



Telecoms numbering for Myanmar

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Outline: part 1

1. Introduction

- This project
- The role of ITU
- Definitions
- General principles for numbering plan design
- Stakeholder requirements

2. Numbering for Myanmar: overview

3. Numbering for Myanmar: detail

4. Adapting numbers

5. Numbering administration and management

6. Valuing numbers

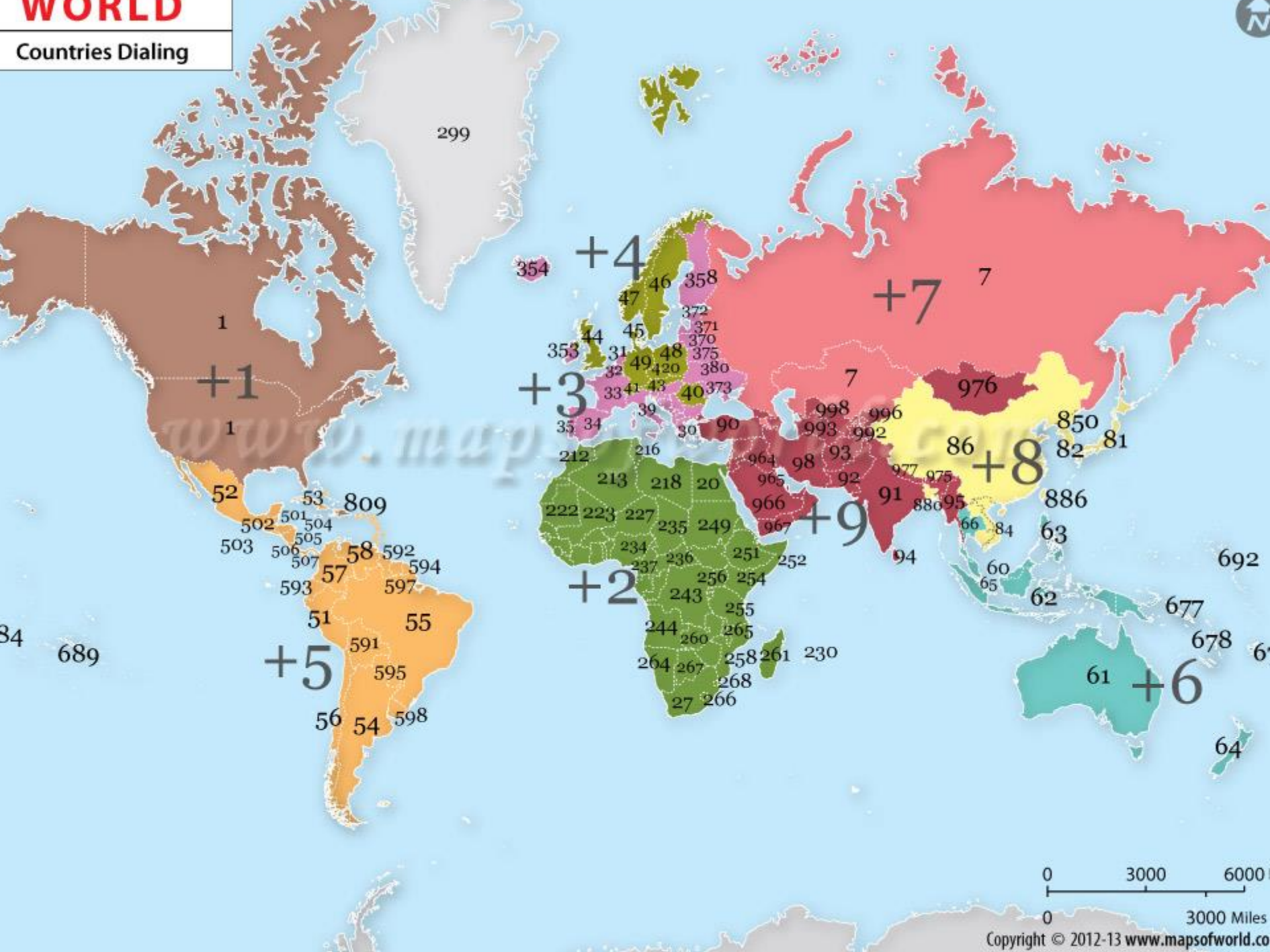
Numbering consultancy project

- Part of World Bank Telecom Reform Project.
- Supporting PTD in reviewing Myanmar's numbering plan and associated procedures.
- Met many of you during first visit in July 2016, and appreciate valuable inputs already received.
- Now drafting a Consultation Document for PTD to issue as soon as possible, with an **60-day consultation period**. Final decisions will take account of responses.
- This workshop's purposes include:
 - Introducing you to much of the likely content of the Consultation Document.
 - Allowing you to express early views on many of its draft recommendations.
 - A networking opportunity for people in Myanmar concerned with numbering.
- Our experience with numbering plans in many countries is reflected in the presentation, and also at **World Numbering Developments**
<http://www.itu.int/ITU-D/treg/related-links/links-docs/numbering.html>.

Some kinds of numbering

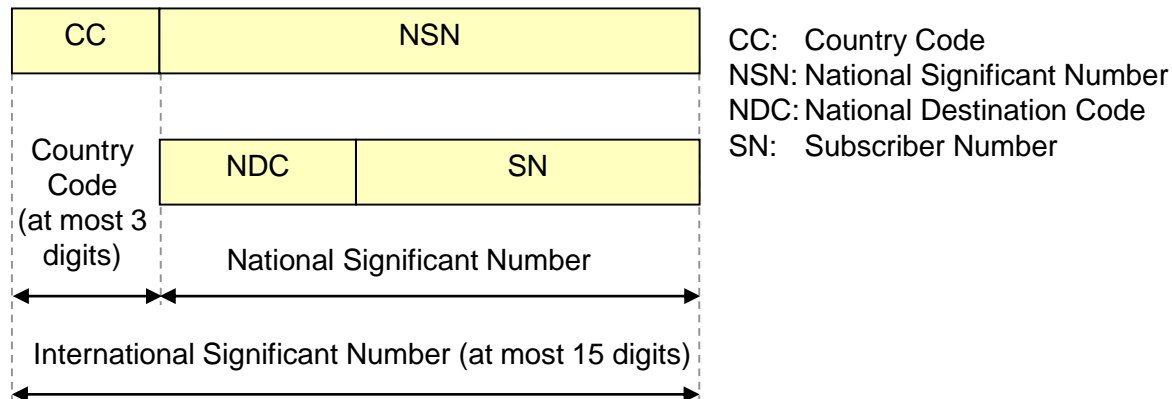
- **E.164 telephone numbers**
- **Q.708 Signalling Point Codes (SPCs)**
- **E.212 International Mobile Station Identities (IMSI)**
- **X.121 public data networks (DNICs)**
- **F.69 public telex networks**
- **Other national resources, such as:**
 - number portability codes
 - operator identification codes
- **(ENUM is not a kind of numbering, but a mapping from telephone numbers to domain names.)**

**E.164 numbering is our main focus,
because it is seen by end users and could be scarce.**



Essentials from E.164

- **Terminology:**
 - **Numbering plan (or numbering scheme) and dialling plan**
 - **National (trunk) prefix and international prefix**
 - **Open numbering plan and closed numbering plan**
 - **National Significant Number (NSN) (or N(S)N, in ITU documents)**
 - **Country Code (CC)**
 - **National Destination Code (NDC) (trunk code, area code or service code)**
 - **Subscriber Number (SN)**
- **Distant analysis for routing limited to first 7 digits of ISN**



Meaning of “numbering plan”

- The term “numbering plan” gets used in many different ways. When we use it we mean both:
 - How networks and people understand the first few digits of numbers (usually NDCs), and
 - How these understandings will or may change in the future.
- Others mean the list of number blocks allocated to particular licensees, with their purposes. We call this an **allocation table**.
- In some countries, the number plan includes both what we mean by the term and all the rules for **numbering administration and management**, which in Myanmar are the contents of the **Numbering Rules**.

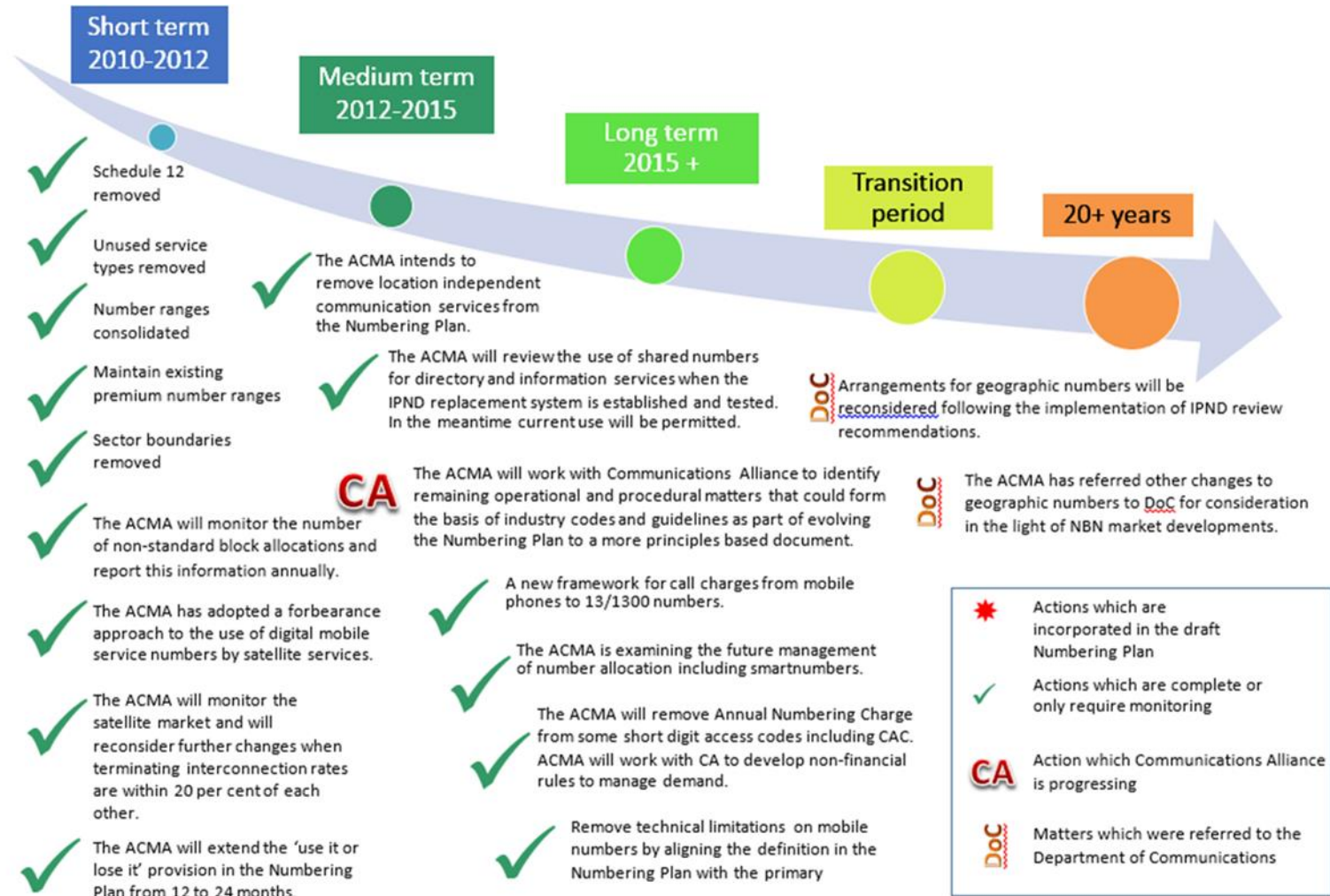
Example of a current numbering plan (Denmark, 2012)

Den overordnede disponering for den nationale nummerplan for telefoni, ISDN og mobilkommunikation, specificeret på a- og b-ciffer 3. august 2012										
a \ b	0	1	2	3	4	5	6	7	8	9
0	Udlandspræfix	Reserve (*)								
1	4-cifrede operatørforvalgs- koder	3-cifrede kortnumre		Reserve (*)			5-cifrede netadgangs- koder	Reserve (*)	4-cifrede kortnumre	Reserve (*)
2	Fortrinsvis mobilkommunikation									
3	Fortrinsvis mobilkommunikation		Fortrinsvis telefoni/ISDN					12-cifrede M2M-numre	Fortrinsvis telefoni/ISDN	
4	Fortrinsvis mobilkommunikation			Fortrinsvis telefoni/ISDN						
5	Fortrinsvis mobilkommunikation				Fortrinsvis telefoni/ISDN					
6	Fortrinsvis mobilkommunikation		Fortrinsvis telefoni/ISDN					Reserve (*)		Fortrinsvis telefoni/ISDN
7	Fortrinsvis telefoni/ISDN	Fortrinsvis mobil- kommunikation	Fortrinsvis telefoni/ISDN							
8	Numre gratis for kaldende slutbruger	Fortrinsvis mobil- kommunikation	Fortrinsvis telefoni/ISDN	Reserve (*)			Fortrinsvis telefoni/ISDN			
9	Overtakserede tjenester	Fortrinsvis mobilkommunikation			Reserve (*)		Fortrinsvis telefoni/ISDN			

At en nummerserie er afsat til reserve betyder, at der på nuværende tidspunkt ikke tildeles numre fra den.
Ikke alle reserverede nummerserier fremgår direkte af oversigten, da denne kun er specificeret på de to første cifre.

- Nummerserier markeret med (*) er afsat til brug for ekstra kapacitet. Dette gælder tillige nummerserierne 108-109, 164-169 og 906-908.
- Nummerserier med førsteciffer 2-9 og tredjeciffer 0 er afsat til fremtidig udvidelse af nummerplanen. Disse fremgår ikke af oversigten.
- Nummerserien 116 er reserveret til brug for europæisk harmoniseret anvendelse af kortnumre på seks cifre til tjenester af samfundsmæssig betydning. Kortnummeret 116 112 kan ikke tildeles eller bruges af nogen tjeneste.
- Nummerserierne 2599 og 6988 vil kun blive tildelt udbydere med et minimalt nummerbehov. Der vil kun blive tildelt nummerserier på 1.000 numre. Nummerserierne 2598 og 6989 er afsat til reserve for udbydere med et minimalt nummerbehov, men disse serier vil først blive taget i brug, når det skønnes nødvendigt.
- Nummerserierne 3711-3719 og 372-379 tages først i brug, når det skønnes nødvendigt.

Example of forward thinking about a plan (Australia)



ACMA's evolutionary approach to numbering – as at March 2015

Example of an allocation table (Denmark again)

Nummerserie Number Series	Tildelt til / Øremærket Assigned to / Earmarked	Fortsat/vist til brug for Mainly used for		Pris (kr.) Price (DKK)
0		INTERNATIONAL PREFIX	1000	kr 2,000,000.00
01cdefgh		Reserved national or standard european prefix	1000	kr 2,000,000.00
02cdefgh		Reserved national or standard european prefix	1000	kr 2,000,000.00
03cdefgh		Reserved national or standard european prefix	1000	kr 2,000,000.00
04cdefgh		Reserved national or standard european prefix	1000	kr 2,000,000.00
05cdefgh		Reserved national or standard european prefix	1000	kr 2,000,000.00
06cdefgh		Reserved national or standard european prefix	1000	kr 2,000,000.00
07cdefgh		Reserved national or standard european prefix	1000	kr 2,000,000.00
08cdefgh		Reserved national or standard european prefix	1000	kr 2,000,000.00
09cdefgh		Reserved national or standard european prefix	1000	kr 2,000,000.00
1000		Carrier select code	10	kr 20,000.00
1001	Telenor	Carrier select code	10	kr 20,000.00
1002		Carrier select code	10	kr 20,000.00
1003		Carrier select code	10	kr 20,000.00
1004	TDC A/S	Carrier select code	10	kr 20,000.00
1005	Telenor	Carrier select code	10	kr 20,000.00
1006		Carrier select code	10	kr 20,000.00
1007	Timepiece	Carrier select code	10	kr 20,000.00
1008	Facilicom	Carrier select code	10	kr 20,000.00
1009	Orange Business Denmark	Carrier select code	10	kr 20,000.00
1010	A/S	Carrier select code	10	kr 20,000.00
1011	Telia	Carrier select code	10	kr 20,000.00
1012	TDC A/S	Carrier select code	10	kr 20,000.00
1013		Carrier select code	10	kr 20,000.00
1014		Carrier select code	10	kr 20,000.00
1015	Telenor	Carrier select code	10	kr 20,000.00
1016	Telenor	Carrier select code	10	kr 20,000.00
1017		Carrier select code	10	kr 20,000.00
1018		Carrier select code	10	kr 20,000.00
1019		Carrier select code	10	kr 20,000.00
1020	Supertel A/S	Carrier select code	10	kr 20,000.00
1021		Carrier select code	10	kr 20,000.00
1022		Carrier select code	10	kr 20,000.00
1023	Banedanmark	Carrier select code	10	kr 20,000.00
1024		Carrier select code	10	kr 20,000.00
1025		Carrier select code	10	kr 20,000.00
1026		Carrier select code	10	kr 20,000.00
1027		Carrier select code	10	kr 20,000.00
1028	Telia	Carrier select code	10	kr 20,000.00
1029	Verizon Denmark A/S	Carrier select code	10	kr 20,000.00
1030	TDC A/S	Carrier select code	10	kr 20,000.00
1031		Carrier select code	10	kr 20,000.00
1032		Carrier select code	10	kr 20,000.00
1033	Telenor	Carrier select code	10	kr 20,000.00
1034		Carrier select code	10	kr 20,000.00
1035		Carrier select code	10	kr 20,000.00
1036		Carrier select code	10	kr 20,000.00
1037		Carrier select code	10	kr 20,000.00
1038		Carrier select code	10	kr 20,000.00
1039		Carrier select code	10	kr 20,000.00
1040		Carrier select code	10	kr 20,000.00
1041		Carrier select code	10	kr 20,000.00
1042		Carrier select code	10	kr 20,000.00
1043		Carrier select code	10	kr 20,000.00
1044		Carrier select code	10	kr 20,000.00
1045	TDC A/S	Carrier select code	10	kr 20,000.00
1046		Carrier select code	10	kr 20,000.00
1047	Telenor	Carrier select code	10	kr 20,000.00
1048	Tellio ApS	Carrier select code	10	kr 20,000.00
1049	Telenor	Carrier select code	10	kr 20,000.00
1050		Carrier select code	10	kr 20,000.00
1051		Carrier select code	10	kr 20,000.00
1052		Carrier select code	10	kr 20,000.00
1053		Carrier select code	10	kr 20,000.00
1054		Carrier select code	10	kr 20,000.00
1055		Carrier select code	10	kr 20,000.00
1056		Carrier select code	10	kr 20,000.00
1057		Carrier select code	10	kr 20,000.00
1058		Carrier select code	10	kr 20,000.00

- This spreadsheet has nearly 5000 rows and changes often.
- Original (in Danish and English) is at <https://erhvervsstyrelsen.dk/sites/default/files/media/nummerliste8-cifredeabonmentnumre.xls>

Good numbering plans are a bit like tidy vegetable gardens...

- Designated space for specific crops
- Some empty space for new crops
- Some crops need to grow upwards rather than along the ground



Not like this ↑

More like this →



General principles of numbering plan design

- Look to the future (for some decades).
- Allow for the unforeseen and for future expansion.
 - Leave some spare capacity at each level.
- Avoid unjustified divergences between countries.
 - Conform with ITU recommendations, in particular on 00 and 0.
 - Keep in touch with other countries about numbering developments.
- Adopt good husbandry: allocate numbers with care and ensure efficient use.
- Aim to meet requirements of:
 - Users.
 - Operators.
 - Regulator.

User requirements

- **Callers require to:**
 - **Make the right decision on whether and how to call (based on correct and easily recognised tariff, location and service information).**
 - **Make calls correctly, which needs:**
 - Numbers that are not too long (easier to remember and dial).
 - Infrequent changes.
 - Uniform lengths and patterns (even if numbers need to be longer).
- **Called parties require to receive calls correctly, which needs:**
 - Infrequent changes.
 - Options to keep the number when moving or changing networks.
 - Having a choice of number, for example:
 - Getting vanity and specially tariffed numbers.
 - Avoiding numbers like ones that are called often (such as those of big hospitals).



Operator requirements

- **Economical network operation:**
 - Routing and tariff information in early digits (depending on the technology used).
 - Uniform number lengths.
 - Infrequent changes.
- **Traffic stimulation:**
 - Plentiful number supply.
 - User-friendly numbering.
- **Competitively fair/favourable allocation.**

Typically, user costs of numbering change are much greater than operator costs; a recent study for the Hong Kong regulator found they were at least 10 times greater.

Regulator requirements

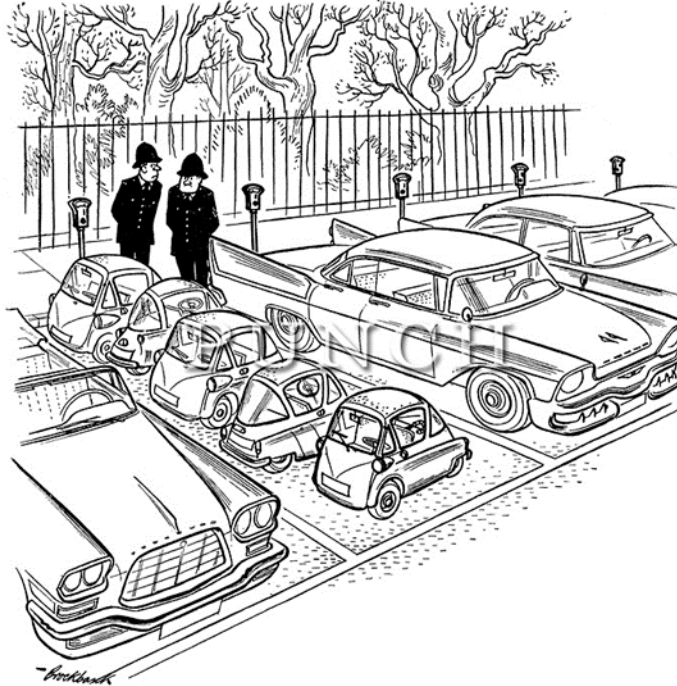
- **Fair competition:**
 - **For access providers:**
 - Local and mobile number capacity (behind **suitable shared codes**).
 - Number portability, when the time is right.
 - **For long-distance service providers:**
 - Easy access method for end users– was carrier selection codes, now more often calling cards or mobile apps.
 - **For new service providers:**
 - New service code capacity.
 - Short codes:
 - Harmonised short codes for essential public and telecom services like fault reporting (with cross-network access for telecom services).
 - Some short code space for individual operators to use as they want.
- **Ease of management:**
 - Simplest possible plan with simplest possible rules.
 - Numbering space used **efficiently**.
 - Plenty of capacity and flexibility long term.

“Suitable shared codes” make users’ lives easier



Efficiently used numbering plans last longer

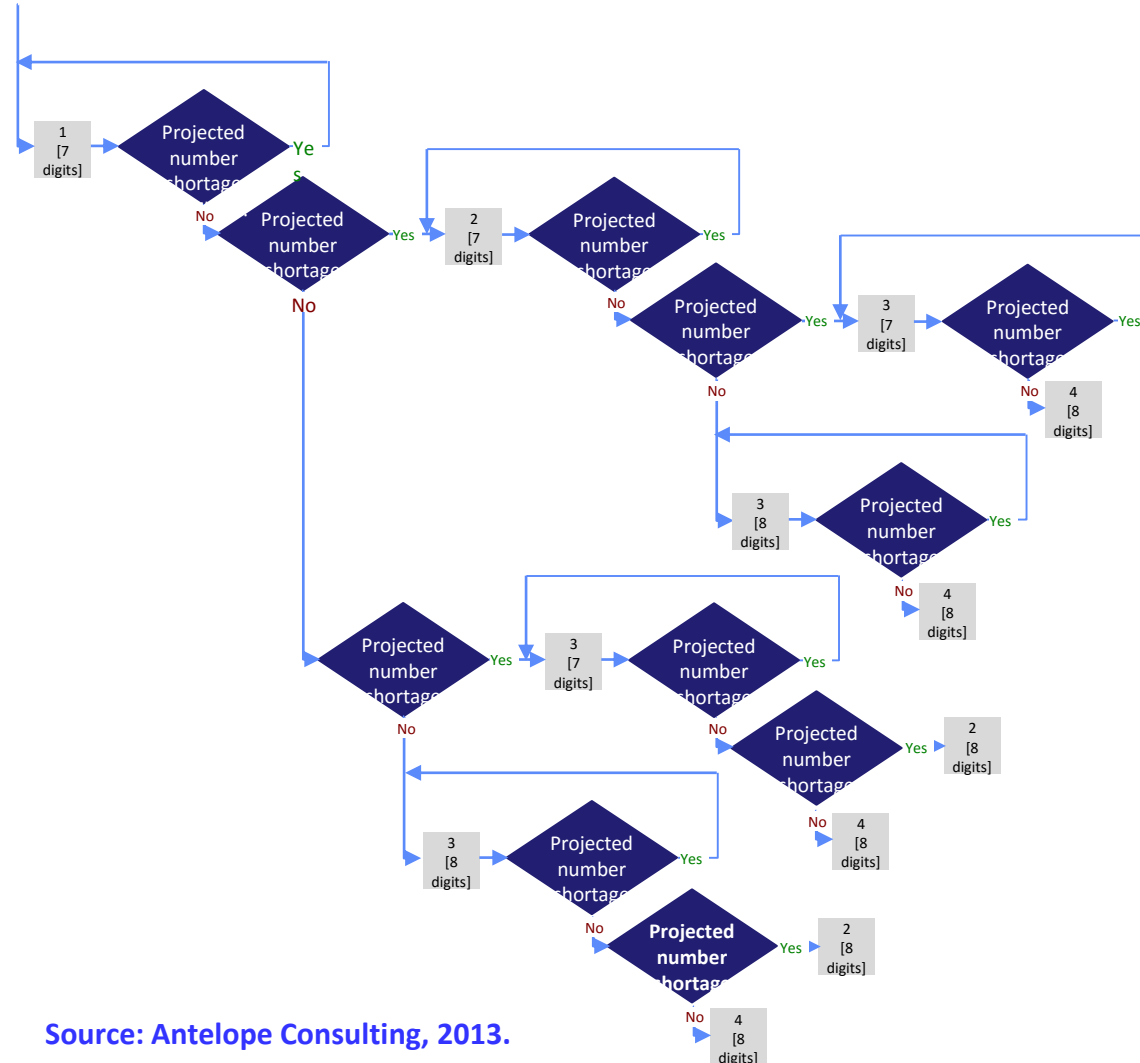
- **One 8-digit number** takes up as much numbering space as **ten 9-digit numbers** or **one hundred 10-digit numbers**.



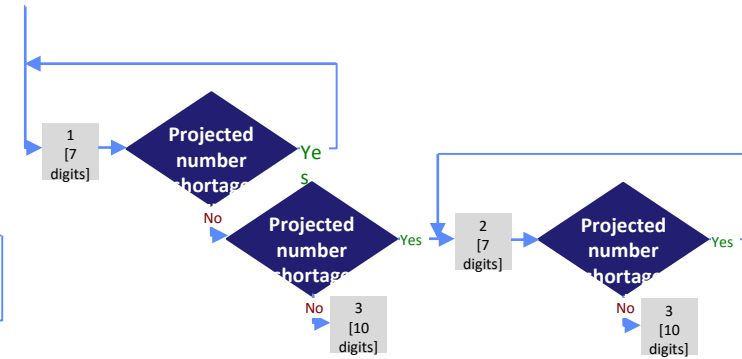
- Block allocation practices (discussed later) also affect efficiency – should avoid fragmenting numbering space.

Some plans are harder to change than others

Options for changes to fixed numbers in Ireland



Options for changes to mobile numbers in Ireland



Source: Antelope Consulting, 2013.

Source: Antelope Consulting, 2013.

Outline: part 2

1. Introduction
2. Numbering for Myanmar: overview
 - The need for agreed records
 - The use of the early digits
 - Allocated number blocks
 - Open and closed numbering plans
3. Numbering for Myanmar: detail
4. Adapting numbers
5. Numbering administration and management
6. Valuing numbers

Overview of position in Myanmar– the need for agreed records

- Some records of allocated numbers in different documents have:
 - Different prefixes for ranges ('2820 xxx', '282 xxx').
 - Different sizes for ranges ('31x xxx', '31 xxx').
 - Different ranges ('49 xxx', '58 xxx').
- Because of this:
 - Numbers already allocated might never be used.
 - Numbers already used might be allocated to someone else.
 - New numbers might clash with existing used numbers during number changes.
- There can be an outline numbering plan, but there is no agreed allocation table, so new allocations and number changes (of fixed numbers, mobile numbers and short codes) might be wrong.

There is an urgent requirement for agreed tables of allocated number blocks and proportions of registered subscribers.

New allocations and number changes will not be safe before these allocation tables are ready.

Overview of position in Myanmar

– the use of the first and second digits

First digit of NSN	Use of second digit of NSN (geographic=G, mobile=M, non-geographic=N, military=D)										Unused second digits	Detail of use	General part of country
	0	1	2	3	4	5	6	7	8	9			
1		N	G	G	G	G	G	G	G	G	1	Yangon	
2			G	G	G	G	G	G	G	G	2	Mandalay	
3	D	D	D		D		D	D			4	Military	
4			G	G	G	G	G				5	Ayeyawady, Rakhine	West
5			G	G	G	G	G	G	G	G	2	Bago, Yangon, Mon, Kayin, Taninthary	South
6	G	G	G	G	G	G	G	G	G	G	0	Magway, Mandalay, Naypyitaw	Centre
7	G	G	G	G	G	G					4	Chin, Sagaing, Kachin	North
8		G	G	G	G	G	G				4	Shan, Kayah, Mandalay	East
9			M	M	M	M	M	M	M	M	2	Mobile	
0												Trunk prefix	
Unused second digits	6	4	0	1	0	1	1	3	4	4	24		

NSN lengths vary from 6 to 9 digits (fixed) and from 8 to 10 digits (mobile).

Overview of position in Myanmar

– the use of the first, second and third digits

First digit of NSN	Quantity of third digits with allocated numbers, where second digit is...										
	0	1	2	3	4	5	6	7	8	9	0-9
1		1	8	4	2	10	9	2	10	7	53
2			7	10	2	10	10	9	4	1	53
3	1	1	1		1		1	1			6
4			6	5	5	3	5				24
5			7	6	6	2	3	7	5	6	42
6	2	4	5	4	5	3	7	7	3	2	42
7	6	6	1	3	6	6					28
8		7	7	3	5	3	3				28
9			10	6	9	10	10	5	10	3	63
0-9	9	19	52	41	41	47	48	31	32	19	339

Darker shading shows more intense use (for blue, light=1-3, medium=4-7 and dark=8-10).

There are no free 1-digit NDCs and few free 2-digit NDCs, but some first and second digits are much less used than others.

Overview of position in Myanmar– summary

- **Weaknesses**

- Incomplete numbering records and changing situation prevent regulator from exercising control.
- Current use of NDCs leaves little connected space for new services or future flexibility.
- Varied mobile number lengths are inefficient, competitively unfair and may confuse users.

- **Strengths**

- There are established meanings for geographic areas (1 to 8) and mobile (9).
- Relatively minor changes to some number lengths and a few NDCs would provide ample capacity and flexibility for the indefinite future.
- MPT has plans to modernise fixed network and aims to make numbering more convenient for users.

Numbering plan design– trends and guidelines

- Have numbers no longer than necessary for the size of the population and the expected demand for numbers.
- Retain or increase uniformity (having the same number of digits in all numbers or all numbers of a particular type, except short codes).
- Keep closed plans closed; consider closing open plans.
- Keep in mind widespread practices for codes:
 - Mobile services: often, later digits (6, 7, 8, or 9); increasing proportion of total numbering space.
 - Fixed services: often, early digits (2, 3,...); decreasing proportion of total available numbering space (with geographic simplification).
 - Short codes: 1xx, perhaps 0 (in closed plans) (includes option of short access codes for neighbouring countries).
- Require clear cost-benefit or social justification for harmonisation that needs changes:
 - Beneficiaries of international harmonisation are travellers, who are a minority.
 - Costs of co-ordinated numbering of new services are much less than costs of renumbering existing services.

Open and closed numbering schemes– trends

- **Fundamental architectural feature of a numbering scheme:**
 - Closed scheme: single dialling procedure (no national prefix needed), usually single uniform number length.
 - Open scheme: separate local and trunk dialling procedures; lengths of codes and subscriber numbers may vary.
- **Closed schemes commoner in countries with:**
 - Small area (such as Hong Kong).
 - Small population or small number of lines (such as Norway and Botswana).
 - NSN length 8 or less.
- **The balance of advantage moves towards closure as:**
 - More people have modern phones, so the number of digits matters less.
 - Geographic structure gets simpler and area codes get shorter.
 - There is a stronger expectation of portability.
 - Non-geographic services are called more.
 - International traffic grows.

Overview of position in Myanmar– recommendations

- **On closure:** Local dialling is still an important signal to fixed network users of lower tariffs, so...
 - Do not plan to close the plan soon, but
 - Keep the option of closing the plan in future, if desired.
- **On number length:** When there is a need to change numbers, do so in ways that give more nearly uniform number lengths for each of fixed and mobile numbers, minimising inconvenience to users.
 - This requires any number changes to be simple and systematic.
- **On NDC use:** If ever geographic NDCs are changed, take the opportunity to free the x0 series and, if possible, a whole first digit (perhaps 4).
- **On new service numbering:** designate new blocks only when demand is proven, matching choice to specific service requirements.

How the numbering plan might look in future

First digit of NSN	Use of second digit of NSN (geographic=G, mobile=M, non-geographic=N, military=D)									Detail of use
	0 ⁶	1	2	3	4	5	6	7	8	9
1			G							Geographic - Yangon
2			G							Geographic - Mandalay
3	D	D	D		D		D	D		Military
4	N ¹		G	G	G	G	G			Possibly free, or being freed, from geographic use
5			G	G	G	G	G	G	G	Geographic
6		G	G	G	G	G	G	G	G	Geographic
7		G	G	G	G	G				N ³ Possibly free, or being freed, from geographic use
8	N ²	G	G	G	G	G	G			N ⁴ Possibly free, or being freed, from geographic use
9			M	M	M	M		M		Mobile ⁵
0	int									National and international (int) prefixes

Notes

1. Possible corporate 400 service similar to the one in China.
2. Freephone on 800.
3. 79 used by some VOIP services.
4. 89 set aside for machine- related numbering with 13 digits.
5. CDMA has closed. All mobile numbers have 10 digits.
6. Set aside for new services requiring distinctive non-geographic numbering.

Outline: part 3

1. Introduction
2. Numbering for Myanmar: overview
3. **Numbering for Myanmar: detail**
 - **Mobile numbering**
 - **Short codes**
 - **New services numbering**
 - **VOIP numbering**
 - **Geographic numbering**
4. Adapting numbers
5. Numbering administration and management
6. Valuing numbers

Mobile numbering– trends and guidelines

- Mobile service has become, and is likely to remain, the service seen by users that needs most numbers.
- Operators harmonise many short numbers and short codes on mobile phones and, ideally, on fixed phones.
- Where end-users wish it, directory information includes mobile numbers.
- Distinctive first digits are shared among all mobile operators (so they mean “mobile” not “this operator”).
- Longer lives for mobile numbers are desired: credit should last a long time.

Mobile numbers in Myanmar– situation and recommendations

First two digits of NSN	Quantity of four-digit labels with allocated numbers having third digit of the NSN...										Free 4-digit labels	GSM operator	CDMA operator
	1	2	3	4	5	6	7	8	9	0			
91											10		
92	10	10	10	10	10	6	10	10	10	10	0	MPT	-
93	10	10	10	3		10				10	4	-	MVNO
94	1	10	1	8	10		10	10		5	2	MPT	-
95	10	10	10	10	10	10	10	10	10	10	0	MPT	-
96	10	10	10	10	10	10	10	10	10	10	0	-	MPT
97			10			10	10	10	10		5	Telenor	MPT (973)
98	10	10	10	10	10	10	10	10	10	10	0	-	MPT
99	10					10	10				7	Ooredoo	MPT (991)
90											10		

← Now

Darkness of shading shows intensity of use, as before

Possible future, if, as we recommend→

- 8-digit GSM numbers starting 92 and 95 are extended to 10 digits;
- CDMA is withdrawn.

Lighter shading shows expected expansion for operators exhausting existing allocations.

First two digits of NSN	Quantity of four-digit labels with allocated numbers having third digit of the NSN...										Free 4-digit labels	GSM operator
	1	2	3	4	5	6	7	8	9	0		
91											10	
92		1			10	6					7	MPT
93				3							4	Fourth operator, MVNO
94		10		8	10				4	5	5	MPT
95					1						9	MPT
96											0	-
97						10	10	10	10		5	Telenor
98											0	-
99						10	10				7	Ooredoo
90	Reserved for new services numbering										10	

Short numbers– trends and guidelines

- Open numbering plans let mobile phones have more short number options than do fixed phones.
- In many countries the mobile industry manages these resources, but the regulator should still have overall control, because short numbers:
 - Require non-discriminatory allocation to value added service providers.
 - Are often used for premium rate services that call for consumer protection.
 - Justify harmonisation among access networks, so that users are not confused and value added service providers can brand and port services.
- Short codes of the form 1xx (preceded by * or #) for GSM Unstructured Supplementary Service Data (USSD) may need similar supervision.
- In any case, short numbers are a scarce resource which must be used with care and in a way that is fair between competitors.
- A very important short number use is for calling help in emergencies (usually fire, ambulance, police).
 - Numbers that are known internationally (such as GSM and European standard 112 or NANP 911) may be added to national emergency numbers.

Short numbers in Myanmar– situation

- **Numbering Rules cover this topic, and define Types A, B and C; the Code of Practice provides further detail; but neither appears to be strictly observed.**
- **Here too we lack clear agreed records of actual use, which must be remedied before plans can be made.**
- **All operators make increasing use of the resource in apparently uncoordinated ways, despite agreeing that coordination would be useful, especially for:**
 - **Third party (non-telecom) service provision**
 - **SMS value-added services**
- **Three Type A codes for emergency use are implemented by all operators.**
- **Some operators provide cross-network access for certain essential telecom services.**
 - **Example: 979 (customer service) can be reached from other networks on the full-length number 0979 0000 979.**

Short numbers in Myanmar– recommendations

- Keep an **up-to-date shared record** of all actual uses of short numbers, together with planned uses as far as possible.
- **As a priority, identify space for co-ordinated use** (leaving some for independent use).
- Avoid using short number space for services that are likely to need many numbers, especially where international access may be wanted
 - 0800 is at least as good for **freephone** as 1800
 - Some countries have used 1800 because 0800 would not work for them (and the North American Numbering Plan uses it because their national prefix is 1, not 0)
- To meet needs of non-telecom service providers and end users, increase **co-ordinated use of short numbers**:
 - Between operators, especially mobile but also fixed
 - Between voice, text and USSD versions of closely related services
 - Example: credit balance checks may use all three channels
- Co-ordinate on a voluntary basis (other than for Types A and B), through an industry body with the regulator taking part.

New services numbering– trends and guidelines

- “New services” is a very general term; specific services have specific numbering requirements, and each needs separate consideration.
- Some new services need distinctive numbering so that they can be easily recognised. The best example is freephone, which is now widely recognised by the **800** flag (may be 1800, 0800 or just 800).
- Countries have tended to set aside an initial digit, where they can, for distinctive new services numbering. Where they can’t, the NDC series x0 is often used.
- Short number (national dialling) space is sometimes also used for new services; but number-hungry services need long numbers, not short ones.
 - There can also be difficulties with international accessibility.
- There are many examples of new services not living up to expectations and the numbering space set aside for them being poorly used.

New services numbering in Myanmar– situation and recommendations

- Some uses of short numbers may count as new services– see earlier.
- The only requests so far have been for freephone, non-geographic VOIP, and (long term) machine-related numbering.
- There is no free first digit, but the x0 series is lightly used. Therefore we suggest designating the x0 series for **distinctive new services numbering**.
 - 10, 20, 40, 50, 80 and 90 are currently available.
 - 30, 60 and 70 might also be freed if needed, with relatively little disruption.
 - 800 is an obvious choice for **freephone**.
- We suggest designating 79 for **non-geographic VOIP**, allocating blocks sparingly as needed. (78 is also available if needed).
- We suggest designating 89 for **machine-related numbering**, to be used at the maximum permitted number length (13 significant digits).
 - If and when this block is brought into service, eligibility for allocations should be reconsidered– non-telecom service providers (e.g. car manufacturers) may have reasonable claims.

VOIP numbering– trends

- Over-The-Top (OTT) services use the internet for communications but avoid the conventional operator switches.
- Some machine-related (“internet of things”) services are OTT services; others might be services that use existing fixed and mobile numbers.
- Voice Over IP (VOIP) services (with calls and messages) are the best known OTT services that sometimes need new numbers.



VOIP numbering in Myanmar– recommendations

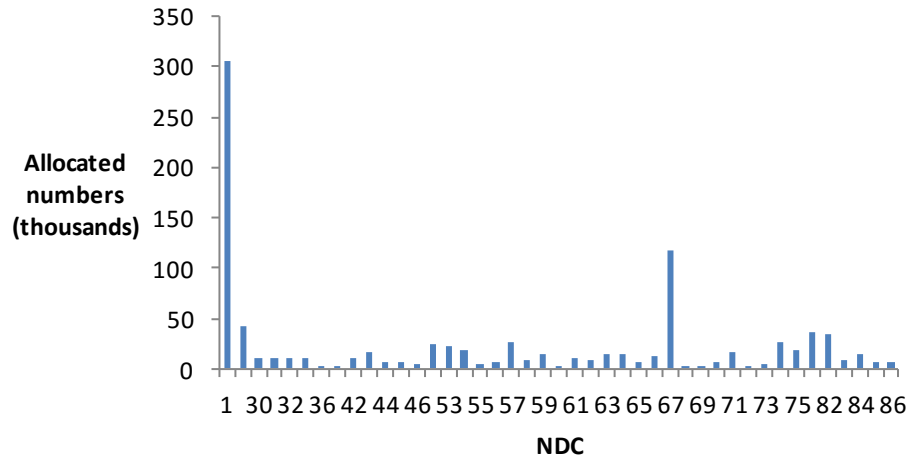
- **Let VOIP services be regarded as fixed or nomadic services for numbering purposes.**
- **Designate an NDC for nomadic services (79 is suggested, to be definite, but without real justification).**
- **Do not expect it to be heavily used.**
- **Check that its tariffs are not much higher than those for fixed NDCs.**

Geographic numbering– trends and guidelines

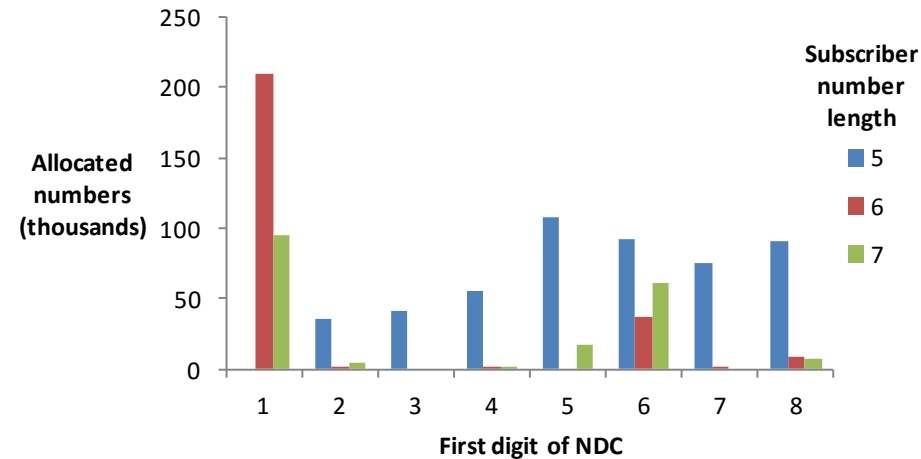
- **Geographic numbering:**
 - Is structured primarily around geography (perhaps with the first digit showing a region, the second digit showing a district in the region, and so on).
 - Is sometimes also structured to indicate the operator, the price or another feature.
 - Identifies fixed lines and local information services (and sometimes also mobile phones in countries with Receiving Party Pays).
 - Often occupies a large proportion of the numbering space, for historic reasons.
 - Often reflects distance-dependence in tariffs, for historic reasons.
- **The geographic indicator takes priority over the operator indicator, as it:**
 - Makes called locations easier to recognise.
 - Simplifies plan management in the case of failed operators.
 - Fits best with operator number portability (as a long-term option).
- **Less distance-dependence in tariffs often leads to fewer, larger, local calling areas (and fewer NDCs).**

Geographic numbering in Myanmar– allocated subscriber numbers

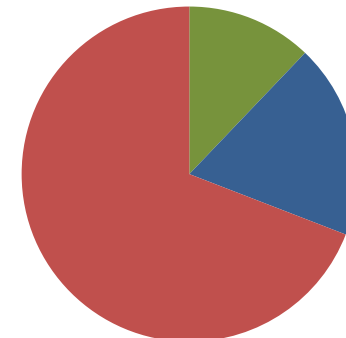
Allocated geographic numbers



Allocated geographic numbers



Distribution of matching 10,000-number blocks in all NDCs and in major cities



- Weighting towards '2x' and 'x0'
- Varying number length
- Fragmentation of the numbering space
- Split of NDCs (in Mandalay and elsewhere)

- Available in all NDCs
- Available in major cities but not in all NDCs
- Not available even in major cities

Geographic numbering in Myanmar– implications of changes

- Costs to customers
- Costs to operators
- Error by operators
- Loss of customers



That's the thirtieth call today for the fast food delivery place in Putao.



They want me to tell people that they are changing my number. Why should I? Nobody uses it. I'll stop paying them instead.

Geographic numbering in Myanmar

– changes to make NDCs available

- **Limited changes might be useful in serving bigger objectives:**
 - **To make all the 'x0' NDCs except '30' available for new non-geographic services, change NDCs of 9,000 NSNs (with 5,000 subscribers):**
 - **'60'→'76'**
 - **'70'→'77'.**
 - **To make all the '4x' NDCs available for new non-geographic services, change NDCs of 44,000 NSNs (with 30,000 subscribers):**
 - **'42'→'77'**
 - **'43'→'76'**
 - **'44'→'51'**
 - **'45'→'78'**
 - **'46'→'79'.**
- **Further changes that combine NDCs to make some available involve changing subscriber numbers as well as NDCs:**
 - **To make each state or region have only one NDC, change NDCs and subscriber numbers of 230,000 NSNs (with 110,000 subscribers).**

Geographic numbering in Myanmar

– changes to make subscriber numbers have the same lengths

- Extensive changes are undesirable, but if numbers must have the same lengths...
 - Select a digit pair between '70' and '99' that:
 - Does not occur at the start of any subscriber numbers.
 - Amend or extend all subscriber numbers so that, if, for example, '78' is the selected pair of digits, then, for formerly 6-digit and 5-digit subscriber numbers, '7' becomes the first digit and, for formerly 5-digit subscriber numbers, '8' becomes the second digit:
 - '765x xxx' → '765x xxx'.
 - '43x xxx' → '743x xxx'.
 - '2x xxx' → '782x xxx'.
 - Remove clashes by changing the second digit of formerly 6-digit subscriber numbers and, if that is not enough, the third digit of formerly 6-digit numbers:
 - '743x xxx' → '783x xxx' or, failing that, '788x xxx'.

With care only 4% of allocated subscriber numbers need to be changed in ways besides putting the selected digit or digit pair at the front.

Geographic numbering in Myanmar

– changes to make subscriber numbers be unique countrywide

- Extensive changes are undesirable, but if numbers must be unique countrywide...
 - Select for every NDC a digit pair between '70' and '99' that:
 - Does not occur at the start of any subscriber numbers in that NDC.
 - Has the same first digit as the pair for nearby NDCs.
 - Amend or extend all subscriber numbers so that, if, for example, '98' is the selected pair of digits, then '9' becomes the first digit and, for formerly 5-digit subscriber numbers, '8' becomes the second digit:
 - '765x xxx' → '965x xxx'.
 - '43x xxx' → '943x xxx'.
 - '2x xxx' → '982x xxx'.
 - Remove clashes by changing the third digit of subscriber numbers or, if that does not help, the second digit of formerly 7-digit and 6-digit subscriber numbers:
 - '965x xxx' → '964x xxx' or, failing that, '985x xxx' or, failing that, '945x xxx'.
 - '943x xxx' → '942x xxx' or, failing that, '983x xxx' or, failing that, '933x xxx'.
 - '982x xxx' → '981x xxx'.

With care only 8% of allocated subscriber numbers need to be changed in ways besides putting the selected digit or digit pair at the front.

Geographic numbers in Myanmar– recommendations

- Publish an agreed correct record of the allocated subscriber numbers.
- Protect the remaining subscriber number blocks in NDCs '60' and '70'.
- Protect all subscriber number blocks with first digit pair '78'.
- Protect vacant 100,000-number blocks, 10,000-number blocks and 1,000-number blocks in all of the following cases:
 - Where they are identical in all NDCs.
 - Where they are identical in the three major cities.
 - Where they occur in individual NDCs.
- Allocate 10,000-number blocks within partially-allocated 100,000-number blocks only and 1,000-number blocks within partially-allocated 10,000-number blocks only.
- Allocate 7-digit numbers except within partially-allocated blocks where 6-digit numbers have already been allocated.
- Avoid allocating subscriber numbers with first digits '9', '8' and '7'.
- Avoid allocating subscriber numbers with first digit '1'.
- Create new geographic NDCs only as replacements for existing ones.

Outline: part 4

1. Introduction
2. Numbering for Myanmar: overview
3. Numbering for Myanmar: detail
4. **Adapting numbers**
 - Number transitions
 - Number portability
 - ENUM
5. Numbering administration and management
6. Valuing numbers

Number transitions– objectives

- Sufficient capacity for indefinite future.
- Improved user-friendliness.
- Robustness for competitive environment.
- Ability to provide parallel running and changed number announcements (avoiding clashes with existing used numbers) wherever possible.
- Subject to above, implementation as easy and cheap as possible.

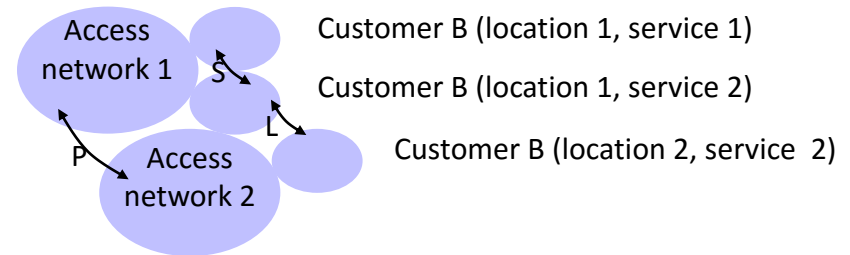
Number transitions– implementation

- **Regulators should ensure that there is:**
 - Wide consultation before making decisions.
 - Convincing public justification.
 - Sufficient advance notice.
 - Good publicity.
- **Operators should think about how number changes affect:**
 - Exchanges of different types (changing gradually, to avoid unacceptable risk).
 - Operational support systems (such as directories and all computer systems holding telephone numbers).
 - International exchanges of overseas correspondent administrations.
- **Users want:**
 - Advance publicity (far enough ahead, but not too far ahead, for diary publishers).
 - Parallel running (which can influence the chosen change).
 - Changed number announcements for misdialled calls.
 - Support for changes to customer premises equipment, especially payphones and automatic alarms.

Number portability– trends

- **Operator Number Portability:**
 - Keeping the same phone number when changing from one operator to another.
- **Location Number Portability:**
 - Keeping the same phone number when changing from one location to another (usually in the same area).
- **Service Number Portability**
 - Keeping the same phone number when changing from one service to another (from analogue to digital mobile telephony, for example).

The distinction between
operator number portability,
location number portability
and service number portability



- O: Operator number portability lets customer B change from being connected to access network 1 to being connected to access network 2 without changing phone numbers.
- L: Location number portability lets customer B change from occupying location 1 to occupying location 2 without changing phone numbers.
- S: Service number portability lets customer B change from taking service 1 to taking service 2 without changing phone numbers.

Operator mobile number portability is the one likely to be wanted first in Myanmar.

Number portability– arguments for and against it

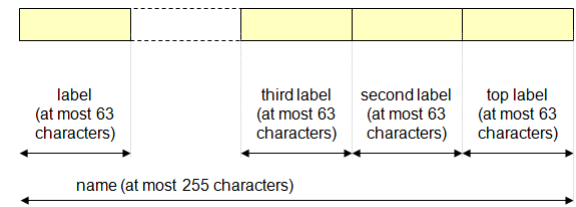
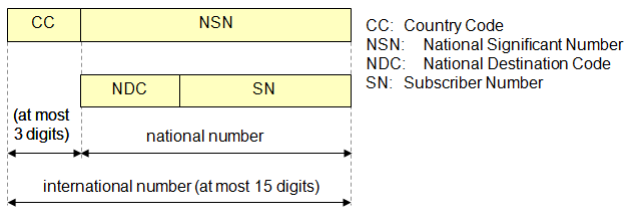
Feature	Argument
Portability is widely regarded as a right of customers, especially as it relieves small business of a major disincentive to changing between operators.	For
Portability stimulates competition and perhaps demand, both before and after its introduction.	For
Market power can become more concentrated if wholesale termination charges are high and one operator is already larger than the others.	Against
Portability boosts competition for existing (relatively high value) customers, not provision of services for customers with low incomes or outside cities.	Against
The few available skilled staff are diverted from tasks such as ensuring thorough network coverage.	Against
Many prepaid customers simply discard their SIMs (and therefore their numbers) after some months of use.	Against
The complications and costs to customers of porting numbers or making calls to ported numbers can stop porting from being used much.	Against
There are partial substitutes, such as making number change announcements or assigning to a customer the same subscriber number in different networks.	Against

Number portability in Myanmar– recommendations

- **Review periodically (perhaps every two years) whether the mobile networks serve sufficient range of customers with low incomes and outside cities for operator mobile number portability to be provided.**
- **Consider as an interim alternative to operator mobile number portability an arrangement whereby some identical subscriber number blocks are set aside for matched assignment by all the mobile operators, so that a customer assigned a number in such a block by one of the operators is entitled to be assigned the matching numbers by all of the operators.**
- **Note that, with a Next Generation Network, location geographic number portability should be very easy to provide, at least inside individual NDCs.**

ENUM– purpose

- ENUM is intended to help in relating phone numbers to IP communications.
- ENUM defines how to represent a phone number as a domain name uniquely.
- This domain name is used for finding a list of communication services with an order of priority chosen by the holder of the phone number.
- There can be several communication services, indicating, for example:
 1. First try the phone number +95 99 112 222
 2. If that fails, try the SMS number +95 99 112 222
 3. If that fails, try the SIP address rem@antelope.mm
 4. If that fails, try the email address rem@antelope.mm
 5. If that fails, try the web site www.antelope.mm
- ENUM is not a VOIP service or a numbering plan (but might be present in both).



ENUM– trends

- **ENUM (now often called “user ENUM”) has several problems with:**
 - Using e164.arpa with existing internet governance institutions.
 - Preventing harvesting of information by spammers.
 - Allowing users to put information into the domain name service.
 - Getting users to keep the information up-to-date.
 - Getting operators to provide full information for their customers.
 - Getting vendors of terminals and gateways to provide it.
 - Using the domain name service for dynamic “find me/follow me” services.
 - Providing personal identifiers in households having single or unlisted phone numbers.
- **Trials (in China, Japan and Malaysia, for example) have often not been followed by deployments.**
- **User ENUM does not meet the needs of operators that just want interconnection.**
- **Variants of user ENUM called “carrier ENUM” or “infrastructure ENUM” do meet those needs and are simply implementation techniques needing no regulation.**
- **Carrier ENUM can be used in, for example, the Pathfinder service, potential Next Generation Networks having IP Multimedia Subsystems, and number portability.**

ENUM in Myanmar– recommendations

- Do not designate numbers specifically intended for ENUM.
- Discourage the introduction of user ENUM.
- Encourage the introduction of a shared carrier ENUM system if:
 - User information is not accessible from the public internet.
 - Only numbers allocated in the national numbering plan are handled.
 - The name server operator is selected openly and reviewed periodically.
 - All operators can get information from the system with non-discriminatory pricing.
 - All operators using the system supply correct, complete and up-to-date information.

Outline: part 5

1. Introduction
2. Numbering for Myanmar: overview
3. Numbering for Myanmar: detail
4. Adapting numbers
5. Numbering administration and management
 - Roles of the regulator and others
 - Contents of numbering regulations
 - Utilisation definitions and allocation criteria
 - Reserving, allocating and withdrawing numbers
 - Non-E.164 numbers
6. Valuing numbers

The role of the regulator in numbering

- Traditionally, the incumbent operator looked after the numbering plan.
- Wherever there is competition, neutral management of the numbering plan is considered essential.
- This usually falls to the regulator or his appointed agent (e.g. North American Numbering Plan Administration in North America).
- Duties of the regulator include:
 - Overall responsibility for architecture and long-term planning.
 - Consultation of all concerned, and protection of users' interests.
 - Transparent rules and records of use of numbers.
 - Reservation, allocation and withdrawal of numbers.
 - Resolution of disputes.
- This is a considerable workload, which may be reduced by:
 - Delegation of allocation (large operators sub-allocate to smaller ones).
 - Allocating larger blocks, and avoiding Individual Number Allocation (INA).
 - Using automated (rather than manual) systems wherever possible.

Delegation and automation aren't simple solutions...



Activities related to numbering

	Numbering administration		Numbering management		
	Continuously	Frequently	Annually	Occasionally	Rarely
Industry	Keeps records of status of all allocated numbers	Applies for number blocks; implements numbers in networks	Reports on utilisation of allocated number blocks	Highlights future numbering needs	Implements major change
Regulator	Shares information on industry contacts, numbering plan and block allocations	Handles applications and allocates number blocks	Reviews overall utilisation of numbering plan	Reviews numbering plan structure and numbering policy	Consults and decides on major change

Usual contents of numbering regulations

- Basic numbering plan structure.
- Purposes for which each range of numbers may be used.
- Procedures for number reservation, allocation, and withdrawal.
- Rules on secondary allocations.
- Any charges for allocations.
- Rules on number trading.
- Rights and obligations of holders of numbers.

State of play in Myanmar

- **Telecoms Law 2013** clarifies regulator's powers and operators' eligibility for numbers (only NFS(I) and NS licensees).
- **Operating Licences** require number holders to:
 - Respect users' requests to be excluded from directories and directory enquiry services (if they provide these).
 - Provide emergency service access on designated emergency codes.
- **Numbering Rules 2013** cover most of the topics on the previous slide, at least in outline.
- Draft **Guidelines on Annual Numbering Return** exist and have been used also to accompany applications for numbering block allocations.
- **Code of Practice for Special Access Codes, Short Codes, and Short numbers** adds some detail on these topics.
- Draft **Framework for Vanity Numbers 2014** exists but is still in draft and its intended status is unclear.
- **Number charging arrangements** are set out in a letter from PTD to the main licensees dated 28 August 2014.

PTD requests on numbering administration and management

- To be discussed today:
 - Clarify **definitions** of number statuses used in Annual Numbering Return (Reseller and Dealer Inventory, etc)
 - Propose **criteria** for regulator to use when deciding on applications for number blocks
 - Review **Short Code CoP** and **Vanity Number Framework** and (with lower priority) **Numbering Rules**
- Not to be discussed today:
 - Advise on approach to **recording allocations**
 - Provide **template** for Annual Numbering Report
 - Design **forms** for number block (and other) applications

Statuses of allocated numbers



Not used to *RD Inv*
(also *Admin* and *R&H*)

RD Inv to *Active*

Cooling

Cooled recycled to
Not used

Active to *cooling*

Problems with number utilisation definition and criteria

- **Utilisation** and its sub-statuses are defined on the return form, but operators seem to interpret this in different ways.
- There is a particular problem around the status **RD Inv** (numbers already sold to resellers or dealers):
 - Rapid network expansion in Myanmar means that a lot of numbers need to be in this status, but
 - If this status is included in utilisation, thresholds lose their meaning.
 - If RD Inv is excluded from utilisation, thresholds would have to vary by operator (and in time) to be fair.
- Consider moving from **utilisation threshold** to **months to exhaust** (as used by North American Numbering Plan Administration):
 - Here exhaust means run out of numbers to supply to end users.
 - The approach seems to be fair and relatively stable over time, but it means more work for operators in showing likely exhaust.
- Your views please, on how to handle this; and how many months would be right, if that route is adopted.

Problems with number recycling periods

- Churn feeds the number recycling pool, which in turn feeds **deactivated** numbers back into the number supply pipeline when they have **cooled** (that is, when they are no longer likely to receive calls for the previous user).
- Longer cooling periods need more numbers, but are safer for new users.
- Decisions are also needed on how long to allow an “active” number to be unused before it is deactivated. Again, longer periods need more numbers but are more generous to users.
- As there is no shortage of mobile numbers, it is proposed to:
 - Favour **user-friendliness** over **economy in number use**.
 - **Minimise regulatory intervention** to what is needed to ensure competitive fairness.
- This means specifying:
 - A **minimum inactive period** from last use to deactivation.
 - A **maximum cooling period** from deactivation to reuse.
- Note: the term **active subscriber** is also used for statistical purposes (when counting operators’ subscriber bases). For this application, a fixed period since last activity is needed.

Suggestions for number recycling periods

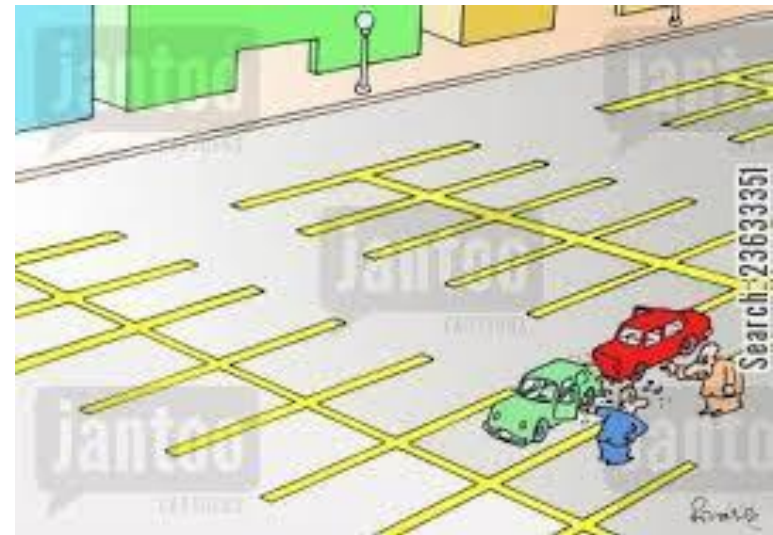
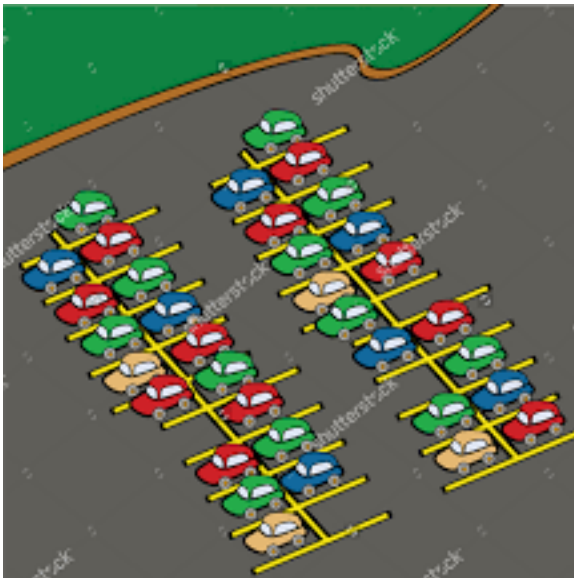
- **Minimum inactive period:** we suggest following 2013 TRAI decision unless there are good reasons to diverge from it.
 - **Activity** includes calls received or made, texts sent or credit top-up.
 - Users have a minimum of **90 days from last use** to get a warning of impending deactivation, and then a minimum **15 day grace period** during which they can reactivate.
 - If a credit balance is higher than 20 INR (~350 MMK), or if a user subscribes to a special number retention scheme, the number will not be deactivated.
 - All this must be made clear to users.
- **Maximum cooling period:** we suggest a calendar year to start with; the regulator could change this with good grounds, following consultation.
- Your views please!

Principles of reserving, allocating and withdrawing numbers

- The regulator **reserves** numbers for an eligible licensee (over a limited time), if for example:
 - The numbers are likely to be used for similar purposes to adjacent allocated numbers.
- The regulator **allocates** numbers to an eligible licensee in blocks of appropriate sizes, when need is shown, by for example:
 - Existing number blocks already being used fully enough (with 50% being “fully enough” in some countries, though 70% is required in Singapore).
 - Growth projections showing that the numbers will be needed in a limited time (such as 6 months).
- The regulator **withdraws** numbers from a licensee (after a notice period), if for example:
 - The numbers are not used and are needed for more pressing purposes.
 - The services intended for the numbers are not provided.
 - The tariff rules for the numbers are not obeyed.

Appropriate block sizes depend on demand and supply

- Typically 10,000 for fixed networks and 1,000,000 for mobile networks
- Can be less when supply nears exhaustion...
- and more when supply is plentiful and growth is rapid



Number statuses again– in numbering plan



Not yet designated for any purpose



Designated for specific purposes
(including long term expansion)



Reserved (for a particular company)
Allocated (to that company)
Assigned (to a specific end user)
Withdrawn (not shown)

Secondary number allocation

- In Myanmar, operators eligible for primary allocations are:
 - All holders of individual (rather than class) network infrastructure licences.
 - All holders of network services licences.
- Numbering Rules 15(a) and 16(b)(iii)(4) envisage secondary allocation (sub-allocation), which does already happen.
 - Should further sub-allocation (beyond secondary) be permitted?
- We suggest making the Rules more explicit here, requiring operators with primary allocations to:
 - Make secondary allocations on request (fairly and speedily), if they are dominant.
 - Ensure that secondary number holders keep all the same rules as primary ones.

Reserving, allocating and withdrawing numbers– recommendations

- A **full audit** of allocated and reserved numbers is urgently needed. The regulator should publish the findings and **reclaim unused blocks** of potential* size 10,000 (fixed) and 1,000,000 (mobile). This record must be kept updated and available to all interested parties.
- Whatever approach is decided on for assessing mobile number applications (*utilisation threshold* or *months to exhaust*) should also apply to other number types.
- The **reservation** procedure could be used more, to streamline later allocations of the reserved blocks.
- The regulator should respond to allocation applications within 45 days, **other than in exceptional circumstances**.

* For 7-digit fixed Subscriber Numbers and 10-digit mobile National Significant Numbers

Other kinds of numbering– trends

- **Other kinds of numbering could create problems of:**
 - Competition, when an operator withholds information about allocations.
 - Scarcity, when an operator creates shortages by having wasteful allocations.
- **Some kinds of numbers used for routing or administration do not follow or imitate international standards but need management by national regulators.**
For instance:
 - In some implementations of number portability, number portability codes identify nodes in recipient networks (or sometimes transit networks); they are prefixed in signalling to dialled numbers, so they must be distinguished from allocated numbers.
 - In some implementations of carrier preselection, carrier preselection codes identify operators that carry calls because of carrier preselection.

Other kinds of numbering in Myanmar– recommendations

- Agree with the industry which ranges of national SPCs should be allocated by operators under delegation from the regulator.
- Agree with the industry which, if any, national standards for signalling and internal network codes need to be developed.
- Require that potential problems with existing ways of allocating codes should be reported to the regulator as soon as they arise.
- Review trends in demand for codes annually.

Outline: part 6

1. Introduction
2. Numbering for Myanmar: overview
3. Numbering for Myanmar: detail
4. Adapting numbers
5. Numbering administration and management
6. Valuing numbers
 - Charging for numbers
 - Rights and obligations of holders of numbers
 - Vanity numbers

Charging for numbers– trends

- **Charges vary between countries:**
 - They may be initial, continuing (annual) or both.
 - They may be based on costs, value or other consideration.
 - They may be fixed as charges in advance or determined by auctions.
- **Charges are becoming more usual.**
- **Charges are frequently fairly low.**
- **Charges can be related to the numbering space occupied by a number and therefore the length of the number (as in Australia, for special service numbers, and Saudi Arabia, for short codes).**

Charging for numbers– arguments for and against it

Feature	Argument
Charges provide a useful source of revenue for the regulator.	For
Numbers are conserved better (if the charges are high enough).	For
Charges can help to remove unreasonable competitive advantages (which arise when, for example, one operator has shorter numbers than another).	For
Numbers become used in the ways that are most valuable (if the charges reflect actual values, especially for vanity numbers).	For
The extra administrative burdens for the regulator and the operators are unnecessary, as other ways of raising revenue are also used.	Against
Sales tax can achieve the same result.	Against
There is no shortage of numbers.	Against
Payment could imply ownership, not just granting of rights of use, as suggested by the Federal Communications Commission (FCC).	Against

Charging for numbers– recommendations

- Clarify that from March 2018 mobile number charges will apply to all allocated blocks, assumed to be used at their full 10-digit capacity.
- Review periodically (perhaps every two years) whether the charges have the desired incentive effect.
- Retain reserve powers to introduce or remove charges for any kind of number, at levels calculated to achieve desired outcomes, if developments suggest that further incentives to efficiency are needed.

Rights of callers and number holders

- Callers have the right to find out numbers and recognise useful information in numbers (for example, what services they are calling and what the calls will cost).
- Number holders have the right to keep their numbers and publicise them or not; this right is enhanced by number portability.
- Possible conflicts are already seen with:
 - Many ex-directory numbers.
 - Ported mobile numbers for which callers do not know the tariffs.
 - Costly personal numbers advertised misleadingly.



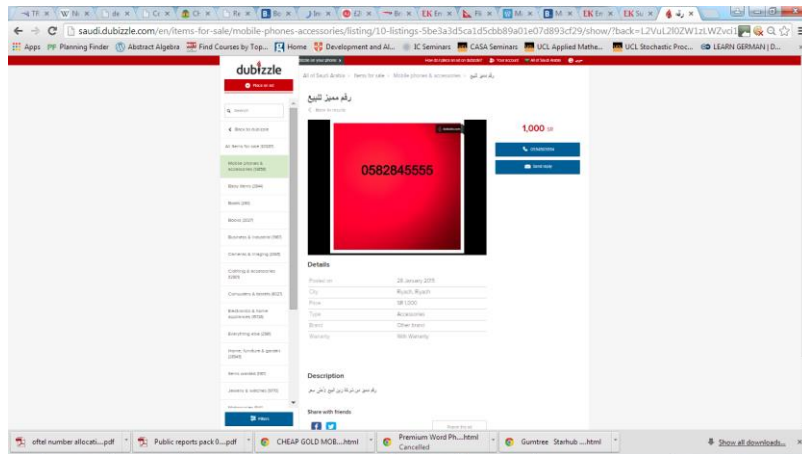
What number holders want

- **Uninterrupted use of an unchanged number, subject to:**
 - Overall national management of the plan.
 - The user paying service dues and abiding by the terms of the contract.
 - Practical considerations (such as exchange areas, and the implementation of number portability).
- **Privacy and freedom from unwanted calls**
 - Direct marketing calls.
 - Misdialed calls to heavily called numbers.
- **Choosing preferred numbers**
 - Helped by having Individual Number Allocation (INA).
- **Buying and selling numbers**
 - Controversial but increasing, especially for freephone.
- **Keeping unused numbers**
 - Potentially leading to hoarding numbers.
 - Occasionally found as 'enhanced rights of use' lengthening the 'use it or lose it' period.

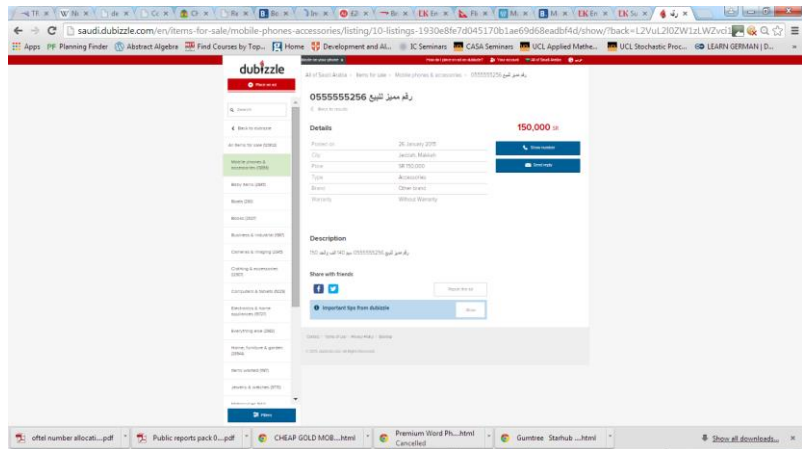


Vanity numbers– trends

‘0582845555’ SAR1,000 MMK320,000



‘055555256’ SAR150,000 MMK48,000,000



TheNational | UAE



Handout image of the Dh8 million phone number auction, Courtesy Emirates Auction Company

‘Unique’ mobile number fetches nearly Dh8 million at UAE auction

Roberta Pennington

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ABU DHABI // The mobile phone number 050-777-7777 was auctioned off for Dh7.877777 million following a heated bidding war in Abu Dhabi and Dubai over the weekend.

Vanity mobile numbers are already found in Myanmar.

Vanity numbers– formats

Principle	Examples
Digits mapping to letters on key pads	‘800 FLOWERS’ (generic) ‘800 SAMSUNG’ (branded)
Digits looking like letters	‘88’ could be ‘double happiness’ in Mandarin ‘800 848135’ could be ‘800 BABIES’ in English
Digits sounding like letters	‘8’ could be ‘richness’ in Mandarin ‘207090’ could be ‘twenty seventy ninety’ in English
Cultural references	The Beijing Olympics started on 08/08/08 at 08:08:08. ‘4’ or ‘13’ is lucky for some but unlucky for others ‘876’ ‘108’
Personal references	Birth and marriage dates
Numerical patterns	‘ 222222 ’, ‘ 227229 ’ ‘ 234567 ’, ‘ 765432 ’, ‘ 237459 ’, ‘ 547329 ’, ‘ 247689 ’, ‘ 867429 ’ ‘ 242424 ’, ‘ 247249 ’ ‘ 224499 ’, ‘ 227449 ’ ‘ 257595 ’

No simple set of rules will cover all of the formats for vanity mobile numbers.



Vanity numbers– regulatory charges and auctions

- Extra regulatory charges for vanity mobile numbers are:
 - Rather rare.
 - Administratively burdensome.
 - Dependent on defining the formats of vanity numbers.
 - Difficult to set rationally (especially as there are no substitute goods).
- Regulatory charges in other countries provide little consistent guidance.
- Regulatory auctions are becoming ever less likely.
- Regulatory charges and auctions work best alongside number portability, as it:
 - Lets customers who buy expensive numbers keep them when changing operators.
 - Tends to use database technology like that for Individual Number Allocation (INA).
- Prices set by a monopoly supplier are usually forced to be determined by cost; the regulator is a monopoly supplier of numbers.

Extra regulatory charges for vanity mobile numbers create challenges.

Vanity numbers– buying and selling numbers

- Trading in mobile numbers is usually:
 - Widespread.
 - Difficult to stop.
 - Not against the law.
 - Helpful to competition.
- Hoarding of mobile numbers is unlikely to cause problems if there are:
 - High charges for numbers.
 - Large supplies of numbers.
- Enhanced rights of use, lengthening the ‘use it or lose it’ period, are:
 - Rather rare.
 - Complicated for people having them.
 - Confusing for people having or not having them.

Prohibitions of number trading tend to be unnecessary and ineffective.

Conclusion

- Thank you for your attention and inputs today.
- Please continue talking to each other and to us.
- Please read the Consultation Document when it is issued.
- Written consultation responses will get full consideration.

