



DSO & ASO planning, deployment and communications

An introduction

ITU/NBTC Workshop
4 December 2014

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Presentation Overview

- 1. DSO & ASO planning**
- 2. Network deployment**
- 3. DSO & ASO communications**



1. DSO & ASO planning



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1. DSO & ASO planning: network operator perspective

Service	Operator	HH cov. %	Phase	Coverage areas	2014	2015	2016	2017	2018	
Ch 3	BEC			all/none						
Ch 5	Army TV			all/none						
Ch 7	BBTV			all/none						
Ch 9	MCOT			all/none						
Ch 11	NBT			all/none						
T PBS	T PBS		I	all - (group 1 sites)						
			II	all - (group 1/2 sites)						
			III	all - (group 1/2/3 sites)						
			IV	all - (group 1/2/3/4 sites)						
1 (Nat)	NBT		51% FX	I	Group 1 (11 sites)					
			76% FX	II	Group 1 + 2 (11+28 sites)					
		~90% FX	III	Group 1-3 (11+28+32 sites)						
		~95% FX	IV	Group 1-4 (11+28+32+95 sites)						
2 (Nat)	Army TV	51% FX	I	Group 1 (11 sites)						
		76% FX	II	Group 1 + 2 (11+28 sites)						
		~90% FX	III	Group 1-3 (11+28+32 sites)						
		~95% FX	IV	Group 1-4 (11+28+32+95 sites)						
3 (Nat)	MCOT	51% FX	I	Group 1 (11 sites)						
		76% FX	II	Group 1 + 2 (11+28 sites)						
		~90% FX	III	Group 1-3 (11+28+32 sites)						
		~95% FX	IV	Group 1-4 (11+28+32+95 sites)						
4 (Nat)	TPBS	51% FX	I	Group 1 (11 sites)						
		76% FX	II	Group 1 + 2 (11+28 sites)						
		~90% FX	III	Group 1-3 (11+28+32 sites)						
		~95% FX	IV	Group 1-4 (11+28+32+95 sites)						
5 (Nat)	Army TV	51% FX	I	Group 1 (11 sites)						
		76% FX	II	Group 1 + 2 (11+28 sites)						
		~90% FX	III	Group 1-3 (11+28+32 sites)						
		~95% FX	IV	Group 1-4 (11+28+32+95 sites)						
6 (Reg)		<51% FX	I	Group 1"						
		<76% FX	II	Group 1 + 2"						
		<90% FX	III	Group 1-3"						
		<95% FX	IV	Group 1-4"						
		~95% FX	V	Group 1-4"+5						

Example only

Source: ITU



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1. DSO & ASO planning: consumer perspective

		2014				2015				2016				2017				2018			
Viewers in coverage areas a,b,c,d (Phase I)		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Incumbent services	Ch3	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Light Green	Light Green	Light Green	Light Green
	Ch5	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Light Green	Light Green	Light Green	Light Green
	Ch 7	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Light Green	Light Green	Light Green	Light Green
	Ch 9	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Light Green	Light Green	Light Green	Light Green
	Ch 11	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Light Green	Light Green	Light Green	Light Green
	T. PBS	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
DTTB services	A	Light Green	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
	B	Light Green	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
	C	Light Green	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
	D	Light Green	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
	E	Light Green	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
	F	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
# simulcasted incumbent services			6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Example only

Source: ITU

- A consumer's perspective differs, depending on:
 - Simulcast duration per region/area
 - Service launches
 - Alternative television providers



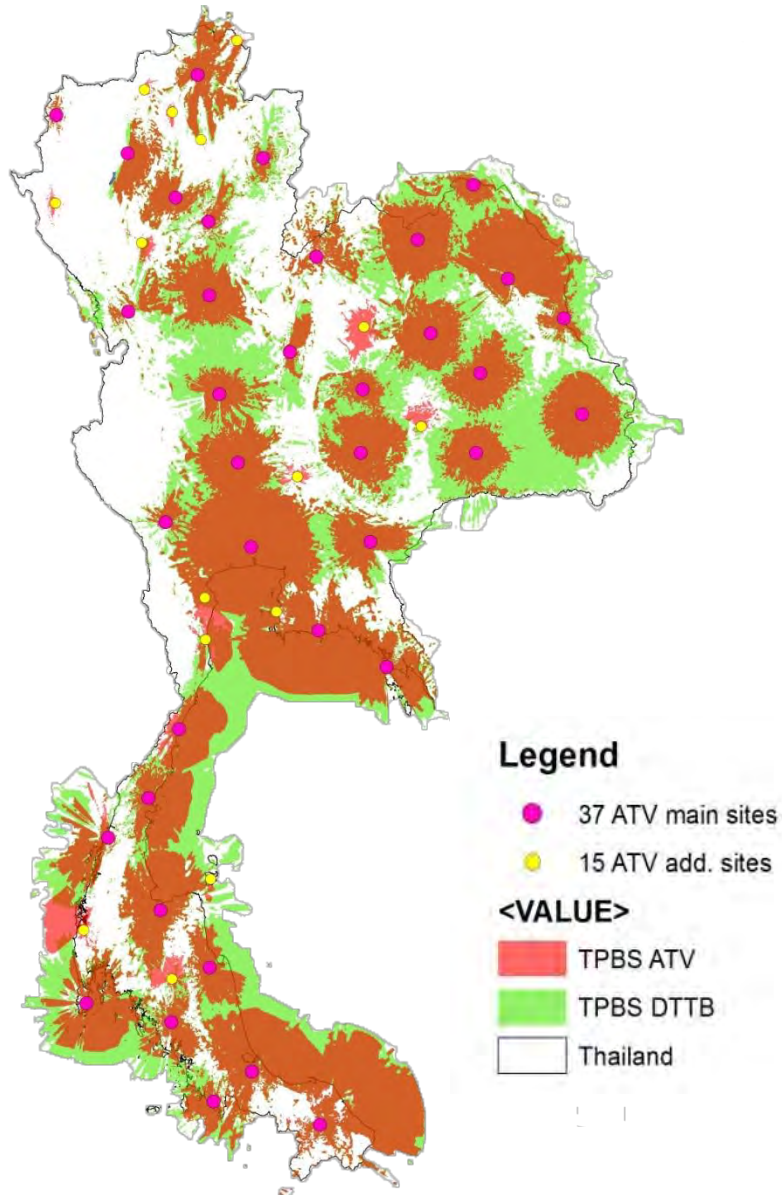
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2. Network deployment



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2. Network deployment: detailed schedule needed



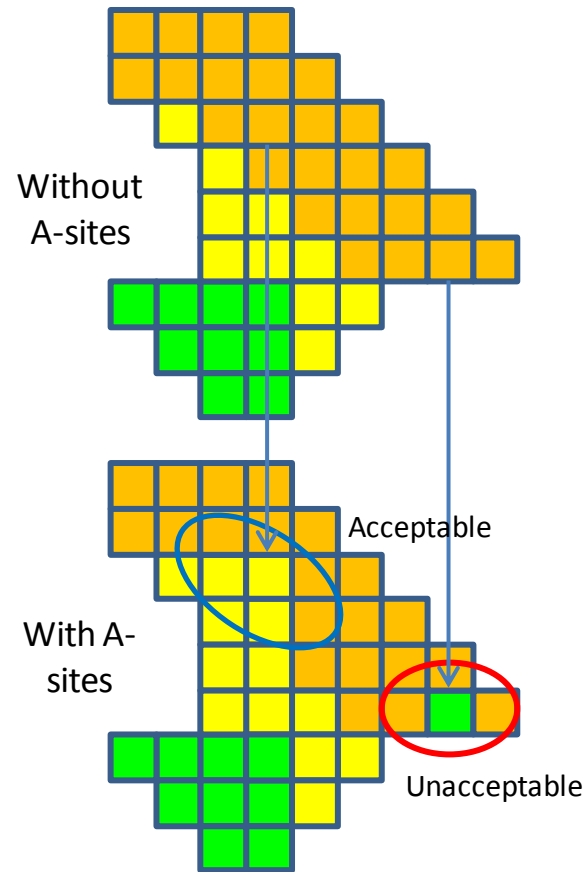
- Top-level deployment order:
 1. Main sites (39)
 2. Additional sites (~ 130)
- Brown = overlap between 39 main DTTB sites and ATV sites (TPBS)
- Pink = ATV only and determines (partly) order of additional sites

Source: ITU

2. Network deployment: detailed schedule needed



Source: ITU

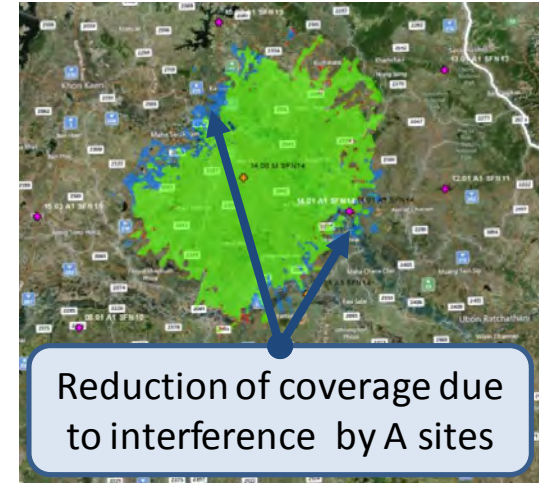
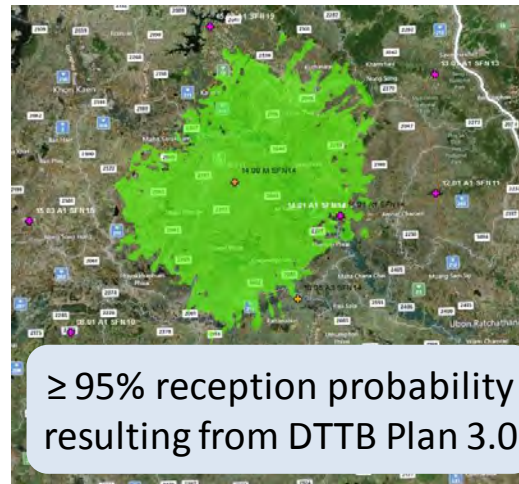


■ $\geq 95\%$ ■ 90-95% ■ 70-90%

- Additional sites should not cause unacceptable inference to Main sites
- But can also help out in resolving interference

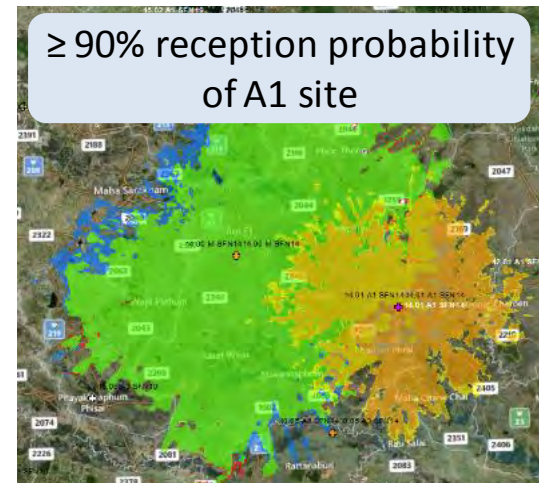
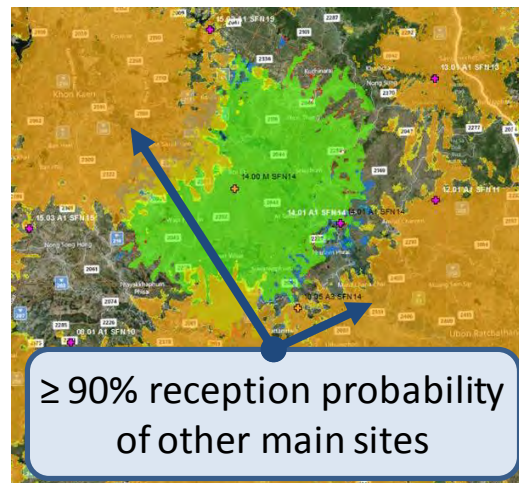
2. Network deployment: detailed schedule needed

Main site 14.00 (Roi Et) interfered by additional sites



Situation is compatible:

interfered areas of main site 14.00 are overlapped by other main sites and A1 site



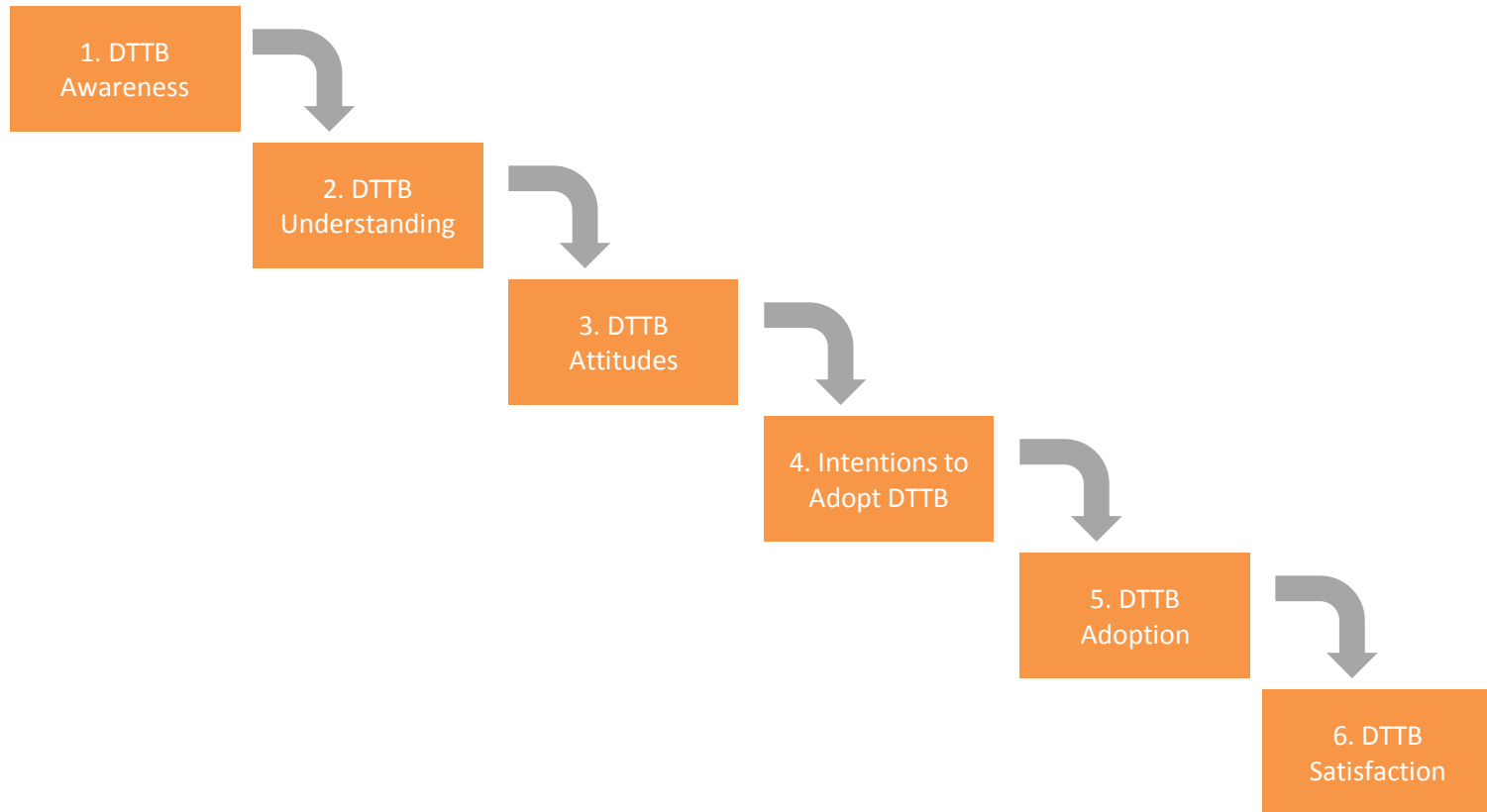
Source: ITU

3. DSO & ASO communications



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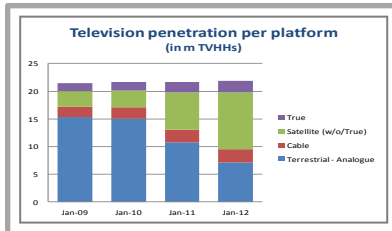
3. DSO communications: based on marketing principles



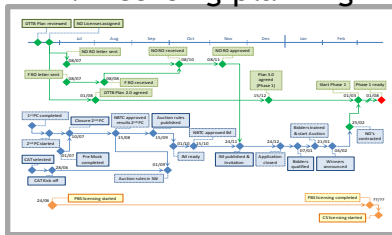
- DSO communication strategy based on classic marketing principles
 - People are not aware and don't understand
 - Don't skip steps, although they can run in parallel

3. DSO communications: interrelations

1. Market structure



2. Licensing planning



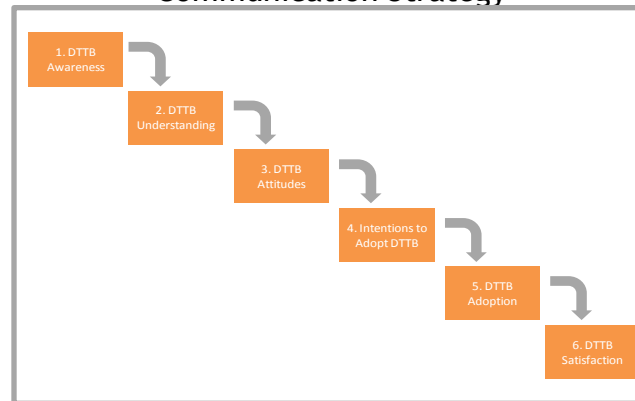
3. DSO and ASO planning

Area	Service	Frequency	Power	Time	Area	Service	Frequency	Power	Time
A	Mobile	900 MHz	100W	24h	B	Mobile	900 MHz	100W	24h
	Mobile	1800 MHz	100W	24h		Mobile	1800 MHz	100W	24h
	Mobile	2100 MHz	100W	24h		Mobile	2100 MHz	100W	24h
	Mobile	2300 MHz	100W	24h		Mobile	2300 MHz	100W	24h
C	Mobile	900 MHz	100W	24h	D	Mobile	900 MHz	100W	24h
	Mobile	1800 MHz	100W	24h		Mobile	1800 MHz	100W	24h
	Mobile	2100 MHz	100W	24h		Mobile	2100 MHz	100W	24h
	Mobile	2300 MHz	100W	24h		Mobile	2300 MHz	100W	24h

4. Network deployment



Communication Strategy



5. Receiver Certification



6. Retail logistics

Team name	Object ID	Address line 1	Go-Digital Voucher accepted?	Certified	
				FX type No 1	FX type No 1
MOAO KHAD	1	305 Langsuan Rd	Yes	SamSung STB T2 M2011	SamSung IoTV Smart
MAE SOI	2	111 Charoengwan Rd	No	LG OTV X1200	SamSung IoTV Smart
SAEN TUNG	3	1 Mitichul Rd	No	Philips Amba 2013 T2	SamSung IoTV Smart
PHO NGAM	4	55 Phahonyothin Rd	Yes	Sony Bravia T2 K2	SamSung IoTV Smart
SIAM THA CHANG	5	1 Prid Thai Rd	Yes	SamSung STB T2 M2011	Sony Bravia T2 K2
MO YAO NOI	6	456 Silom Rd	Yes	SamSung STB T2 M2011	LG STB X1200
YAN NI	7	1 Sukumvit	Yes	SamSung STB T2 M2011	LG OTV X1200
SUPHITON	8	240 Khon Sai	Yes	Sony Bravia T2 K4	LG OTV X1200
LAH NO	26	12 Ratchadomni Bldg	Yes	Sony Bravia T2 K2	Sony Bravia T2 K4
MAE NANG KHAD	27	1 Ratchadomni Rd	Yes	LG OTV X1200	SamSung IoTV Smart
CHAI MONGKHON	28	13 Samit Rd	Yes	Sony Bravia T2 K2	SamSung IoTV Smart

7. Voucher logistics



International
Telecommunication
Union

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3. DSO communications: deployment is key driver

Network	Network operator	DTB pop coverage target	Phase	Coverage areas	# HD services	# SD services	Type	2014	2015	2016	2017	2018
Ch 3	BEC			all/none			A TV					
Ch 5	Army TV			all/none			A TV					
Ch 7	BBCV			all/none			A TV					
Ch 9	MCOF			all/none			A TV					
Ch 11	NBT			all/none			A TV					
T PDS	T PDS			all/none			A TV					
A (National)	MCOF	50% FX	I	Group 1*	2	6	FX + Pi in municipalities					
		80% FX	II	Group 1* + 2*								
		90% FX	III	Group 1* + 2* + 3*								
		95% FX	IV	Group 1* + 2* + 3* + 4*								
B (National + Regional)	NOS	50% FX	I	Group 1*	1	10	FX + Pi in municipalities					
		80% FX	II	Group 1* + 2*								
		90% FX	III	Group 1* + 2* + 3*								
		95% FX	IV	Group 1* + 2* + 3* + 4*								
C (National)	Army TV	50% FX	I	Group 1	2	6	FX + Pi in municipalities					
		80% FX	II	Group 1+2								
		90% FX	III	Group 1+2+3								
		95% FX	IV	Group 1+2+3+4								
D (National)	Army TV	50% FX	I	Group 1	2	6	FX + Pi in municipalities					
		80% FX	II	Group 1+2								
		90% FX	III	Group 1+2+3								
		95% FX	IV	Group 1+2+3+4								
E (National)	T PDS	50% FX	I	Group 1	2	6	FX + Pi in municipalities					
		80% FX	II	Group 1+2								
		90% FX	III	Group 1+2+3								
		95% FX	IV	Group 1+2+3+4								
F (National)	NBT	50% FX	I	Group 1	2	6	FX + Pi in municipalities					
		80% FX	II	Group 1+2								
		90% FX	III	Group 1+2+3								
		95% FX	IV	Group 1+2+3+4								

Customer contact points/week

DSO top level planning (Phase 1)			[DATE]				24/01/14 31/01/14 07/02/14 14/02/14 28/02/14 07/03/14 14/03/14 21/03/14 18/04/14 16/05/14 23/05/14 06/06/14 20/06/14 04/07/14 11/07/14 01/08/14																												
Prov. code	Province Name	Other name	Phase 1	Phase 2	Phase 3	Phase 4	wks	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
								Tracker Survey 1 completed	DSO website (back) on web	National DSO Campaign 1a	Regional DSO Campaign 2a		National DSO Call Centre ready	National DSO Campaign 3a	National DSO Campaign 4a	Tracker Survey 2 Completed				Regional Campaign 4b					Tracker Survey 3 completed	Service Dashboard ready	Vouchers distributed	Installer networks trained/ready	RX distributed	Tracker Survey 4 completed				Service launch	
			Percentage of Provinces reached Target					61%	na				na	na	na											na	5%	3%	18%						
1	BANGKOK							yes																			yes	yes	yes						
2	KANCHANABURI							yes																			No	No	No						
3	KALASIN							No																			No	No	No						
4	KAMPHAENG PHET																										No	No	No						
5	KHON KAEN							No																			No	No	No						
6	CHANTHABURI																										No	No	No						
7	CHACHOENGSAO							yes																			No	No	yes						
8	CHON BURI																										No	No	No						
9	CHAI NAT																										No	No	No						
10	CHAIYAPHUM							No																			No	No	No						
11	CHUMPHON							No																			No	No	No						
12	TRANG																																		
13	TRAT																																		
14	TAK							yes																			No	No	No						
15	NAKHON NAYOK							yes																			No	No	No						
16	NAKHON PATHOM																										No	No	No						
17	NAKHON PHANOM							No																			No	No	yes						
18	NAKHON RATCHASIMA							yes																			No	No	yes						
19	NAKHON SI THAMMARAT																										No	No	yes						
20	NAKHON SAWAN																										No	No	yes						
21	NONHABURI							yes																			No	No	No						

Areas



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3. DSO communications: tracker board info needed

DTTB communications steps

→

Areas

Base size	1. DTTB Awareness		2. DTTB Understanding				3. DTTB Attitudes	
	a. DSO intro	b. Logo	a. What to do for DSO	b. 2nd set limitation	c. VCR/DVDR limitation	d. Phase 1 date	a. Overall opinion	b. Personal comfort
5578	20%	10%	5%	10%	10%	0%	40%	30%
125	1.a. Question: Have you heard of digital terrestrial television or DVB-T2? <i>No introduction, unprompted</i> Response: Yes/No		2.a. Question: What do you think people have to do to get DTTB? Response: To get a STB or IDTV/No Idea		2.c. Question: Are you aware that after connecting a STB your VCR/DVDR will no longer be able to record a program while you watch a different program on other channel? Response: Yes/No		3.a. Question: What statements do you think about DTTB? <i>Prompted statements</i> Response: (or Thailand: optional necessary).	
125	1.b. Question: Do you recognise this? <i>When shown a screen with the Go-Digital logo</i> Response: Yes/No		2.b. Question: Are you aware that you will need for every set a STB? Response: Yes/No		2.d. Question: In which Year/Month do you think DTTB will be available in your Province? Response: Correct date for Province/No Idea		3.b. Question: (or Thailand: optional necessary).	
125	20%	10%	5%	10%	10%	0%	40%	33%
125	10%	10%	3%	4%	5%	0%	40%	30%
125	25%	20%	10%	10%	15%	0%	40%	30%
125	20%	10%	5%	10%	10%	0%	40%	30%
25	11%	10%	3%	4%	5%	0%	30%	12%
25	10%	10%	3%	4%	5%	0%	30%	12%
125	20%	10%	5%	10%	10%	0%	40%	30%
25	12%	10%	3%	4%	5%	0%	30%	12%
25	23%	23%	12%	8%	10%	0%	25%	20%
125	9%	20%	10%	10%	15%	0%	40%	33%
25	20%	10%	5%	10%	10%	0%	40%	30%
125	25%	20%	10%	10%	15%	0%	40%	33%

- Tracker board information provides key data for:
 - Communications effectiveness
 - DSO & ASO planning progress
 - ASO date decisions



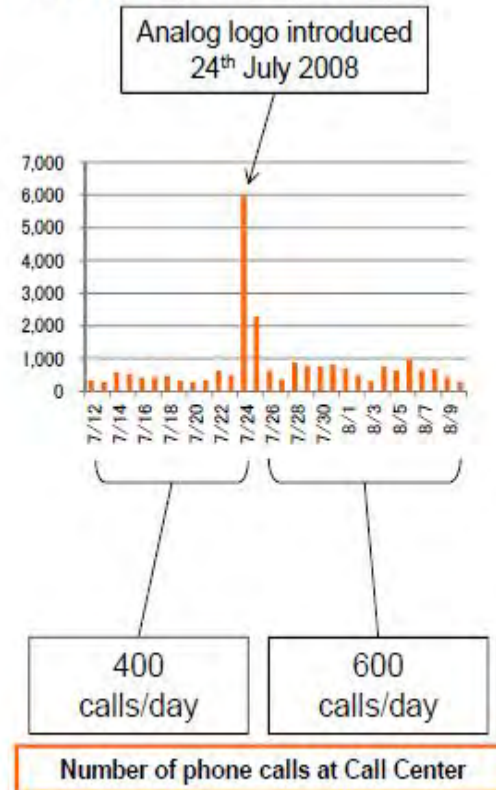
3. ASO communications: managing the peak

An example from Japan..

- 3 years before ASO, “Analog” logo was placed on the screen



24th July 2008

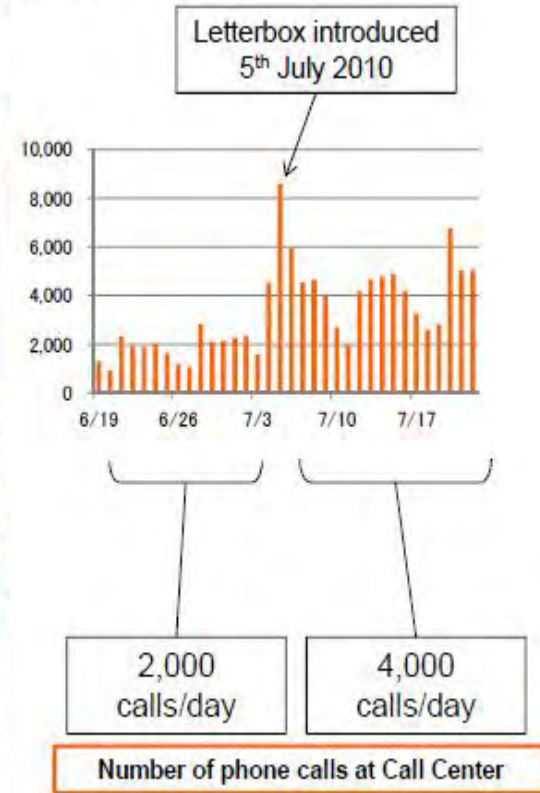


3. ASO communications: managing the peak

- 1 year before, conversion to a letterbox format

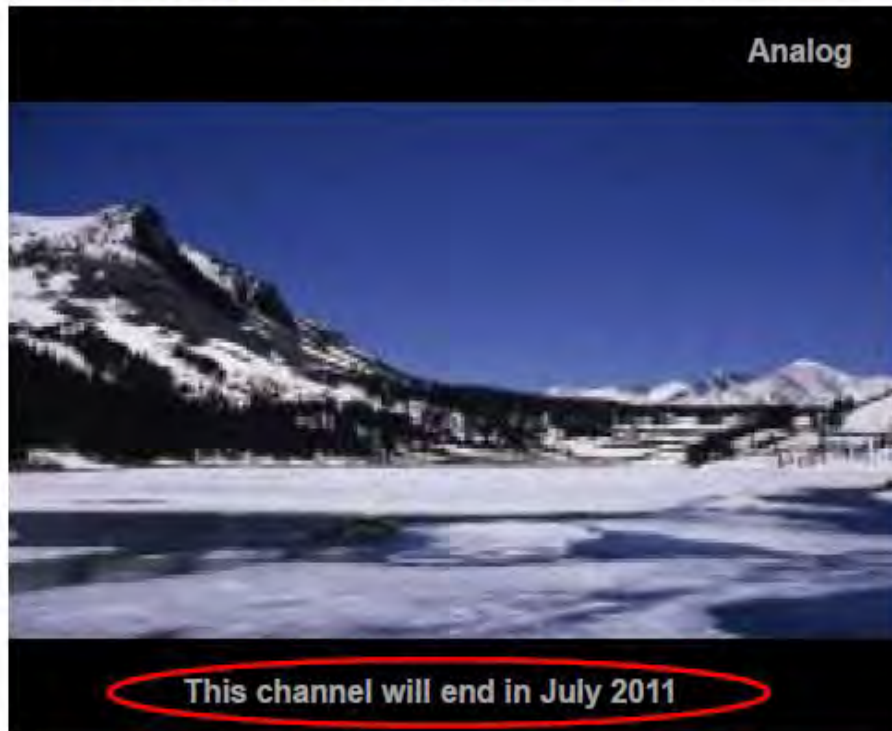


5th July 2010

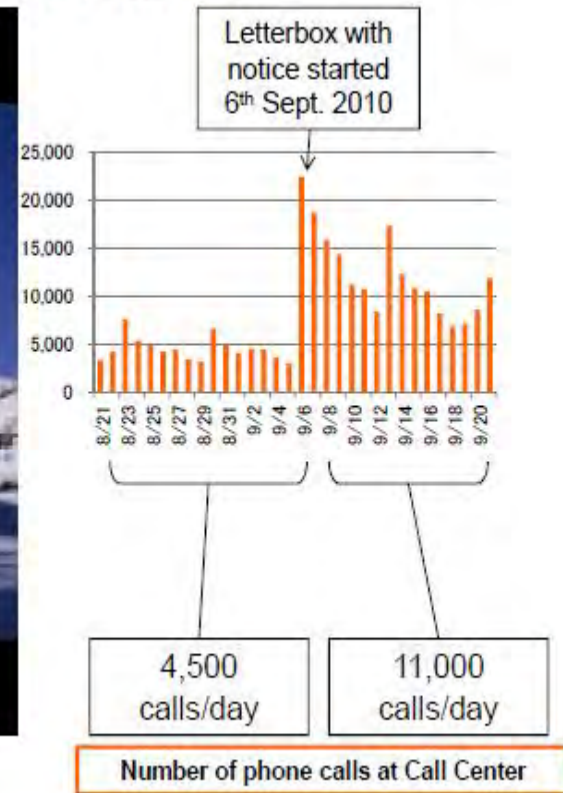


3. ASO communications: managing the peak

- 10 months before, notice was added to the letterbox



6th Sept. 2010

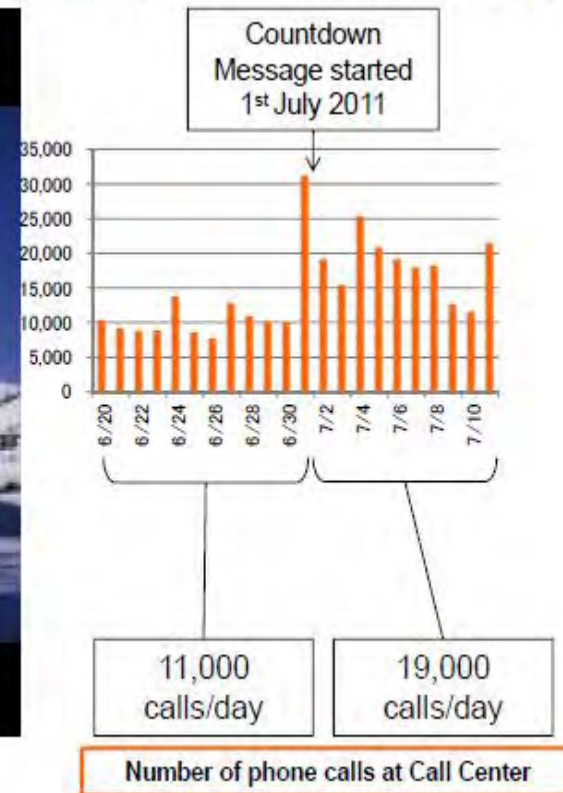


3. ASO communications: managing the peak

- 24 days before, countdown message superimposed on the screen

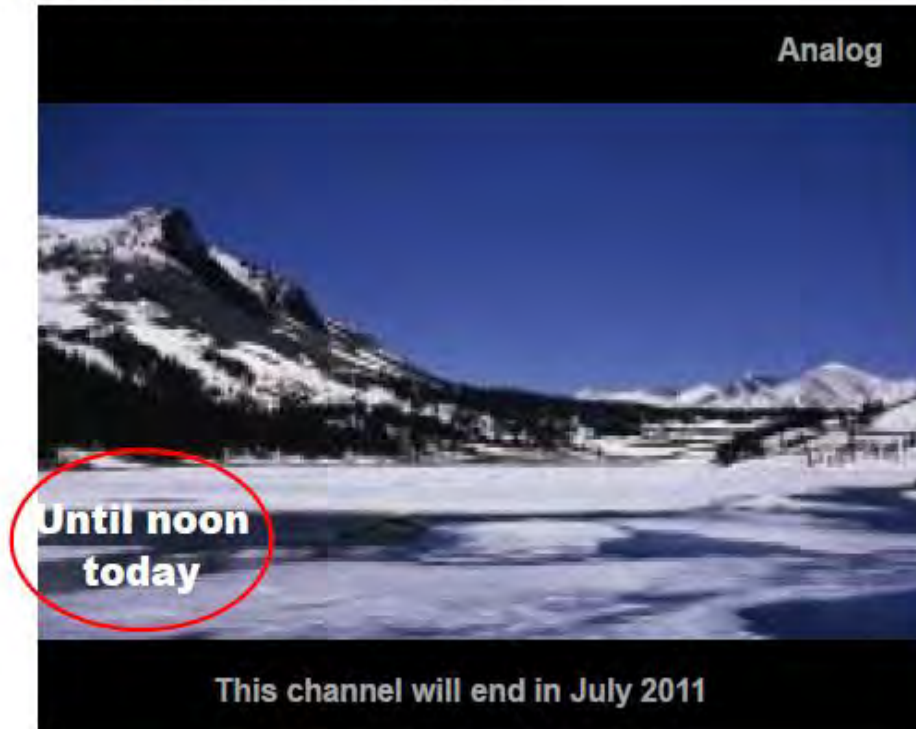


1st July 2011



3. ASO communications: managing the peak

- From 0:00 to 12:00 on July 24



3. ASO communications: managing the peak

- From 12:00 to 23:59 on July 24

This analog broadcast will terminate on
July 24, 2011.

Please make arrangements for
digital TV reception.

<Inquiries>

Please contact:

AAAA TV support center

Tel: XXXX-XXX-XXX

DTV support center

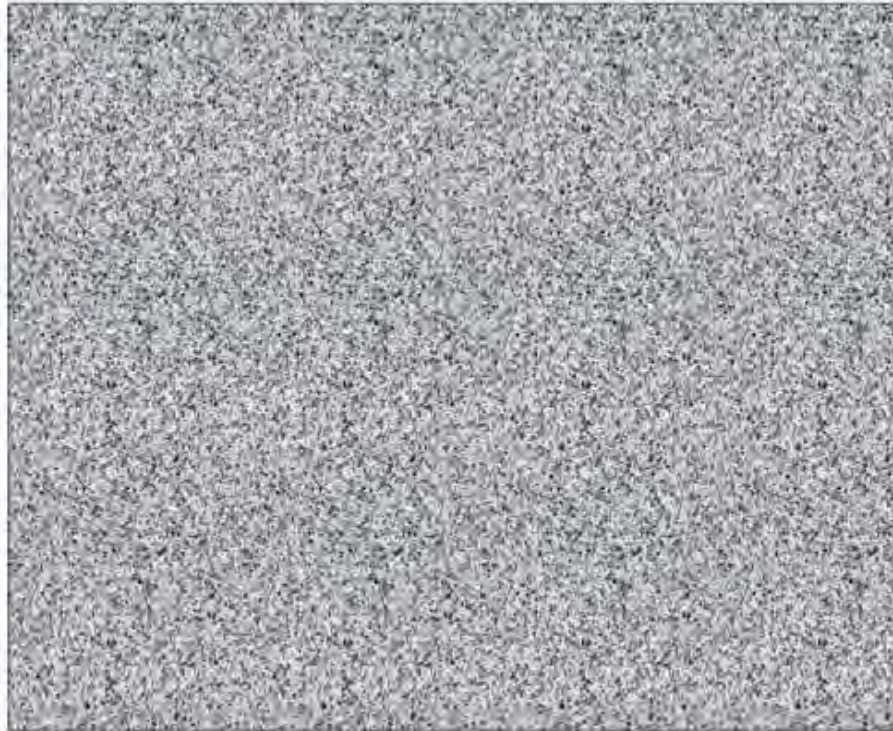
Tel: 0570-07-0101

9am-9pm (9am-6pm Weekends/Holidays)



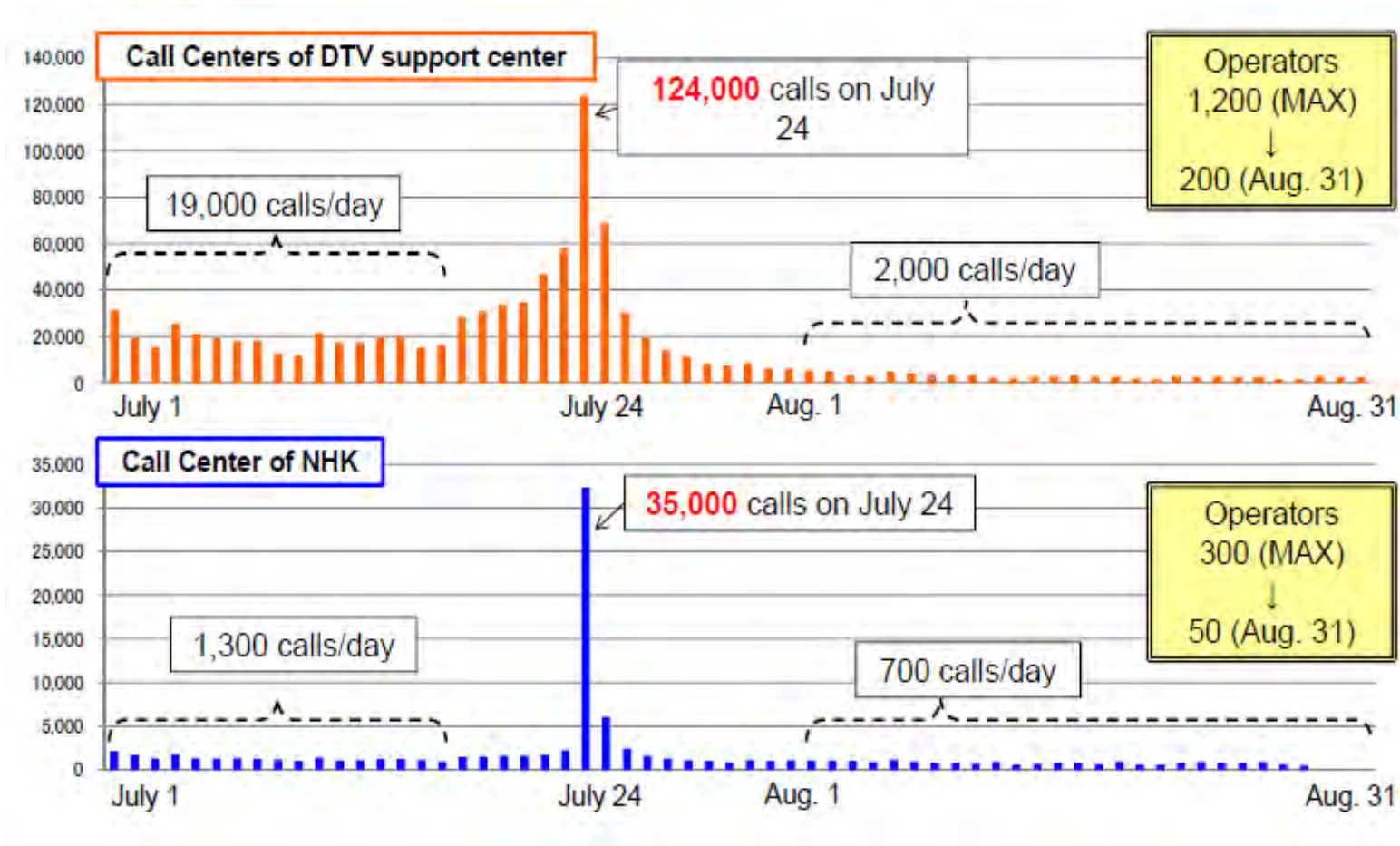
3. ASO communications: managing the peak

■ At 23:59 on July 24



3. ASO communications: managing the peak

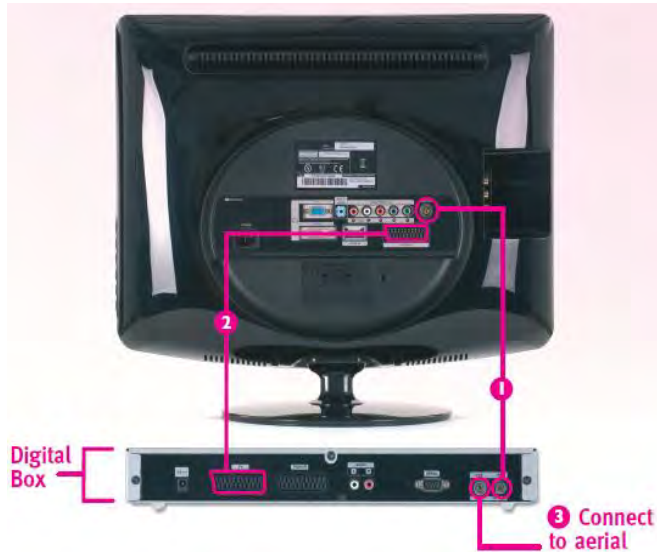
.. and still in the call centres this happened..



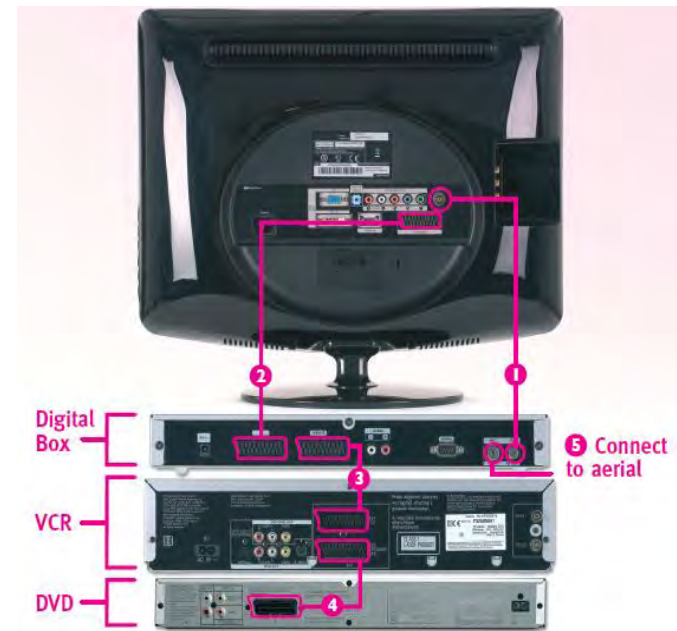
3. ASO communications: managing the peak

- Keep it (the offer) simple, the details will make it more complex..

..in the brochure..



..and at home..



3. ASO communications: managing the peak

- Understanding can be surprisingly low..

