



DAB Network Architecture

Investments and cost drivers

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Presentation Overview

1. Introduction

- Scope
- LRIC
- Cost drivers

2. CAPEX

3. OPEX



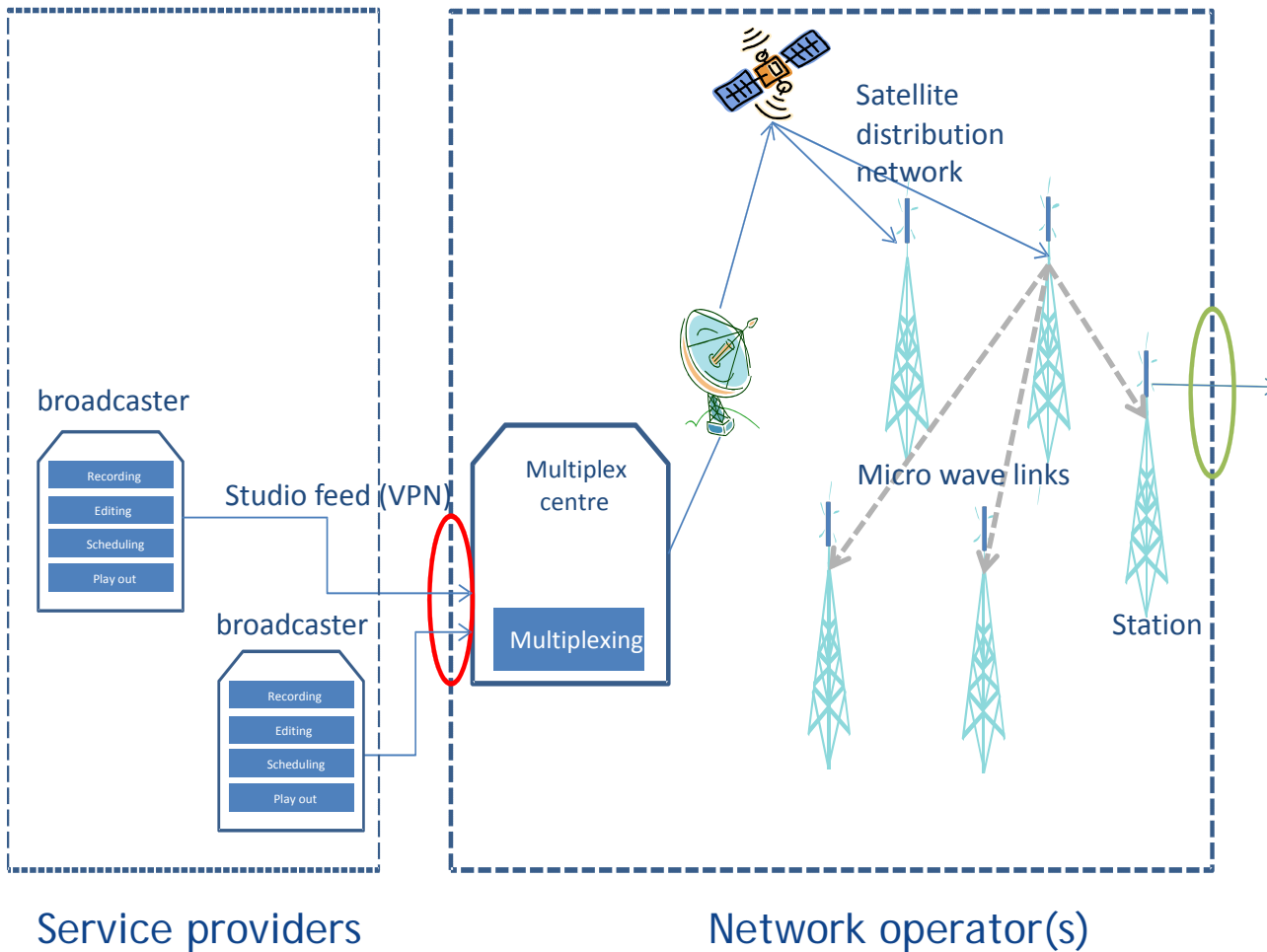
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1. Introduction



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1. Introduction – scope



- In scope:
 - Encoding in studio
 - Studio feeds
 - Encoding & multiplexing of studio feeds
 - Distribution of DAB+ compliant services
 - Transmission

1. Introduction – Long Run Incremental Costs

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

- The cost of the (minimum) service comprises:
 - Capital expenditure (CAPEX) and Operating expenditure (OPEX) directly relevant to the provision of (minimum) service;
 - Reasonable (??) return on capital, calculated on the basis of weighted average cost of capital (WACC);
 - Common cost relevant to the business operation but cannot be directly or indirectly allocated to minimum service – mark-up model (EPMU)
- WACC can vary from 10% - 25% depending on the risk profile
 - Country and industry specific
 - Market structure and offer
 - Size of operations/company



1. Introduction – cost drivers

- For any terrestrial broadcast network the technical cost drivers are:
 1. Network topology = Number of sites and power (ERP) per site
 2. Number of multiplexes
 3. Level of redundancy
- In terms of service offering these drivers are:
 1. Population and geographical coverage
 2. Number of services, type and quality of service
 3. Service availability/reliability
- Service requirements should be matched with:
 - Business case (at industry level and per market player)
 - Finance capacity (risk profile)
 - Service deployment phases/timing of investments



2. CAPEX



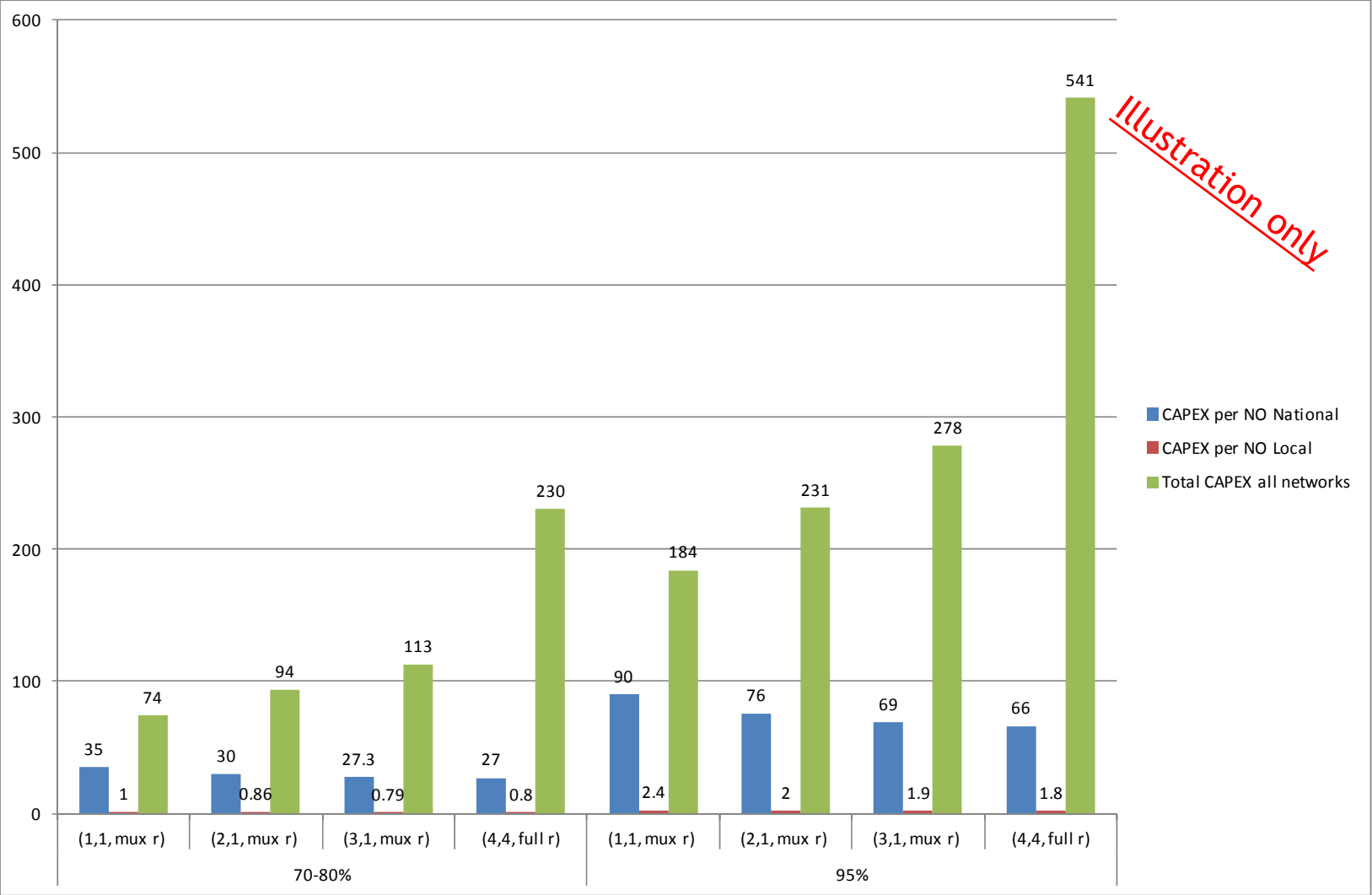
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2. CAPEX – scenarios

DAB CAPEX Dashboard			
Forecast	Theoretical	Pop coverage	95%
Total # sites	502		61,750,000
Number of National MUX (layer)	4		
Number of Local MUX (layer)	4		
Number of Local areas	39		
Number of audio services in national ensemble	9		
Number of audio services in local ensemble	18		
% greenfield sites	40%		
	National	Local	
Redundant encoder	yes	yes	
Redundant multiplexer	yes	yes	
Redundant distribution	no		
Redundant transmitter	yes		

Source: ITU

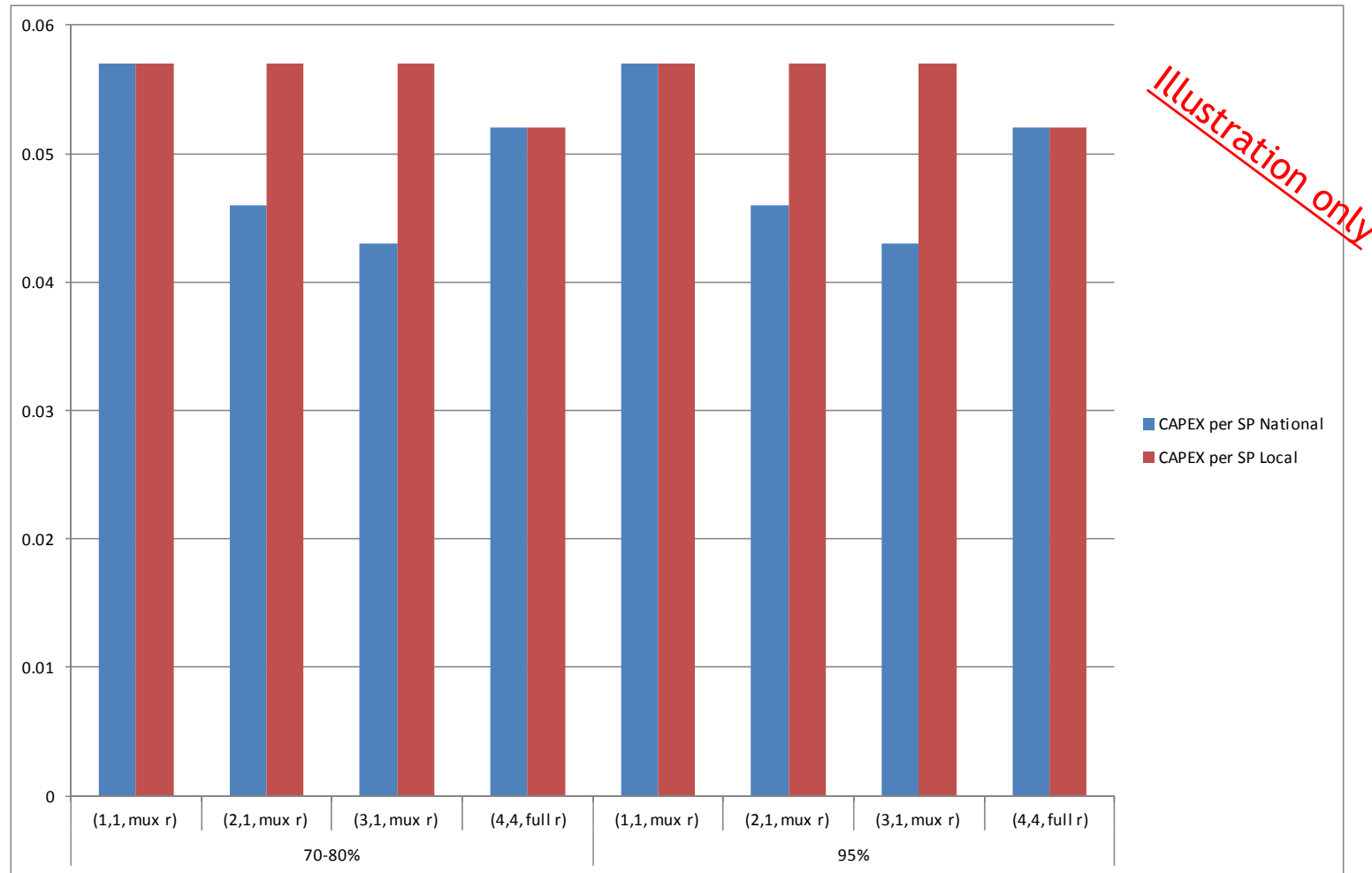
2. CAPEX – network operator (in m\$)



Source: ITU



2. CAPEX – service provider (in m\$)



Source: ITU



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3. OPEX



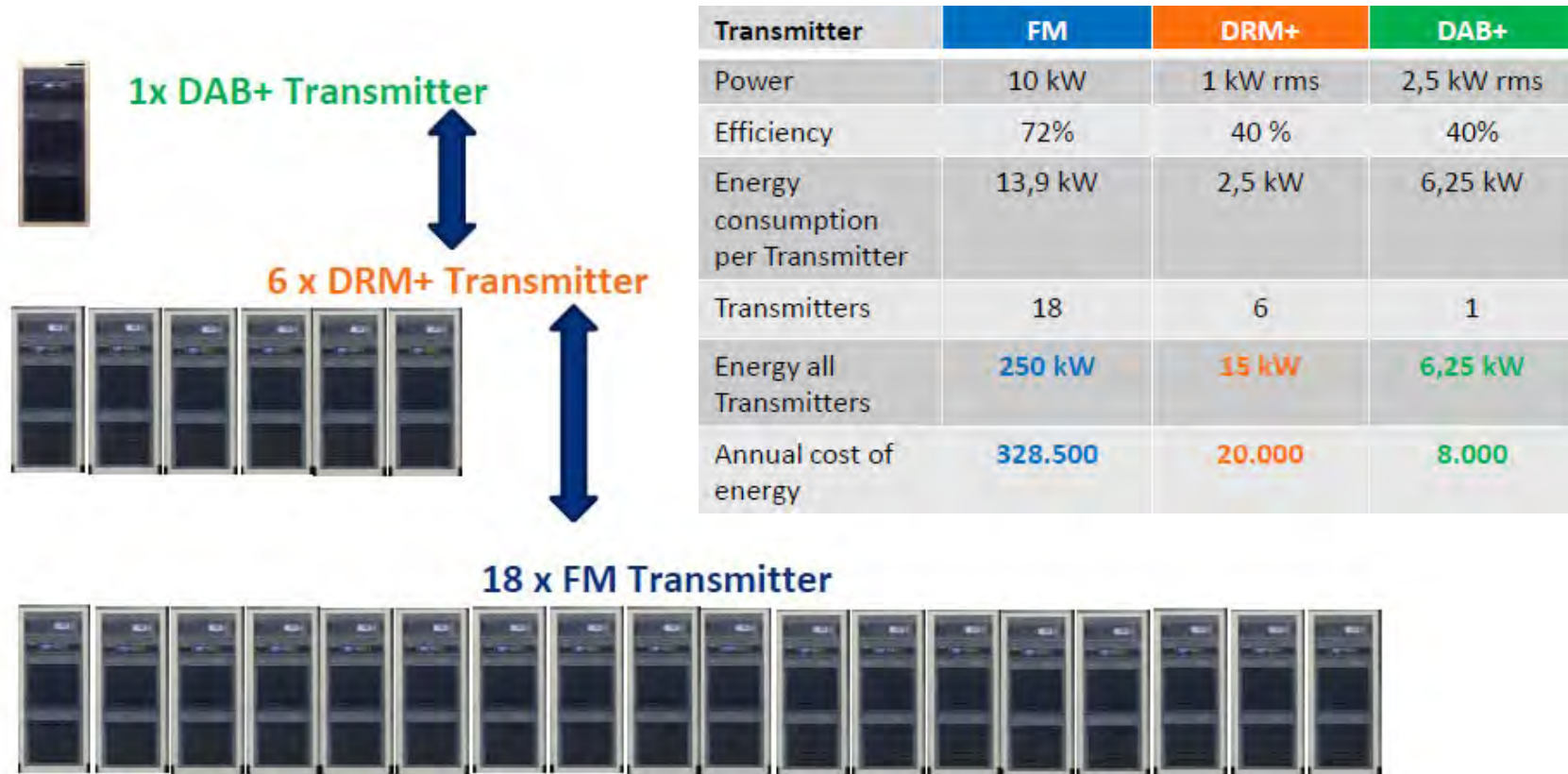
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3. OPEX – categories

- OPEX can comprise the following costs categories (design dependent):
 - Distribution (satellite transponder rental)
 - Energy (feeding TX and cooling)
 - Floor and tower space (of Facility license holder)
 - Service & maintenance costs (including spares, staff & contracts)
 - License fees (NBTC)
- OPEX is periodical cash-out and has a different risk profile for investors

3. OPEX – example

- 18 radio services/same coverage – energy savings



Source: Harris Broadcast