location differences*
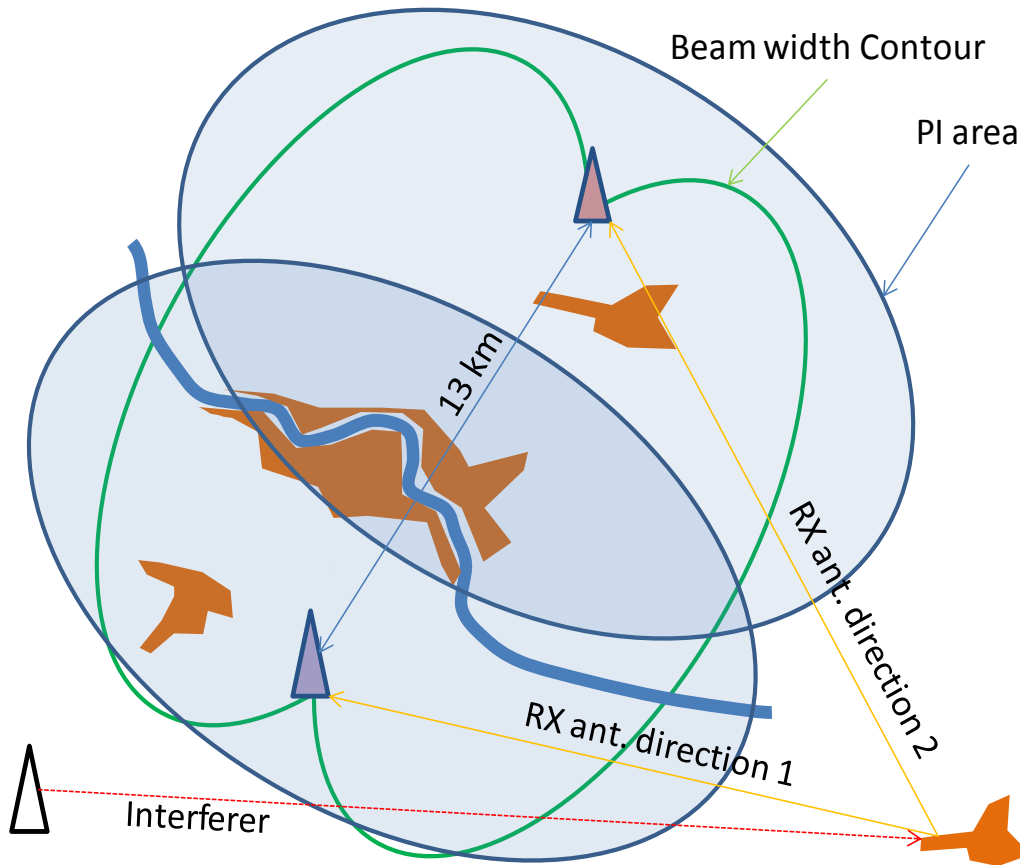

Beam width contour

19 km

5 km

PI coverage contour
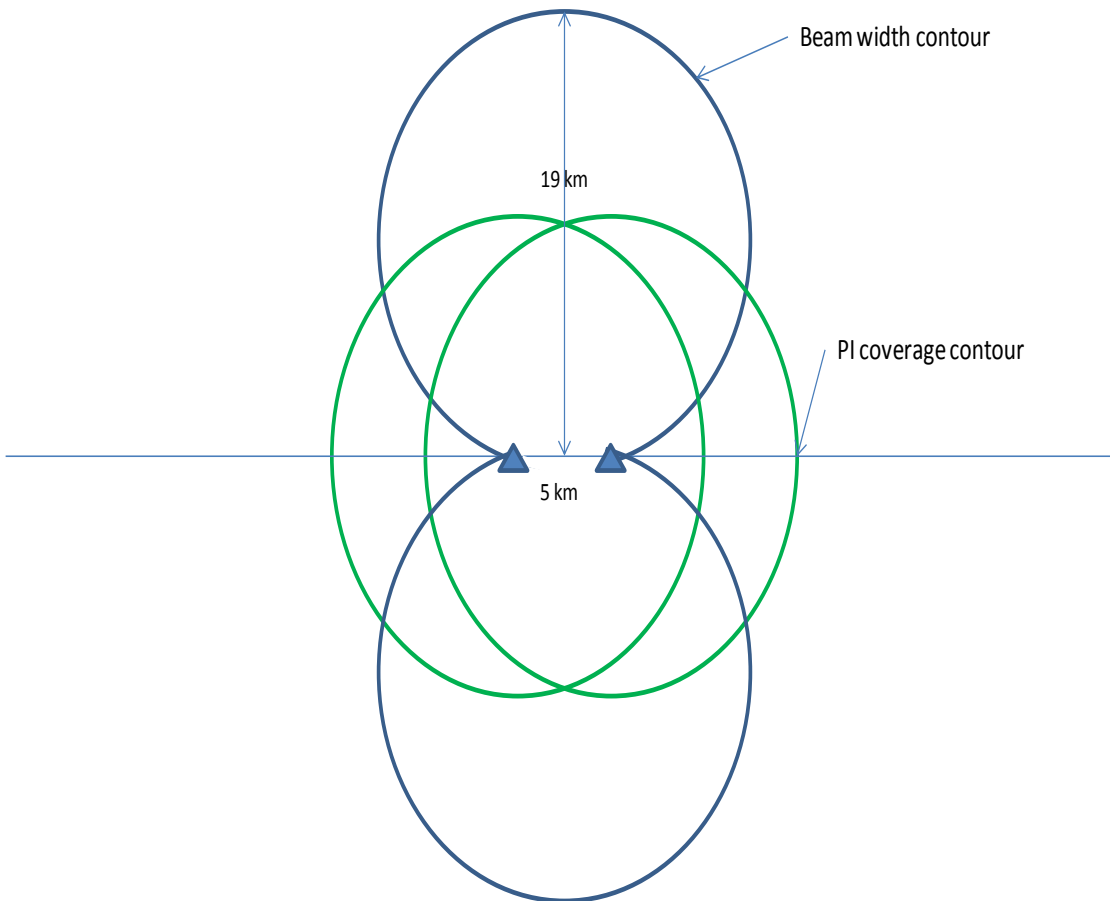
Source: ITU, Nectec

- From a frequency planning point of view, coordination needed for:
  - o RX antenna beam width limitations
  - o Distant site interferer
- Assumptions needed on:
  - o RX antennas sold
  - o Average PI coverage range

2. Network licensing: *site location differences*

Beam width Contour

PI area

13 km

RX ant. direction 2

RX ant. direction 1

Interferer

- Distant site interferer can not be predicted
- Any pragmatic limit for site location differences will include risks
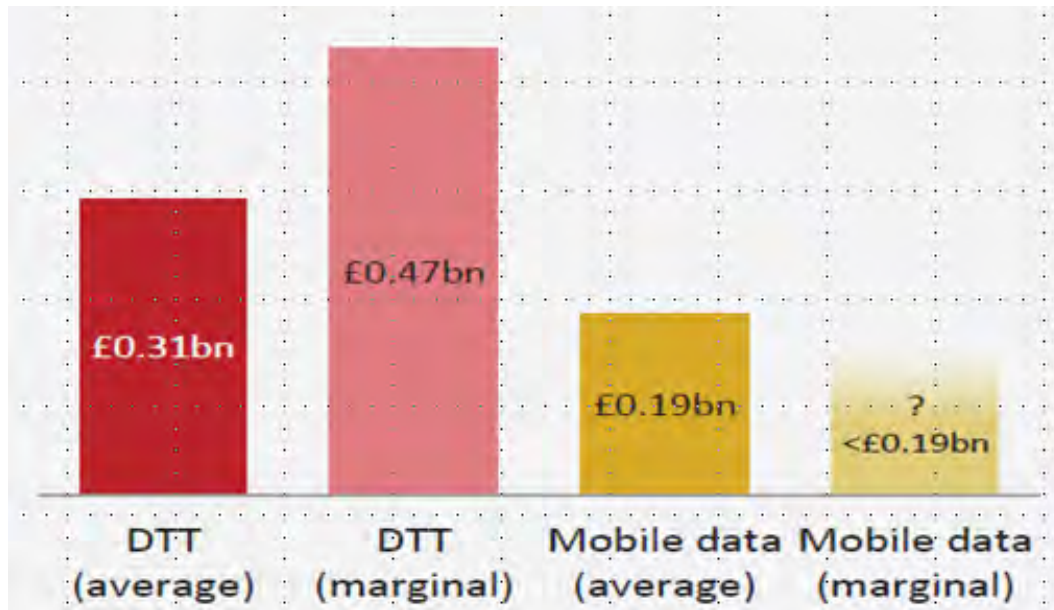- Best is a single site per coverage area

Source: ITU

3. Service licensing

3. Service licensing: auction results

Economic Surplus per MHz of Spectrum

Bar chart:
- DTT (average): £0.31bn
- DTT (marginal): £0.47bn
- Mobile data (average): £0.19bn
- Mobile data (marginal): ? <£0.19bn

Source: Communications Chambers

- TV services are universal services and cannot be valued in monetary terms
- Spectrum can be valued and should be assigned to highest valued service
- DTT marginal value higher than Mobile?

3. Service licensing: auction results

Auction proceeds per MHz (in m$) Thailand

Bar chart showing:
- DTT (half of 32x8 MHz) - 2013: 13
- 3G (2x45 Mhz) - 2012: 14
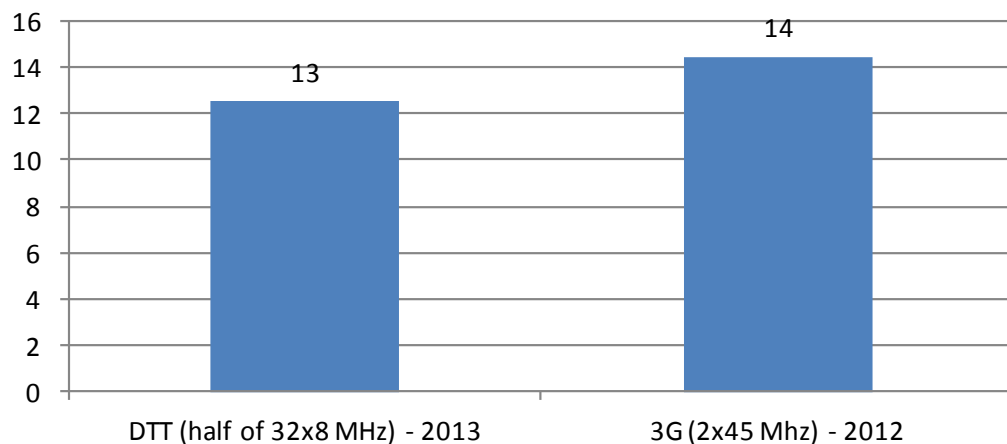
Source: ITU, NBTC

- Service licenses are assigned to broadcast or media related companies
- Total Thai ad market value can carry auction bids
- (re) distribution of revenues over market parties is key (i.e. how long is the 'long tail')