

Costing and Pricing Infrastructure Access

Rabat, MOROCCO

9–12 July, 2018

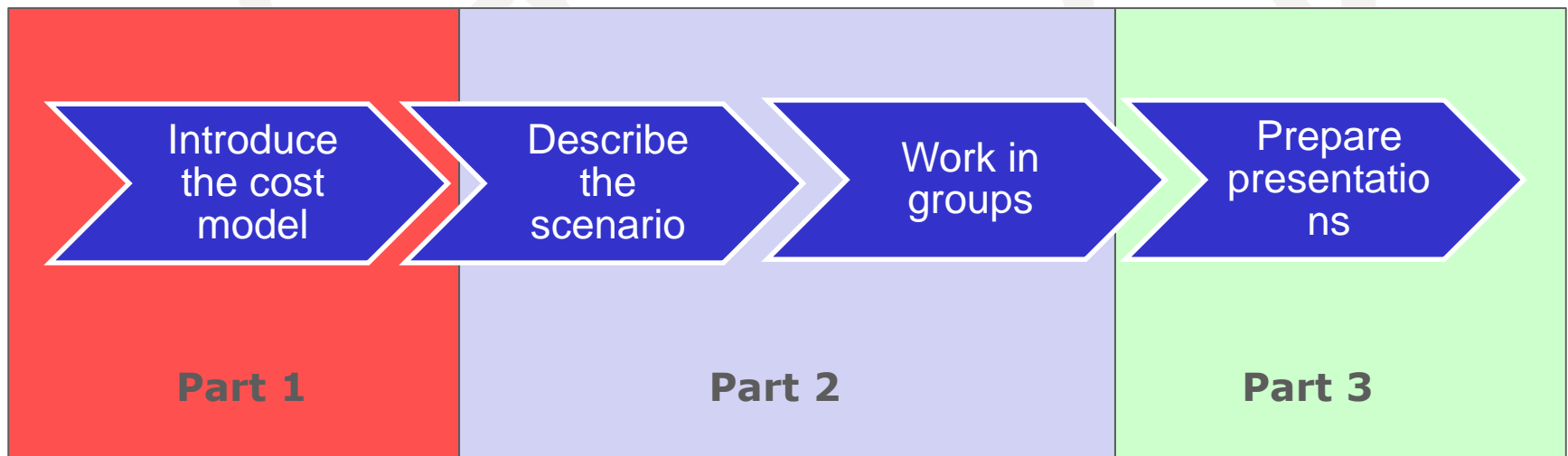
David Rogerson, ITU Expert

Session 10:

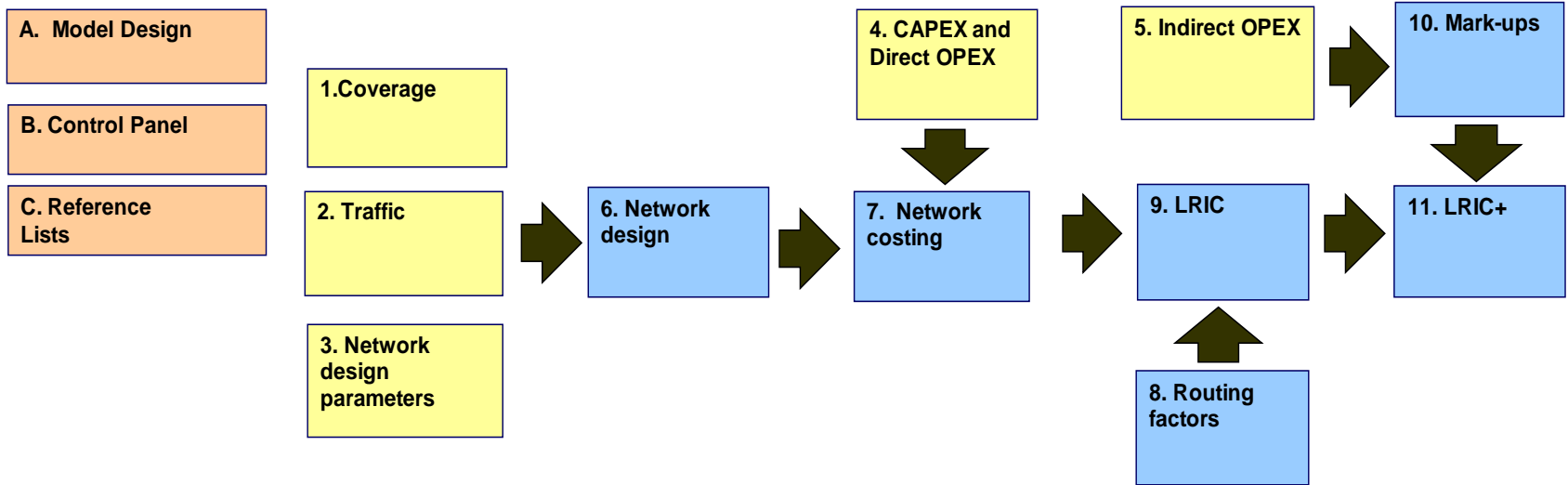
Practical exercise 4: using a mobile network cost model to establish quad-play prices

Agenda

Aims and objectives for these sessions



The ITU Mobile Telco LRIC training model



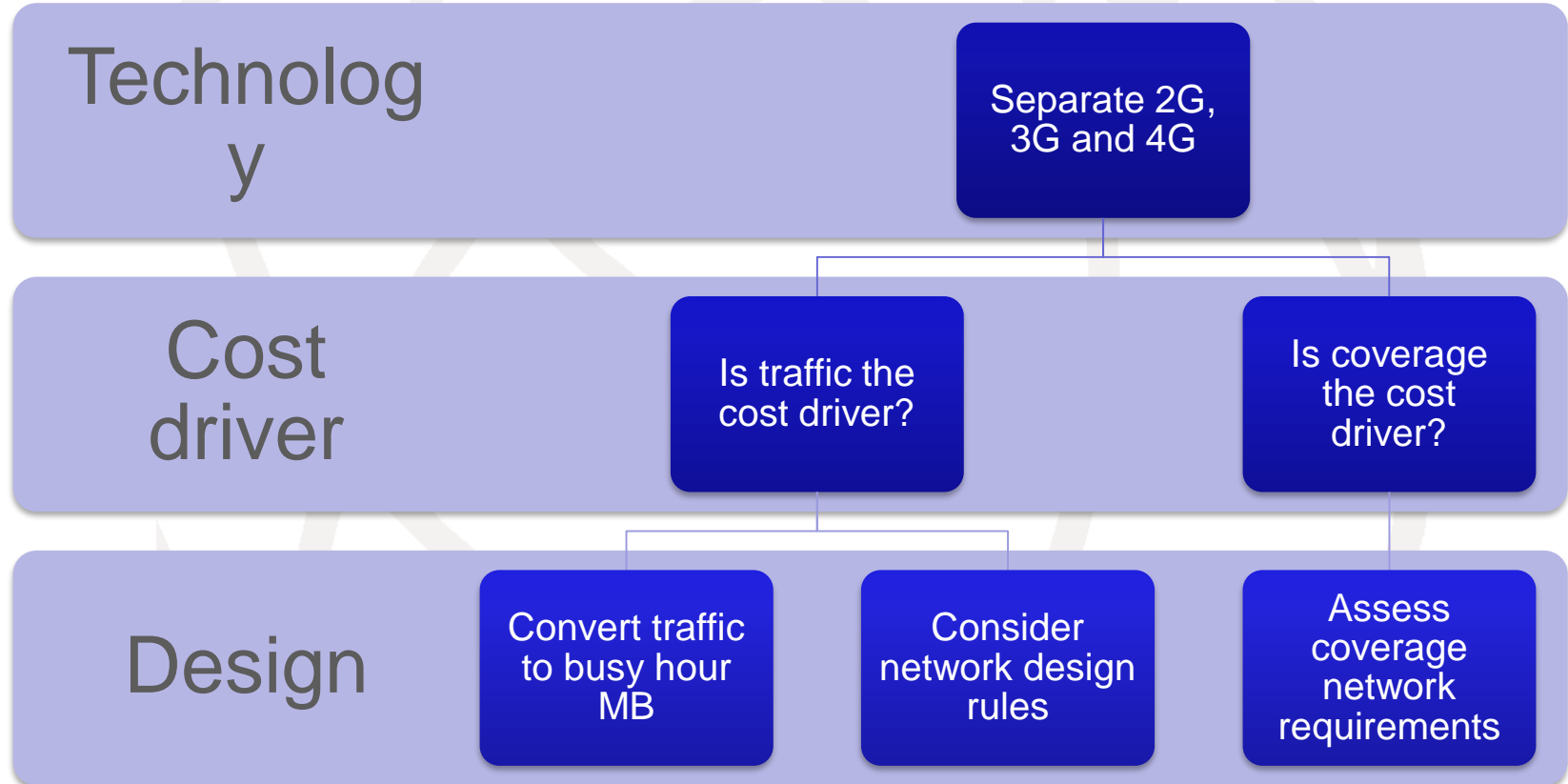
Key

	Summary Sheets
	Input Sheets
	Calculation sheets

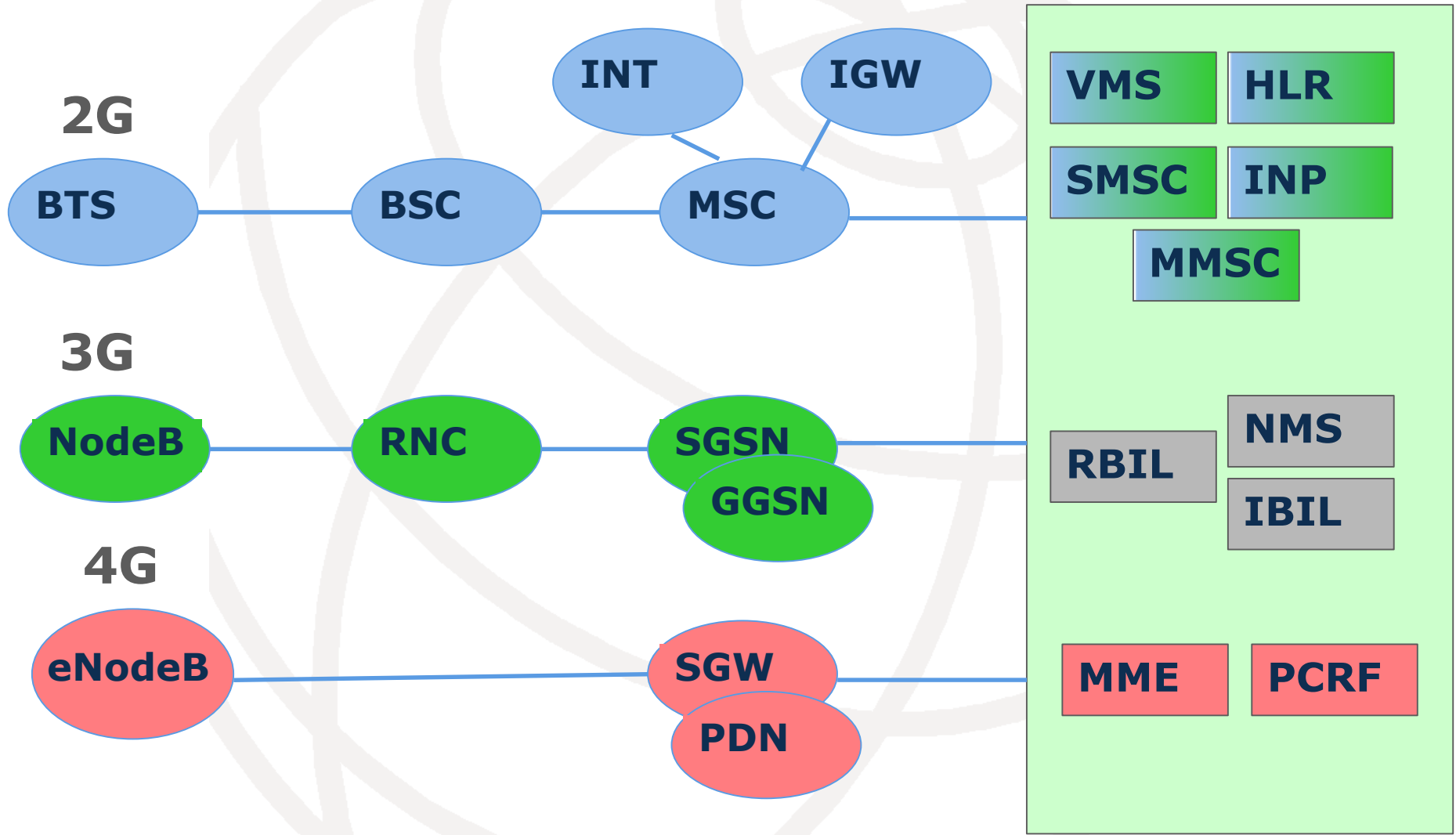
Cells

	Direct input into the model
	Inputs copied from other worksheets
	Calculation cells
	Output cells copied to other worksheets

Logical summary of the mobile network design



Mobile network architecture



Extent of the mobile network cost model

- Covers the mobile access network plus the links between BTS (or Node B) and BSC (or RNC)
 - Node B and eNode B generally co-located with BTS
 - BSC/RNC assumed to be co-located with MSC
- Excludes the links between MSCs
- The links between MSCs are expected to be IP-based and the costs of these may be drawn from the core NGN cost model.
- Mobile network operators typically deploy 10 MSCs (two per region in Normalia) and these require 20 long-distance circuits to be provisioned to provide interconnection and redundancy.

Remembering Normalia

- This practical exercise concerns the fictitious country of Normalia.
- Normalia is a typical (“normal”) country with regulatory challenges similar to those in your country.
- The details required for each practical exercise are presented in the slides / handouts.



Telecoms in Normalia

Regulator - TRAN

(Telecom Regulatory Authority of Normalia)

Fixed Telecoms

- 4m subscribers
- Telecom (75%)
- Newtel (25%)

Mobile Telecoms

- 10m subscribers
- Telecom (60%)
- Normcell (40%)

Content and service providers

(various including **Cloud** an ambitious entrant providing digital TV services)

The story so far ...

- Cloud approached Telecom but was unable to reach a commercial agreement.
- Negotiations with Newtel/Normcell resulted in a tentative deal in which these companies invested in Cloud, and paid a fee of \$6 per month per Cloud subscriber on their network.
- TRAN welcomed this deal as being good for consumers but has asked the network operators to prove that the prices it will be charge are sufficient to cover their costs.
- The ITU's mobile network training cost model is available for this purpose, and responses are sought from both Normcell and Telecom.

Relevant information in the public domain – Normcell (revised tariffs)

- Normcell has 1m contract customers; tariffs as follows:

	Basic – voice, text and 50MB of data	Enhanced – up to 250MB of data	Maxi – up to 1 GB of data	Unlimited – data
Monthly tariff (USD)	10	20	35	60
Cost per additional 250MB data	15	10	10	none
Number of subscribers	600,000	270,000	90,000	40,000
Annual growth rate	-5%	10%	10%	10%

Evidence from Parland

- In the neighbouring country of Parland, the evidence suggests that:
 - Mobile broadband customers taking the digital TV service require at least 500MB per month of data.
 - They are willing to pay \$10 per month (on top of network charges) for Cloud service
 - 10% of voice-only customers migrated to data packages so as to use the sports TV service
 - Generally these customers go for the unlimited data option just to be sure that they have sufficient capacity and to cap their monthly spend.
 - 15% of customers on data packages under 500MB migrated upwards in order use the sports TV service.

Evidence from TRAN customer survey

- TRAN has investigated the actual data usage of customers on mobile broadband plans. It has found that:

Inclusive data MB	% using data within threshold	Their average monthly usage (MB)	Average usage per 250MB above the threshold	Typical number of additional 250MB units used
50	15%*	30	100	1
250	80%	150	150	2
1000	80%	500	200	3
Unlimited	100%	2000	n/a	n/a

- * 80% do not use data at all.
- TRAN notes also that “unlimited” plans typically have a “fair-usage” limit of 10GB.

TRAN's statement to the parties

- TRAN acknowledges the support of Telecom in providing data in support of the mobile network cost model
- TRAN invites Normcell to review this data and in particular to comment on the inputs within the Control Panel regarding its relative coverage, cell size and traffic levels
- More generally TRAN requests the parties to review the assumptions in the Control Panel, and suggest changes that may be appropriate.
- Changes elsewhere in the model may also be suggested, but TRAN is not expecting to change many of the detailed assumptions.
- However, the traffic forecasts for data services (in the Traffic worksheet) should be re-assessed in the light of Cloud.

TRAN's request

- Normcell to:
 - Demonstrate that its proposed tariffs cover all the relevant costs
- Telecom to:
 - Demonstrate (if it can and wishes to do so) that Normcell's proposed tariffs are below cost
- Retail tariffs include mobile broadband charges plus net revenue from Cloud subscriptions
- Costs include mobile network costs plus core network costs.
- Short presentations should be made to TRAN in support of your case.

What happens next?

- The parties have appointed working groups who have been tasked with preparing their cases based on instructions from their Boards.
- A **confidential** data sheet will be provided to each team containing further information to assist in the establishment of these cases.
- Each party should work with the ITU mobile network training cost model and also draw upon the ITU NGN core network training cost model.
- They should also prepare a summary presentation to TRAN explaining the assumptions made and seeking to persuade TRAN of the merits of their case.

Format of the presentation

- Along with assumptions/justifications TRAN wishes the results presented as follows:

USD	2016	2018
Cost per MB in mobile network		
Cost per MB in core IP network		
TOTAL COST per MB		
Mobile broadband revenue per MB		
Net revenue per Cloud subscriber per MB		
TOTAL REVENUE per MB		

Possible outcome

Normcell's case

- 15% annual growth in mobile broadband data usage per subscriber, giving 9,486m MB in 2018
- Cost of sale 40% of revenue
- Cost model assumptions:

Category	Key assumptions	Unit	Normcell
Financial	Pre-tax WACC	%	14.0%
	Economic asset life - h/w related	years	8
	Economic asset life - s/w related	years	5
	Economic asset life - transmission	years	8
	Annual asset price trend	% pa	-3%
	Annual installation/opex cost trend	% pa	0%
Technical	Voice/text - Busy days per annum	#	250
	Voice/text - Busy day traffic in the busy hour	%	9%
	Average voice channel capacity	kbps	36
	Data/video - Busy days per annum	#	250
	Data/video - Busy day traffic in the busy hour	%	9%
	Blocking rate	%	2%
	Normcell coverage, 2016 (% of Telecom actual)	%	80%
	Normcell coverage, 2020 (% of Telecom forecast)	%	80%
	Proportion of fibre links BTS-BSC (2016)	%	40%
	Proportion of fibre links BTS-BSC (2020)	%	100%
Market	Market share - subscribers (2016)	%	40%
	Market share - subscribers (2020)	%	50%
	Traffic per sub (% of Telecom actual, 2016)	%	80%
	Traffic per sub (% of Telecom forecast, 2020)	%	80%

Normcell’s presentation

- Cost outcomes based on LRIC (without mark-up) as prices above that level are not predatory

	2016	2018
Cost per MB in mobile network	0.032	0.031
Cost per MB in core IP network	0.0051	0.0051
TOTAL COST per MB	0.037	0.036
Mobile broadband revenue per MB	0.046	0.032
Net revenue per Cloud subscriber per MB	0.0000	0.0014
TOTAL REVENUE per MB	0.046	0.033
Are revenues above cost?	YES	NO

Some further edit to assumptions will be required to ensure revenues exceed costs in 2018

Possible further edits by Normcell - 1

- More Basic subscribers use some data – e.g. 70% rather than 80% do not use data at all 2016-2018.

Cost per MB in mobile network

Cost per MB in core IP network

TOTAL COST per MB

Mobile broadband revenue per MB

Net revenue per Cloud subscriber per MB

TOTAL REVENUE per MB

Are revenues above cost?

	2016	2018
Cost per MB in mobile network	0.032	0.031
Cost per MB in core IP network	0.0051	0.0051
TOTAL COST per MB	0.037	0.036
Mobile broadband revenue per MB	0.053	0.037
Net revenue per Cloud subscriber per MB	0.0000	0.0014
TOTAL REVENUE per MB	0.053	0.038

YES

YES

Possible further edits by Normcell - 2

- Data traffic more evenly spread through the day so lower % in busy hour – e.g. 7% rather than 9%.

Cost per MB in mobile network

Cost per MB in core IP network

TOTAL COST per MB

Mobile broadband revenue per MB

Net revenue per Cloud subscriber per MB

TOTAL REVENUE per MB

Are revenues above cost?

	2016	2018
Cost per MB in mobile network	0.026	0.025
Cost per MB in core IP network	0.0051	0.0051
TOTAL COST per MB	0.031	0.030
Mobile broadband revenue per MB	0.046	0.032
Net revenue per Cloud subscriber per MB	0.0000	0.0014
TOTAL REVENUE per MB	0.046	0.033

YES

YES

Telecom’s case

- 25% annual growth in mobile broadband data usage per subscriber, giving 11,146m MB in 2018
- Cost of sale falling from 40% of revenue in 2016 to 25% in 2018
- Cost model assumptions:

Category	Key assumptions	Unit	Telecom
Financial	Pre-tax WACC	%	12.0%
	Economic asset life - h/w related	years	8
	Economic asset life - s/w related	years	5
	Economic asset life - transmission	years	8
	Annual asset price trend	% pa	-3%
	Annual installation/opex cost trend	% pa	0%
Technical	Voice/text - Busy days per annum	#	250
	Voice/text - Busy day traffic in the busy hour	%	9%
	Average voice channel capacity	kbps	36
	Data/video - Busy days per annum	#	250
	Data/video - Busy day traffic in the busy hour	%	9%
	Blocking rate	%	2%
	Normcell coverage, 2016 (% of Telecom actual)	%	100%
	Normcell coverage, 2020 (% of Telecom forecast)	%	100%
	Proportion of fibre links BTS-BSC (2016)	%	40%
	Proportion of fibre links BTS-BSC (2020)	%	100%
Market	Market share - subscribers (2016)	%	60%
	Market share - subscribers (2020)	%	50%
	Traffic per sub (% of Telecom actual, 2016)	%	100%
	Traffic per sub (% of Telecom forecast, 2020)	%	100%

Telecom’s presentation

- Cost outcomes based on LRIC with mark-up as common costs should be recovered from all services except call termination

	2016	2018
Cost per MB in mobile network	0.035	0.030
Cost per MB in core IP network	0.0111	0.0055
TOTAL COST per MB	0.0458	0.036
Mobile broadband revenue per MB	0.046	0.034
Net revenue per Cloud subscriber per MB	0.0000	0.0011
TOTAL REVENUE per MB	0.0460	0.035
Are revenues above cost?	YES	NO

- Mobile termination rates based on LRIC+ fall to 1.05 US cents per minute in 2018.

TRAN's perspective

- The deal should help to increase competition:
 - Both Normcell and Newtel will be better able to compete with Telecom as a result
- The deal is not anti-competitive:
 - A 2-year exclusive deal is not overly restrictive
- The deal will help grow the mobile data market, reduce costs and ultimately help consumers through lower prices.
- The evidence is not conclusive as to whether the proposed prices will be above or below costs in 2018 – that will depend on market growth.
- TRAN accepts the deal for now, but will review in 2 years time.