Costing and Pricing Infrastructure Access

Rabat, MOROCCO

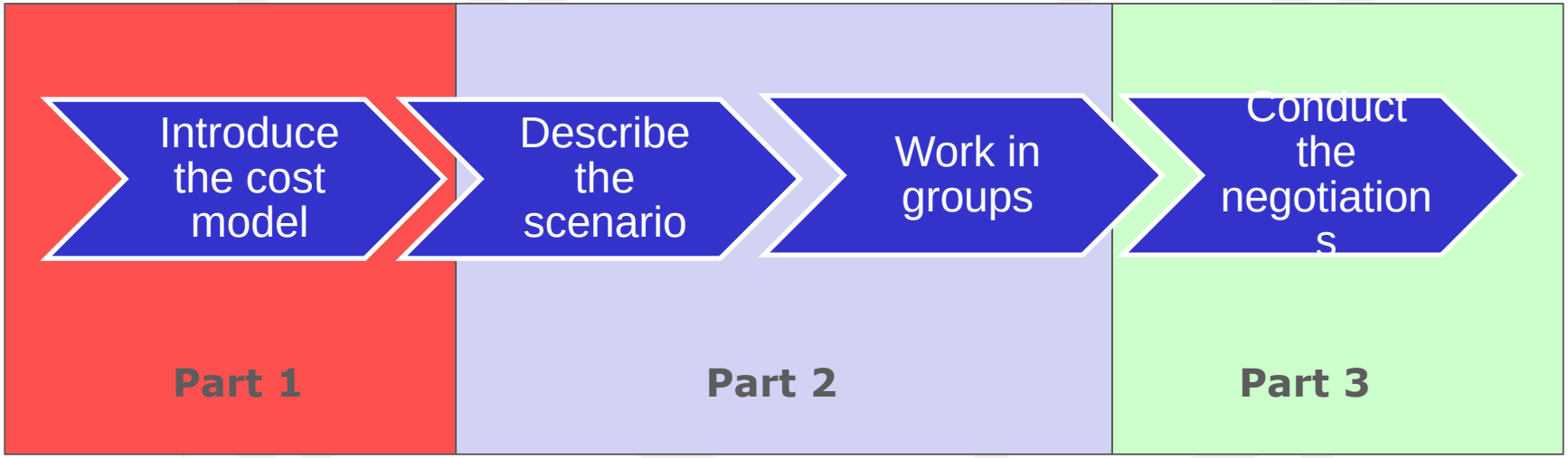
9–12 July, 2018

David Rogerson, ITU Expert

Session 8:
Practical exercise 3: costing the fixed core network using NGN cost model

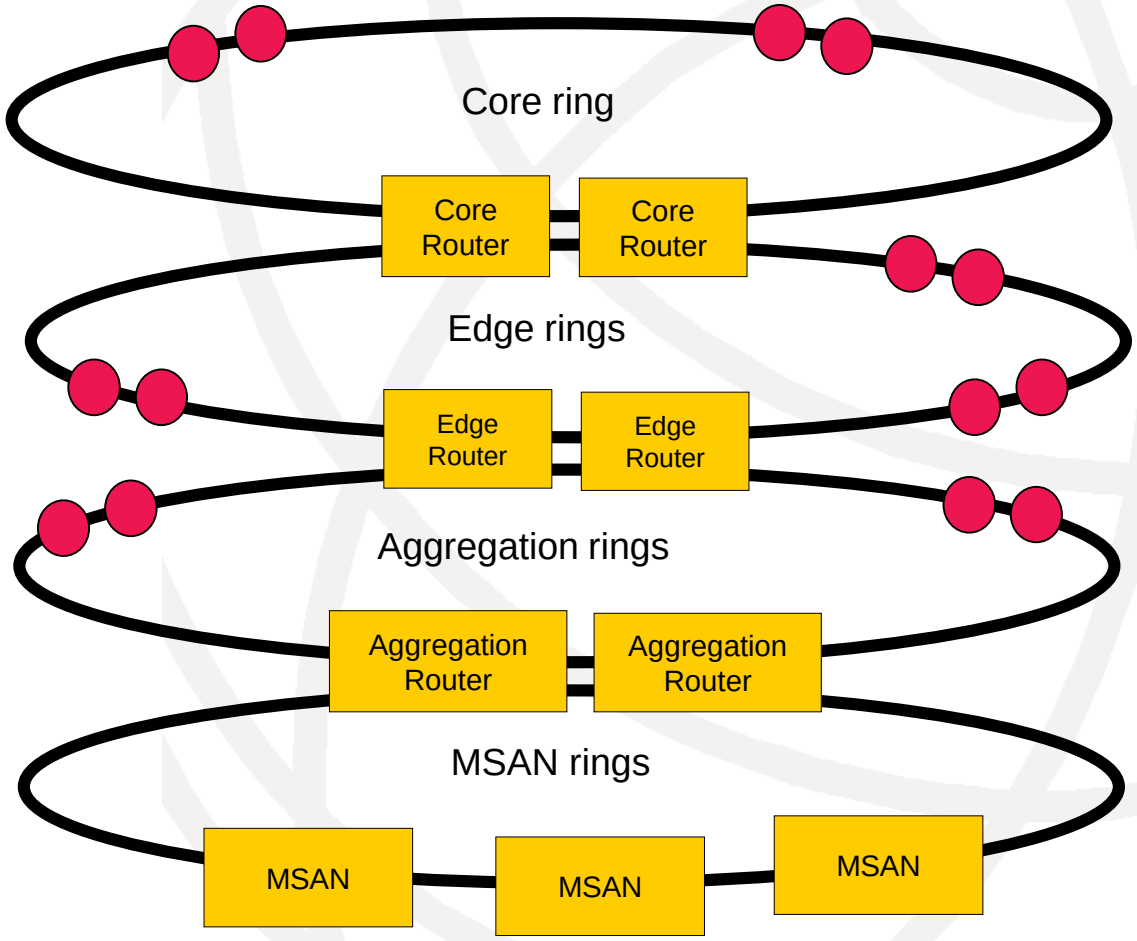
Agenda

Aims and objectives for these sessions



The core network NGN cost model

A typical NGN Architecture

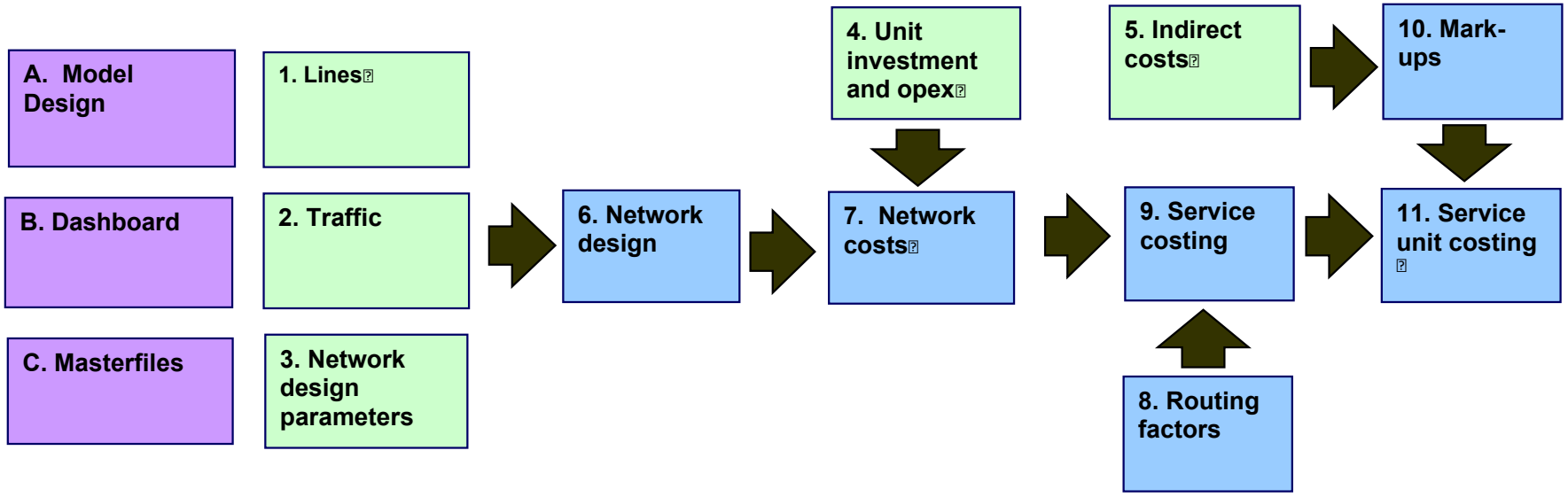


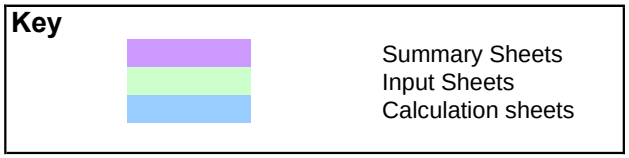
Nodes deployed in redundant pairs

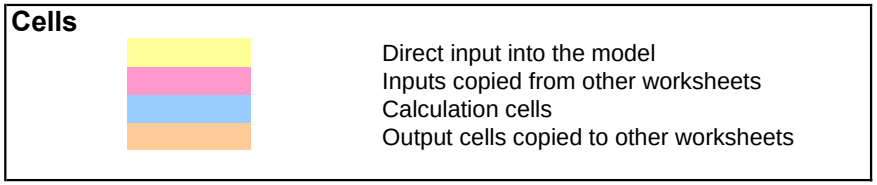
Three-tier ring topology

19 MSANs

ITU IP Core Network LRIC Training Model

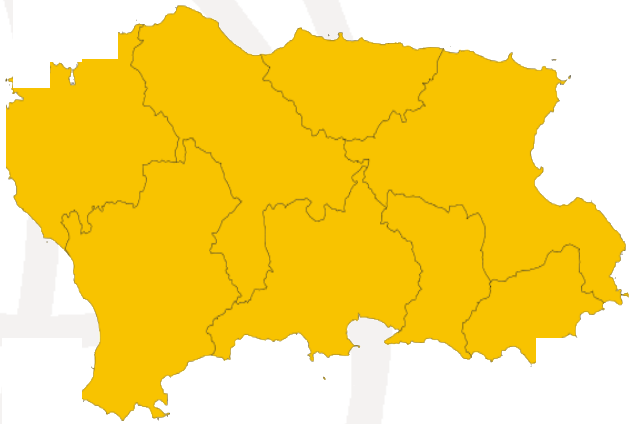






Back to Normalia

- 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%)

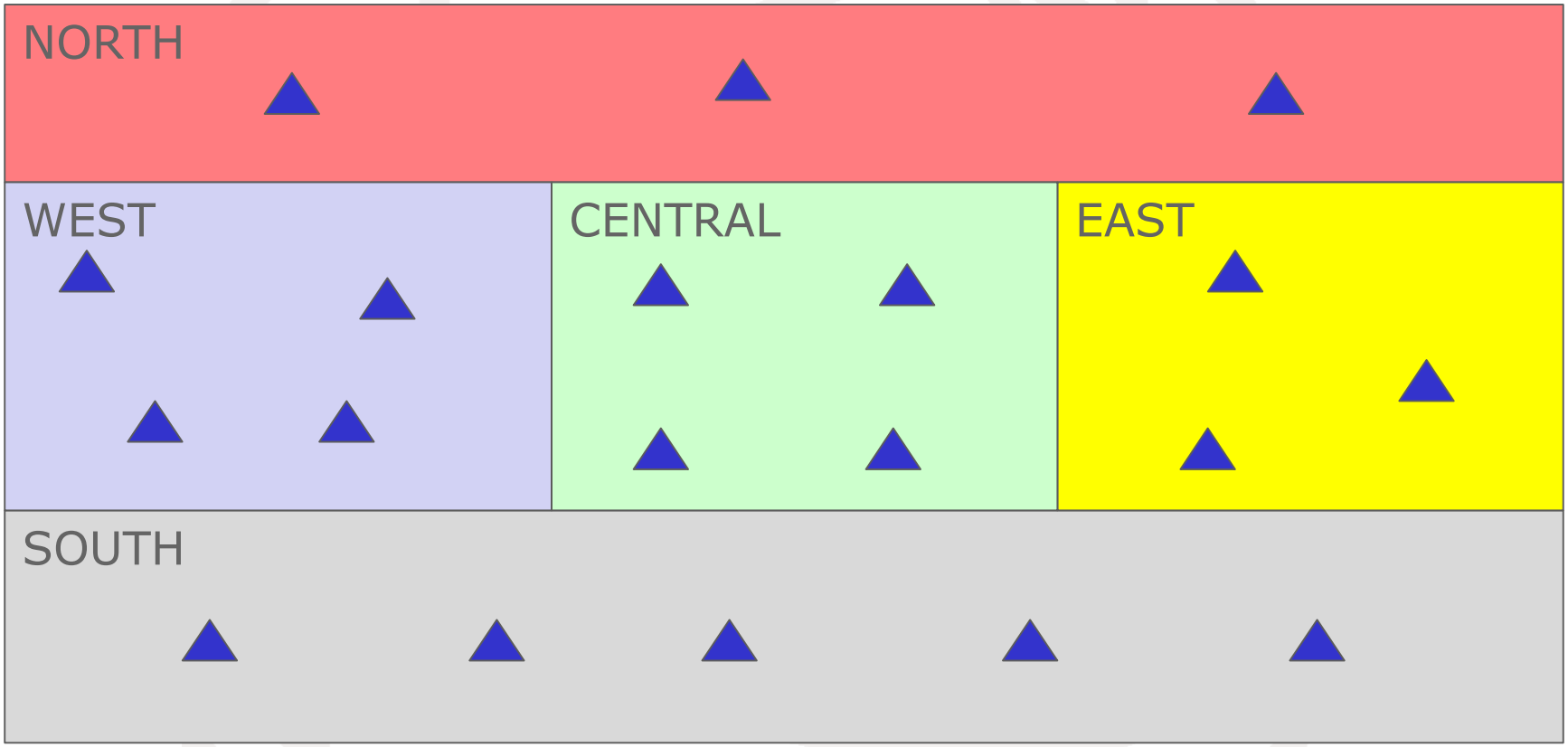
Mobile Telecoms

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

Content and service providers

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

Topology of the Telecom's new fibre network



Quad-play pricing: a regulatory hearing

The story so far …

- Cloud is a new digital TV company in Normalia that is seeking a telecoms network partner.
- It entered into negotiations with Telecom, but failed to reach a deal that was acceptable to both parties.
- Subsequently it approached Newtel and Normcell and collectively they have reached an exclusive agreement for carriage of Cloud TV.
- The deal involves payments to Cloud of:
  - $90m (Normcell) and $30m (Newtel) upfront investment
  - $6 per subscriber per month
- The three companies have submitted their proposal to TRAN for regulatory approval.

TRAN consults and Telecom objects

- TRAN has sought public and industry opinion on the proposed deal in line with statutory requirements
- Telecom has launched an objection on the basis of anti-competitive behaviour and predatory pricing.
  - It has advised TRAN of its own negotiations with Cloud and its inability to reach a deal that covered its costs
  - As Telecom has significantly greater economic of scale than its rivals, it concludes that the deal must be below the network operators' costs
  - The below-cost prices are predatory because this is an *exclusive* deal clearly designed to lock Telecom out.
- TRAN has therefore challenged Normcell and Newtel to demonstrate that the deal is cost justified.

TRAN's requirements

- Use the ITU fixed core network training cost model to demonstrate that:
  a. The proposed price of $6 per subscriber per month will cover the incremental costs of the Cloud service
  b. No increase in internet access tariffs will be required either to subsidise Cloud or to cover additional network investment that may be required.
- TRAN has available market data and commissioned two independent pieces of market research to help with this task.
- It has asked Newtel to use this data to demonstrate the cost basis for its proposed tariff; and Telecom to use the same data to back-up its claim that the proposed tariff is below cost.

Relevant market data - Newtel

Service	Newtel monthly tariff (USD)	Newtel subscribers 2016	Telecom subscribers 2016
Vitesse 2	10	200000	500000
Vitesse 10	20	120000	300000
Vitesse 25	35	60000	150000
Vitesse 100	50	20000	50000
TOTAL		**400000**	**1000000**

Market development indicators	Research survey 1	Research survey 2
% annual growth in broadband subscribers	10%	12%
% annual broadband growth with IPTV services	12%	15%
% of existing broadband subscribers liable to take IPTV each year	10%	8%
% of broadband subscribers liable to upgrade broadband service each year	10%	9%
Additional % of broadband subscribers liable to upgrade broadband service for IPTV	3%	5%
% of broadband subscribers liable to change supplier each year for quad play offer	2%	3%

Quad-play revenue and cost workbook

TRAN asks the operators to use this workbook to establish Newtel's costs and revenues.

The aim is to show whether the Cloud-Newtel deal covers costs.

QUAD-PLAY REVENUE AND COST WORKSHEET

STEP 1	Fill in the Assumptions shaded green
STEP 2	Review the calculations shaded blue (no need to change these cells)
STEP 3	Copy the key outputs into the Fixed Core Network Cost Model (shaded yellow)
STEP 4	Copy the key results from the Fixed Core Network Cost Model (shaded orange)

1. Assumptions

Current market situation

Service	Newtel monthly tariff (USD)	Newtel subscribers 2016	Telecom subscribers 2016	Total subscribers in 2016
Vitesse 2	1	1	1	2
Vitesse 10	1	1	1	2
Vitesse 25	1	1	1	2
Vitesse 100	1	1	1	2
TOTAL		**4**	**4**	**8**

Market development indicators	2016	2017-2020
Annual growth in broadband subscribers (without Cloud)	1%	1%
Annual growth in broadband subscribers (with Cloud)	1%	1%
% of existing broadband subscribers taking Cloud services	1%	1%
% of broadband subscribers upgrading broadband (without Cloud)	1%	1%
% of broadband subscribers upgrading broadband (with Cloud)	1%	1%
% of Telecom's broadband customers that move to Newtel (quad play)	1%	1%
Retail revenue ($p.m.) for Cloud subscribers	1	1
Wholesale cost ($p.m.) for Cloud subscribers	1	1

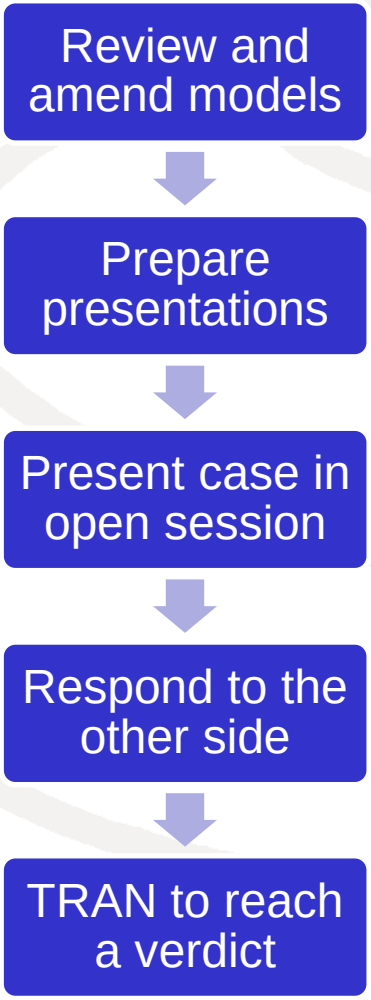
Efficient operator inputs

- TRAN is satisfied that Telecom's core network design is that of an efficient operator. It notes that Newtel has a similar topology, and therefore advises that the number of nodes and rings should remain unchanged.
- TRAN's technical department seeks guidance from the operators regarding:
  - The contention ratios used for broadband subscribers, both for internet access and for IPTV. TRAN is aware of network design rules ranging from 10:1 to 100:1. What should they be?
  - The busy hour (peak load) requirement for broadband. TRAN is aware of operators using a 2%-5% peak load for leased lines. Does this figure apply for broadband also?

Other resources and assumptions

- Both Newtel and Telecom now claim that their fibre network passes all sites in Normalia.
  - The incremental cost of a new broadband subscriber may therefore be taken as the cost per site connected - which in the NGA Cost Model is $88 p.a.
- Two possible discount factors for the NPV calculation have been suggested, and operators should explain their choice:
  - Annual inflation (forecast by the Central Bank at 5%)
  - WACC (set by TRAN at 12%).

The regulatory process



Possible outcome

A case that Newtel could have made

Market development indicators	2016	2017-2020
Annual growth in broadband subscribers (without Cloud)	12%	12%
Annual growth in broadband subscribers (with Cloud)	15%	15%
% of existing broadband subscribers taking Cloud services	5%	8%
% of broadband subscribers upgrading broadband (without Cloud)	10%	10%
% of broadband subscribers upgrading broadband (with Cloud)	15%	15%
% of Telecom's broadband customers that move to Newtel (quad play)	2%	3%
Retail revenue ($p.m.) for Cloud subscribers	10	10
Wholesale cost ($p.m.) for Cloud subscribers	6	6
Cost of access network (per subscriber connected, per annum)	88	
Annual discount factor (for NPV calculation)	5%	

Based on a contention ratio of 25:1 for both internet and IPTV services

Newtel subscribers under these assumptions

Newtel subscribers without Cloud (Internet Access Subscribers)

Service	1.1.2016	1.1.2017	1.1.2018	1.1.2019	1.1.2020	1.1.2021
Vitesse 2	200000	201600	203213	204839	206477	208129
Vitesse 10	120000	143360	167086	191183	215654	240505
Vitesse 25	60000	73920	90568	110006	132298	157510
Vitesse 100	20000	29120	40893	55944	74978	98793
TOTAL	**400000**	**448000**	**501760**	**561971**	**629408**	**704937**

Newtel IPTV subscribers (i.e. Cloud subscribers)

Service	1.1.2016	1.1.2017	1.1.2018	1.1.2019	1.1.2020	1.1.2021
Vitesse 2	0	3980	12983	21855	30602	39225
Vitesse 10	0	18520	41855	65714	90053	114830
Vitesse 25	0	15510	37306	65372	99622	139964
Vitesse 100	0	14310	39719	74181	120404	181512
TOTAL	**0**	**52320**	**131862**	**227122**	**340681**	**475532**

Cost and revenue outputs

Additional network revenues with Cloud ($'000s p.a.)

Service	2016	2017	2018	2019	2020
Vitesse 2	239	1018	2090	3147	4190
Vitesse 10	2222	7245	12908	18692	24586
Vitesse 25	3257	11091	21562	34649	50313
Vitesse 100	4293	16209	34170	58375	90575
Revenues from Cloud	**10011**	**35563**	**70731**	**114864**	**169664**

Additional service revenues from Cloud ($'000s p.a.)

Service	2016	2017	2018	2019	2020
All	1256	4420	8616	13627	19589
Costs of Cloud	**1256**	**4420**	**8616**	**13627**	**19589**

Additional core network costs from Cloud ($'000s p.a.)

Service	2016	2017	2018	2019	2020
with cloud	46014	69705	104207	147315	205477
without Cloud	30627	37257	48476	61334	76734
Costs of Cloud	**15388**	**32448**	**55731**	**85980**	**128742**

Additional access network costs from Cloud ($'000s p.a.)

Service	2016	2017	2018	2019	2020
All	2302	8104	15795	24983	35913
Costs of Cloud	**2302**	**8104**	**15795**	**24983**	**35913**

Net financial impact of Cloud on Newtel ($'000s p.a.)

	2016	2017	2018	2019	2020
Annual gain	-6423	-569	7820	17527	24597
NPV	**33814**				

A case that Telecom could have made

Market development indicators	2016	2017-2020
Annual growth in broadband subscribers (without Cloud)	10%	10%
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% of Telecom's broadband customers that move to Newtel (quad play)	2%	3%
Retail revenue ($p.m.) for Cloud subscribers	10	9
Wholesale cost ($p.m.) for Cloud subscribers	6	6
Cost of access network (per subscriber connected, per annum)	88	
Annual discount factor (for NPV calculation)	12%	

With a contention ratio of 20:1 for both internet and IPTV services

Newtel subscribers under these assumptions

Newtel subscribers without Cloud (Internet Access Subscribers)

Service	1.1.2016	1.1.2017	1.1.2018	1.1.2019	1.1.2020	1.1.2021
Vitesse 2	200000	198000	196020	194060	192119	190198
Vitesse 10	120000	140800	161172	181122	200658	219784
Vitesse 25	60000	72600	87362	104217	123099	143940
Vitesse 100	20000	28600	39446	53000	69764	90282
TOTAL	**400000**	**440000**	**484000**	**532400**	**585640**	**644204**

Newtel IPTV subscribers (i.e. Cloud subscribers)

Service	1.1.2016	1.1.2017	1.1.2018	1.1.2019	1.1.2020	1.1.2021
Vitesse 2	0	9020	22720	36085	49121	61833
Vitesse 10	0	14252	34172	55362	77762	101313
Vitesse 25	0	12564	29503	50803	76522	106710
Vitesse 100	0	11764	31909	57179	88880	128494
TOTAL	**0**	**47600**	**118304**	**199429**	**292284**	**398349**

Cost and revenue outputs

Additional network revenues with Cloud ($'000s p.a.)

Service	2016	2017	2018	2019	2020
Vitesse 2	541	1904	3528	5112	6657
Vitesse 10	1710	5811	10744	15975	21489
Vitesse 25	2638	8834	16864	26738	38479
Vitesse 100	3529	13102	26726	43817	65212
Revenues from Cloud	**8419**	**29651**	**57863**	**91643**	**131837**

Additional service revenues from Cloud ($'000s p.a.)

Service	2016	2017	2018	2019	2020
All	1142	3982	7626	11801	16575
Costs of Cloud	**1142**	**3982**	**7626**	**11801**	**16575**

Additional core network costs from Cloud ($'000s p.a.)

Service	2016	2017	2018	2019	2020
with cloud	51455	74753	107267	146208	197035
without Cloud	35852	43125	55016	68447	84390
Costs of Cloud	**15603**	**31629**	**52251**	**77761**	**112644**

Additional access network costs from Cloud ($'000s p.a.)

Service	2016	2017	2018	2019	2020
All	2094	7300	13980	21635	30388
Costs of Cloud	**2094**	**7300**	**13980**	**21635**	**30388**

Net financial impact of Cloud on Newtel ($'000s p.a.)

	2016	2017	2018	2019	2020
Annual gain	-8136	-5295	-743	4047	5380
NPV	**-6389**				

TRAN's conclusions

- The case is unproven: under a range of reasonable assumptions costs may be higher or lower than revenues.
- The key assumptions seem to be the contention ratio and usage in the busy hour:
  - These need to backed up with practical experience
  - TRAN will be looking carefully at the quality of service offered by Newtel (availability, throttling of bandwidth etc) and at possible customer complaints.
- As Newtel is not a dominant operator in the market, TRAN will not intervene ex-ante.
- It will review the situation again, at the latest within 2 years when the current Cloud-Newtel deal comes to an end.