



REPUBLIC OF LEBANON
**TELECOMMUNICATIONS
REGULATORY AUTHORITY**

**Consultation on
Administering and
Implementing the
National Numbering
Plan**

May 2008

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1 Introduction

The Telecommunications Law 431/2002 (Article 5.1.f and Article 31.1) gave to the Telecommunications Regulatory Authority (“the Authority”) the responsibility for establishing and managing the numbering needed for Customers and Users of Public Telecommunication Services. The Authority is consulting on numbering management¹ in stages.

In the first stage, the Authority provided details of the changes to fixed and mobile numbering, and outlined the changes to short codes and principles for number block allocation and number charges. In this second stage, the Authority is setting out new arrangements for numbering administration, more detailed proposals for the future of short codes and premium rate and shared cost service numbering, and proposals for implementing changes to the numbering plan.

In a traditional monopoly environment, the incumbent monopoly Service Provider, or the ministry that supervises the incumbent Service Provider, has often undertaken numbering administration. Objectives have been driven by network topology and routing requirements, and correspondingly the individuals involved have been in technical departments. Conservation of the available capacity was a secondary objective, and there was no need for non-discrimination or transparency.

In Lebanon the establishment of the Authority, the prospect of a third mobile Service Provider and the introduction of a new Numbering Plan (the topic of the first Numbering Plan Consultation Document) create the requirement to review the administrative policies for the Numbering Plan and ensure a focus on capacity management along with timely and non-discriminatory allocation.

This document consults about appropriate policies to create the framework for a Numbering Regulation and for corresponding internal procedures for the Authority. It takes into account the responses to the first Numbering Plan Consultation Document that relate most directly to its content.

The numbers concerned here are those dialled by users for voice, fax and dial-up modem calls (the topic of ITU Recommendation E.164) and SMS messages. Various other codes and numbers, with associated management arrangements, were described in the first Numbering Plan Consultation Document.

¹ In this document, the terms “numbering management” and “numbering administration” are used interchangeably. In other relevant documents, sometimes a distinction is drawn between them, with management generally referring to activities of longer-term importance such as reviewing the plan, and administration referring to day-to-day activities like processing applications.

2 Selection of blocks for allocation

2.1 Allocating numbers in blocks

Numbers are normally allocated in *blocks* of all the numbers that start with the same three, four or five leading digits. In an 8-digit numbering plan this corresponds with block sizes of 100,000, 10,000 and 1,000 numbers. For example, the number block 2345 consists of the 10,000 numbers in sequence: 23450000, 23450001, and so on up to 23459999.

Any block size is a compromise between number utilisation, administrative effort, and network operational convenience. The highest utilisation would result from individual numbers being allocated as demand occurs, but this would create a tremendous administrative overhead and (potentially) consequential delays to providing service when required by customers. Conversely, allocating very large blocks would reduce delays in providing service and simplify network routing but would make inefficient use of the capacity.

For reasons of non-discrimination the Authority intends to allocate numbers and blocks of numbers on a 'first come first served' basis, once the initial migration from existing numbers has been achieved. To avoid fragmenting the numbering space, and to accommodate applications for multiple contiguous blocks, the Authority intends to allocate blocks sequentially, unless there is special justification for not doing so.

Thus, the following basic principles for number allocation are proposed:

- No Service Provider may use numbers from the Numbering Plan before being allocated them by the Authority.
- Numbers and blocks should be allocated on a 'first come first served' basis, and sequentially, unless there is special justification for doing otherwise.
- When allocating individual numbers and blocks, the Authority must have due regard for efficient use of numbering resources.

Question 1. Are the above principles for number allocation the correct ones to use? Would you like to suggest other principles for number allocation? If yes, please provide detailed explanation?

The following sections consider the individual parts of the proposed Numbering Plan and recommend appropriate block sizes for allocation purposes.

2.2 Initial digit 0

The Authority does not intend to allocate numbers beginning with 0 until there are international standards or new requirements for their use.

The Authority reserves its right to cancel the current allocation of 02 (used as the code for calls to Syria), which is contrary to international practice. If it does so, it will give due notice.

2.3 Initial digit 1

With 4-digit codes beginning with 1, there is a theoretical maximum of 999 codes available for use. However the presence of various 3-digit codes reduces this theoretical capacity.

The short lengths of these numbers make them readily memorable by customers and therefore highly desirable to service providers. As there are few of them the Authority can reasonably allocate individual numbers rather than blocks of 10 or 100 numbers. In doing so, the Authority should give particular scrutiny to allocation requests for short codes and refuse them when more (or equally) appropriate number ranges are available for use.

A separate chapter of this document considers current and future uses of short codes in more detail.

Question 2. Do you agree that the Authority should allocate numbers starting with 1 as individual numbers and refuse requests where alternative, appropriate numbers are available?

2.4 Initial digit 2

In many countries, geographic numbers have been allocated to Service Providers in blocks of 10,000. This practice originally derived from technological constraints relating to electro-mechanical telephone exchanges. More recently, these block sizes have proved administratively convenient and broadly appropriate for traditional telephony services. *Granularity loss*² can reduce the theoretical capacity of a numbering plan significantly. Some countries react to localised capacity problems by reducing the size of the allocated blocks to 1,000.

Lebanon, like many countries, is unevenly populated with areas of both relatively high and low population densities. Demand for geographically based telecommunications services will broadly follow the population densities of the geographic areas (except in major business centres, where the use of PBXs can increase demand significantly).

To allow flexibility to meet different needs while maintaining a uniform block size, the Authority proposes to allocate relatively small blocks but to permit applications for multiple blocks or larger blocks in areas of high demand (or where otherwise justified). Where (as now in Lebanon) there is no distance based charging, users need to know a general 'geographic significance' in the numbers rather than a high level of geographical precision in number ranges. However, fixed network routing can benefit from a high level of geographical precision, especially in rural areas.

Question 3. Do you agree that geographic numbers should be allocated in blocks of 1,000 numbers, and applications for multiple contiguous blocks should be encouraged for geographic areas of high demand for service?

2.5 Initial digits 3, 4, 5, and 6

The Authority does not intend to allocate numbers beginning with 3, 4, 5 or 6 until there are new services that are inappropriate to other first digits, or currently designated first digits are fully utilised. The allocation block sizes will be defined when these first digits are made available for allocation, in the light of the service types in question and other prevailing circumstances.

² Granularity loss occurs when allocated blocks are large relative to the demand for the service, with the effect that most numbers in an allocated block are unused.

2.6 Initial digit 7

The demand for, and nature of, mobile network services reduces the risk of granularity loss, so the allocation block size could be 100,000. The draft new mobile licence alludes to up to two blocks each of up to a million numbers being made available for each operator. However if non-network Service Providers³ enter the market and are allocated numbers directly by the Authority (rather than being sub-allocated them by a hosting network Service Provider) then allocation block size could be 10,000.

Question 4. Do you agree that mobile network numbers should be allocated in blocks of 10,000 numbers (except when new licences are granted), and applications for multiple contiguous blocks should be accepted at times of high growth in service?

2.7 Initial digits 8 and 9

Numbers beginning with 8 or 9 are new to the Numbering Plan, so no precedent for their allocation exists. However, a separate part of this document recommends that various services be transferred from the current short codes to numbers beginning with 8 or 9. The Service Providers offering these services could be allocated blocks from which they could choose numbers to replace the short codes.

The first Consultation Document mentions individual number allocation (INA) in these ranges, but as the number of services grows (and before number portability has been introduced) INA might well be administratively inefficient. Generally blocks of 1,000 numbers would be appropriate. However, allocating numbers directly to non-network Value Added Service Providers⁴ rather than via network Service Providers might also be suitable, and in this case very small blocks of 10 or 100 numbers might be enough.

The Authority therefore proposes that numbers beginning with 8 and 9 should be allocated as individual numbers or in blocks of up to 1,000 numbers, with number utilisation efficiency and non-discrimination as main objectives

Question 5. Do you agree that Service Providers having short codes that are to be transferred to numbers beginning with 8 or 9 should be allocated blocks from which they can choose for themselves which numbers to use for particular services?

³ Such as Mobile Virtual Network Operators (MVNOs) or resellers.

⁴ In this instance, often content providers.

3 Allocation rules

The Telecommunications Law 431/2002 requires that numbers be allocated to all Providers of Public Telecommunications Services ("Service Providers"). Transparent allocation is achieved if the Authority publishes rules to be followed by Service Providers and the Authority. The Authority then adopts internal procedures that are consistent with these rules. The emphasis in the following sections is on rules to be followed by Service Providers and the Authority, not on the internal procedures of the Authority; the internal procedures might be provided for information but are not subject to consultation or regulation.

The Telecommunications Law 431/2002 also provides the right to request reviews of decisions by the Authority. Such reviews can be requested for numbering allocation decisions in accordance with Article 14 of the said Law.

Question 6. Do you agree that the Authority should adopt numbering allocation processes such as those shown below? Please identify any aspects of the processes which you feel could be improved.

3.1 Status of blocks

For administrative purposes the individual blocks need to be allocated a status. The following five statuses are widely used by numbering administrators:

- **Allocated** applies to blocks in use or available for imminent use by Service Providers.
- **Reserved** applies to blocks in which a Service Provider has a significant interest but is not yet ready to use, or may wish to keep confidential pending activation. (An example of the former is latter is where a Service Provider is in commercial negotiations with a potential customer and does not want this to become public information.)
- **Protected** applies to blocks that are currently unavailable for allocation.
- **Unusable** applies to blocks that are unusable due to system constraints or risk of dialling errors.
- **Free** applies to blocks that are available for allocation but not yet allocated to a Service Provider.

These statuses should be applied at the levels of granularity that are used for block and number allocation, i.e. individual numbers in the 1xx(x) short code range, 1,000 blocks for geographic services and 10,000 blocks for mobile network services.

Service Providers may legitimately use certain numbers for network routing purposes (such as connecting roaming users). These numbers are not dialled by customers. Even so, Service Providers must apply for these numbers to be allocated to them, as otherwise another Service Provider could be allocated these numbers, leading to incompatible different uses in competing networks. Once allocated for such uses, blocks have the status *allocated*; annual returns for numbering audits can mention their special uses and consequent low utilisations.

3.2 Applications for allocations and reservations

Applications for the allocation or reservation of numbers should be submitted to the Authority as soon as a definite requirement for numbers has been recognised. The applicant should provide:

- Name and contact details of the applicant.

- Type of application (allocation or reservation).
- An indication of which, if any, parts of the application are to be regarded as confidential between the applicant and the Authority.
- Details of any existing ranges held that are relevant to that application.
- Details of the applicant's interconnection (and, if any, number portability) arrangements.
- Number and size of blocks applied for, and the required numbering range.
- Any request for a specific (non-sequential) allocation, with justification.
- Details of the type of telecommunications service intended on the range and the proposed tariff rate of the service.
- The date by which the allocation is required.
- The date when the service is planned to be operational.
- Numbers in service allocated to end-users.
- Numbers set aside to meet contractual commitments.
- A three year forecast of demand.
- Any other information that the applicant wants to provide in support of its application.

3.3 Reserving numbers or codes

Reservations of numbers for up to 6 months, in advance of requests for allocation, are appropriate for example where:

- An applicant does not want to be identified.
- The reason for the application should not be divulged prior to an application for the allocation.
- A customer order has not been finalised.
- A route for migrating numbers from another block or code needs to be identified.

A reservation may be made against a specific request submitted by any Service Provider eligible to receive allocations (for example, for the expansion or growth of existing services or for the introduction of new services).

Reservation of a number range does not guarantee that it will be allocated to the applicant. However, the reserved numbers will be unavailable for allocation, except to the applicant and for the purpose for which the reservation was made.

It is usual to cancel a reservation if:

- The time limit has expired.
- The applicant withdraws the reservation.
- A substitute reservation or allocation has been agreed with the applicant.

Reservations are normally granted on a first-come, first-served basis.

3.4 Assessment of Applications

The Authority will assess an application against a series of criteria including:

- Consistency with the National Numbering Plan (and, in particular, with the conditions of use for the numbers requested).
- The availability of numbers.
- Demonstrated need for the numbers applied for, including both satisfactory levels of utilisation of existing blocks used for the same service and reasonable demand projections. Typical utilisation requirements elsewhere are around 50% for fixed services and up to 70% for mobile services.
- Suitability for use over all networks providing connection with the service.
- Relevant national and international standards.
- Possible anti-competitive effects.
- Alternatives offering benefits in cost and/or convenience for users and Service Providers.
- The views of the applicant and other concerned parties (through consultation where appropriate).
- Any other matters that are perceived by the Authority as relevant, subject to consultation with the applicant and others where appropriate.

3.5 Response times and publicity

The time limit between receipt of a properly completed application for an allocation or reservation, and notification of the subsequent decision, is normally set at one calendar month.

There might be specified exceptions to this period where additional information is required from the applicant or a period of consultation is required to be initiated by the regulator. The topic of charging for numbers was discussed in the First Numbering Consultation Document. If a particular application attracts a charge, then this charge must be paid before the allocation is made.

In those cases where a numbering application is refused, or granted only in part, the applicant is entitled to an explanation of the reasons for this decision. Such cases should be reported (where appropriate, in an anonymous form) in the Authority's Annual Numbering Report.

Service Providers should notify other Service Providers (and overseas Service Providers) of the new numbers, so that they will be routed to correctly. The Authority can assist in this by maintaining a contact list of individuals who have expressed an interest and emailing them to the effect that the database has been updated.

3.6 Number charges

In future, the Authority might charge for numbers to recover costs and encourage careful use of numbers. At present, it considers that raising charges for most types of number is not necessary. Furthermore, the relevant costs are not yet well understood. For the time being, it is considering setting all charges for numbers to zero. Relevant cost information will be gathered and due notice will be given of the introduction of charges for any type of number. The principles on which the Authority currently intends to base any future charges are set out in the first consultation document.

3.7 Withdrawal of reservations and allocations

As the manager of the Numbering Plan the Authority must retain powers to withdraw reservations and allocations where there is good reason to do so. The following are typical of the reasons cited for withdrawal. Withdrawing an allocation in active use has serious implications for customer service and a threat of withdrawal should be a last resort, used only after other approaches to remedying a problem have failed, and then with due notice.

- Failure to satisfy the conditions of use or any other conditions agreed with the Authority at or after the time of allocation.
- Insufficient utilisation of, or deactivation of all numbers in, an allocated block.
- Making fair and open competition more difficult to maintain.
- Being non-compliant with a duly notified change to the National Numbering Plan.

3.8 Sub-allocating and transferring numbers

If non-network Service Providers apply to the Authority for numbers, smaller block sizes might be appropriate to them than to network Service Providers. However, sometimes it is convenient for all parties if smaller Service Providers obtain their numbers through sub-allocation from larger Service Providers, rather than direct from the Authority. An example might be a payphone Service Provider, who needs only a few numbers in each of several localities. Sub-allocation could be permitted, subject to:

- The original number holder keeping full records of sub-allocations, and including information about these (and who holds them) in the annual return to the Authority.
- The original number holder including in the contract with the sub-allocated number holder a requirement to comply with all the conditions of use that are relevant to the original allocation, with the original number holder retaining responsibility for enforcing compliance if necessary.
- Only one level of sub-allocation being permitted (so Service Providers who have their numbers through sub-allocation may not further sub-allocate them to any other Service Provider).

We propose that transfer of numbers from one Service Provider to another (where the original number holder no longer has any responsibility for the transferred numbers) should be permitted only in the case of the transfer of a going telecommunication Service Provision business concern, of which the numbers are an integral part. In this case, the Authority must be notified of the transfer, and be given details of the new number holder. Otherwise, for the time being, number transfers will involve return of the numbers to the Authority by the old number holder, and re-application by the new number holder.

This provision allows the Authority to retain control of numbering transactions. When number portability is introduced, this provision should be revisited (and new administrative procedures should be introduced).

Question 7. Do you agree that sub-allocations should be permitted, subject to the above constraints, but that transfers of numbers should be permitted only in the transfer of ownership of a service from one Service Provider to another?

4 Other numbering administration activities

4.1 Auditing and reporting

To help maintain transparency in the management of the Numbering Plan the Authority should publish an annual report summarising its numbering activities undertaken during the preceding year. As an input to that report and, more importantly to assist the Authority monitor use of the available capacity and undertake forward planning of the capacity, Service Providers should be required to make an annual return on their use of the allocated numbers.

Included in that return should be information on:

- The current use of all allocated ranges.
- Numbers in service allocated to end users;
- Numbers set aside to meet contractual commitments.
- A three year forecast of demand.
- Blocks of numbers allocated to any person for purposes other than end use.

And, once Number Portability is implemented,

- The proportion of numbers ported, at the request of end users, to another Service Provider.

Question 8. Do you agree that Service Providers should be required to make an annual return by a given deadline on their use of and forecasts for the allocated numbers? Do you find the three year forecast acceptable?

Question 9. Do you agree that the Authority should publish an annual report summarising its numbering activities and (in aggregated form) the information supplied to it in the Service Providers' annual returns?

4.2 Numbering database maintenance

A Numbering Database will be required for efficient numbering administration. Widespread practice is to implement a spreadsheet-based system that records the blocks and numbers and their status. For reasons of regulatory transparency this is made publicly available on request from an interested party. Increasingly regulators publish the information on their web sites with an update of no less than monthly frequency.

Many Service Providers will maintain their own databases for various purposes (such as network routing and billing). Each of these purposes creates specific requirements for the database. The Numbering Database is not intended to replace databases maintained by Service Providers.

For allocation and Numbering Plan management purposes the publicly available Numbering Database will contain, for every block (at the level of granularity used for allocation):

- Status
- The Service Provider to which the block is allocated, if there is one. Changes due to number portability are not tracked on the database.
- Purpose for which the block has been allocated.
- Date when the Service Provider plans to make the numbers operational.

- Date when the reservation ends, if the block has been reserved.

Information recording and tracking progress on applications for allocations or reservations should be treated as commercially confidential, and recorded only in an internal version of the database. This internal version of the database will probably record:

- Internal application reference number.
- Date application received by the Authority.
- Identity of Service Provider applying.
- Preferred block(s) for allocation.
- Target date for response.
- Date response sent.
- Response (allocated / refused / more information required and so on.).
- General comments.

4.3 Numbering Plan Revision

The Numbering Plan should be regularly reviewed as new services are developed and existing services grow. Some of the ranges set aside for future flexibility may need to be brought into use. This review also applies to block sizes that have been recommended for allocation purposes.

The precise timing of such reviews should be dictated by the forecast demand included in Service Providers' annual returns recommended in this document and anecdotal evidence regarding the success of new and existing services. Experience elsewhere suggests that a review every three years is appropriate.

Any changes to the numbering plan that are decided upon should be published, with adequate advance notice of their implementation for those affected to take any required action. In particular, any changes that involve changing, adding or removing digits in numbers must be publicised at least six months for business customers and three months for residential customers in advance. Proposals for such changes would normally have been consulted upon in draft form.

The Authority therefore proposes that the plan should be reviewed every three years (or more frequently if evidence of unexpected demand for services exists), to track use of currently designated numbers and reconsider appropriate use of the undesignated capacity and number administration policies.

5 Conditions of use of numbers

5.1 Service Provider obligations

Service Providers have a right to prompt and non-discriminatory allocations from the Authority. This can only be achieved if the Service Providers accept and fulfil obligations that will assist the Authority in carrying out its functions. Often known as Conditions of Use of Numbers, these obligations may include:

- To implement and adhere to the National Numbering Plan, including any conditions of use (such as maximum tariff bands) imposed by the Authority on particular ranges of numbers.
- To use the allocated capacity in an efficient manner.
- To complete the annual returns, including demand forecasts.
- To make timely applications for additional blocks.
- To ensure that onward contracts with other Service Providers (for example, those providing Premium Rate Services) adhere to and re-enforce the primacy of the Numbering Plan, allocation procedures and conditions of use, and national ownership of the numbering resource.
- To route traffic to the numbers brought into use by other Service Providers unless explicitly told not to by the Authority
- To tell other Service Providers when numbers are being brought into use
- Not to claim ownership of or permanent rights in any particular block or code, or to use specific blocks or codes for marketing or branding purposes.
- To ensure that end users are granted at least minimum specified rights of use (such as those set out below).

Numbers may play a particular role in enforcement of consumer protection rules for premium rate services. Paragraph 17 of the Deontology Code of the Audio and SMS Services starts:

“Every breach noticed by the Ministry should lead to the immediate suspension of one or several numbers exploited by the service provider”.

The exact mechanism for suspending numbers is not specified, but it is likely to require action by one or more networks to which an offending Service Provider is connected.

Question 10. Are the conditions set out above the appropriate ones for number allocations to Service Providers to be subject to? Please identify any desirable changes in these conditions.

5.2 User rights

Although all customers tend to think and speak in terms of their ownership of numbers, “my number is...”, numbers are a national resource ‘owned’ and managed by the regulatory authority on behalf of the state. Customers do however have continuing rights of use of their numbers. Subject to fulfilling their contractual obligations (generally, to pay bills on time, and not to use the service in an illegal way), examples of these rights are:

- To continue to use the number for the duration of the service contract, without interruption or interference, unless they are affected by a change to the Numbering Plan required in the national interest.
- To have suitable notice (at least six months for business customers and three months for residential customers) of any change to the number due to a change to the Numbering Plan.
- Whenever the decision is made to change the national numbering plan, and taking into consideration the suitable notice above, licensed operators should ensure that the following measures (or equivalent) are in place wherever possible and appropriate, when number changes are introduced:
 - a. As an optional measure, a period of parallel running, at no extra charge to the number holder, during which both old and new numbers are available for use (typically 6 to 12 months);
 - b. As a mandatory measure, Changed number announcements are made to callers to the old number, free of charge to the caller, after completion of the change (typically for 3 to 6 months after the end of the parallel running period).
- To be allocated a number that is not so frequently misdialled as to cause a customer complaint, and in the case of receiving a troublesome level of misdialled or nuisance calls, to change to another number free of charge.
- To choose free of charge whether or not to be included in a recognised public directory; and, if included, to have correct and up-to-date entries submitted by their Service Provider and to have any errors in the entries corrected free of charge at the first opportunity.
- To know whether or not their calling and called line identifiers are routinely sent to call recipients (not just into the network), and any options that are available to callers for changing this. These options might involve, for example, call-by-call or permanent suppression of calling or called line identifier sending.
- Following the introduction of number portability for the service in question, to port the number to an alternative provider of the same service (or of any other service for which the number is appropriate according to the Numbering Plan). Tariffs for porting numbers would be subject to the Authority's Pricing and Number Portability Regulations, intended to protect end users against abusive charging.

Question 11. Are the Rights of Use of numbers set out above the correct ones to guarantee to customers? Please identify any desirable changes in these Rights of Use.

6 Short codes and premium rate services

The only numbering currently available for premium rate and shared cost services is on the 1xx(x) short code range, and they are occupying a large part of it. The first numbering consultation document proposed that in future they should move to new ranges of national numbers starting with “8” (for shared cost services) or “9” (for premium rate services). This consultation document addresses the following issues:

- which services currently using 1xx(x) short codes may continue to use these codes;
- for services which must migrate to new codes or numbers, how their new codes or numbers will be determined and when the migration will take place;
- guidelines for the longer term use of:
 - 1xx(x) short code space
 - The new numbering ranges starting with 8 and 9.

Detailed proposals on this topic depend on the knowledge of the current uses of 1xx(x) short code space. This document has used the following main information sources:

- a consultancy report on short codes, dating from 2004. This is the best current source of information on short code use by MOT/Ogero.
- Analysis done internally by the TRA of reports and documents available to TRA.

The Authority would welcome any further information on short code use, which is relevant to the proposals.

Good numbering plans require an understanding of the services that are being numbered. Annex A to this document therefore provides a snapshot of Lebanon’s premium rate service market, based on the internal analysis done by the TRA.

We note in particular that for numbering purposes, the way in which the services and their charges are advertised are especially important. Broadcast advertisements last only a short time and people need to take in and retain the information with ease (especially for radio – television allows a number to be displayed for longer). Accordingly:

- Services used on the move (e.g. information on demand) or advertised by radio will benefit especially from short, memorable codes. If these are to be moved from their current well-known 4-digit codes, there may be a demand for short or golden replacement numbers (also known as vanity numbers).
- Services advertised by any mass medium will benefit especially if they are available on the same code over all available networks and at similar or identical prices. Current practice in Lebanon recognises that it is a nuisance for both providers and users to have to advertise different numbers for different networks. Given that the majority of services are offered to users of both mobile networks, it would be misleading⁵ to give broadcast publicity to a code for a service on one network that leads to a different service on the other network. (Targeted publicity, for example by bulk SMS to users of one network, or printed advertising which makes clear that it applies to one network only, is a different matter).

⁵ And presumably in breach of the Deontology Code.

- Depending on how much the same code comes to be used for both voice and SMS versions of a single service, users may grow to expect this to be so. Publicity will need to be very clear on when it is and is not the case, to avoid misleading people into using (say) an SMS code advertised for a voice service, which in fact provides them with an entirely different SMS service.

Question 12. Please provide any supplementary information on current short code use, pointing to its implications for the proposals.

Question 13. Do you agree with the overall picture of the premium rate service market provided in Annex A? Please provide any supplementary information which could affect the numbering proposals.

The rest of this chapter looks at:

- current uses of short code space;
- future uses of short code space;
- future arrangements for numbering premium rate and shared cost services.

6.1 Current uses of short code space

Figure 1 below provides an overview of use of the 1xx(x) range in October 2007. The dual use of a range for voice and SMS services effectively doubles its capacity (e.g. there are 200 possible codes of the form 10xx: 100 possible codes for voice and 100 possible codes for SMS)).

Range	Number of codes in use (MIC1)	Number of codes in use (MIC2)	Description of main use
10xx	98	82	Common pool VAS, mainly SMS
11x	10	8	Mainly 3-digit internal codes
12xx	39	39	Call centres
13xx	36	58	Common pool VAS, mainly voice
14xx	78	79	Common pool VAS, mainly voice
15xx	2	1	Ogero customer service
16xx	1	7	Mainly 3-digit internal codes
17xx	18	17	Public institutions
18xx	1	5	One call centre plus few internal services
19xx	1	0	
Total	254	296	

Figure 1 Overview of short code use

The Minister's Letter dated 06/02/2003 sets out which short code ranges were to be used for which purposes. The table below summarises the effect of the Minister's Letter, interpreted in terms of the short code types above.

First Digit	Second digit	Third digit	Fourth Digit	Type/Use
1	0	0-9	0-9	Proprietary
	1	0-1	0-9	Proprietary
	1	2		Common Mandatory (Emergency)
	1	3-9	1-9	Proprietary
	2	0		Proprietary
	2	1-4	0-9	Proprietary (Commercial)
	2	5		Common Mandatory (Emergency)
	2	6-9	0-9	Proprietary (Commercial)
	3	0-4	0-9	Proprietary
	3	5-8	0-9	Proprietary (Commercial)
	3	9		Proprietary
	4	0-4	0-9	Proprietary (Commercial)
	4	5		Proprietary (Commercial)
	4	6-9	0-9	Proprietary (Commercial)
	5	1	0-4	Proprietary (Commercial)
	5	1	5	Proprietary (Non-commercial)
	5	1	6-9	Proprietary (Commercial)
	5	2-9	0-9	Proprietary (Commercial)
	6	0-9	0-9	Proprietary
	7	0-4	0-9	Common (Public institutions)
	7	5		Common Mandatory (Fire Department)
	7	6-9	0-9	Common (Public institutions)
	8	0-9	0-9	Common (Carrier Selection)
	9	0-9	0-9	Common (Carrier Selection)

This letter remains the only official guidance on use on the different ranges. Since that Letter, mobile use generally and premium SMS in particular have risen greatly. We now observe:

- The only public services actually provided by both mobile operators and Ogero on the same code appear to be the originally required 3-digit emergency codes 112 (Police), 125 (Civil Defence), and 175 (Fire Brigade), plus access to the Red Cross on both its original 140 code and the new 122, and an additional Police access on 160.
- In addition, all three operators provide access to Ogero's call centre on 1515 and to a range of public institutions on 17xx.
- Ogero provides customer services and public services on the following other three-digit codes: 100 (international operator), 120 (information), 130 (general security), 139 (fault repair), 145 (electricity supply).
- The ranges 11x, 12xx, and 17xx seem to be used broadly for the purposes intended earlier, respectively, mainly internal, corporate services and public institutions, although (in the case of 11x) not at the intended length.
- Both mobile operators are heavily using all the ranges 10xx, 13xx and 14xx for value added services. Many but not all of these codes are used by both operators to provide access to the same and similar services. Figure 2 below lists those codes in these ranges, which appear to lead to quite different services when dialled from MIC1 and MIC2.
- Restricted sub-ranges of 13xx and 14xx are used by MIC1, MIC2 and Ogero in different ways for internal customer services (MIC1: 1342-4 and 1454-7; MIC2: 1346-9 and 1350-2, Ogero: 1437-43).

- The ranges 15x(x) is barely used at all.
- The range 16x(x) is used only for the Police access code 160, and for Internet access codes from the fixed network.
- The ranges 18x(x) and 19x(x) are very lightly used, mainly by Ogero.

The possible dual use of a single code by both voice and SMS services is an issue that now needs attention. Figure 3 summarises the information to hand on dual code use.

10xx code	Type	13xx code	Type	14xx code	Type
1021	SMS	1310	voice	1413	voice
1030	SMS	1314	voice	1421	voice
1035	SMS	1333	voice	1429	voice
1056	SMS	1359	voice	1462	voice
1059	SMS	1367	voice	1463	SMS
1062	SMS	1371	voice	1474	voice
1069	SMS	1372	voice	1484	voice
1078	voice	1375	voice	1488	voice
1083	SMS	1381	voice	1499	voice
1084	SMS				
1088	SMS				
1098	SMS				

Figure 2 VAS codes used differently by MIC1 and MIC2

10xx code	Used by	Similar service (V/S)	13xx code	Used by	Similar service (V/S)	14xx code	Used by	Similar service (V/S)	14xx code	Used by	Similar service (V/S)
1004	MIC1	yes	1353	both	no	1413	MIC2	no	1445	both	no
1006	both	yes	1355	both	yes	1414	both	yes	1462	both	yes
1040	both	yes	1358	MIC2	no	1415	both	no	1463	both	yes
1050	both	yes	1363	both	no	1416	both	no	1474	both	yes
1078	both	no	1367	both	no	1418	MIC2	no	1475	both	no
1085	both	no				1420	both	no	1476	both	no
						1422	both	no	1480	both	no
						1424	both	no	1484	both	yes
						1428	both	no	1485	both	yes
						1429	both	no	1488	both	no
						1430	MIC2	no	1489	both	no
						1435	both	no	1491	both	no

Figure 3 VAS codes used for both voice (V) and SMS (S) services

The figure shows that 35 VAS codes (of the 246 VAS codes in use) are used for both voice and SMS services, and of these 11 appear to be used for similar services in the two media – that is, for voice and SMS versions of the same service. For example, a TV programme may invite viewers to vote for their favourite song by voice or SMS, as they prefer, using the same code.

6.2 Future use of 1xx(x) short code space

The Authority believes that it is unsustainable to develop the premium rate industry in the 1xx(x) code space. As is shown by recent survey evidence, this is clearly a growing industry with considerable potential for new services (especially if prices fall). It should not be constrained by lack of numbers. Conversely, 1xx(x) space is needed for a growing variety of non-commercial applications, and maybe for carrier selection codes.

The Authority proposes, broadly in line with the definitions and table stated in the National Numbering Plan consultation, that to stay in place on 1xx(x) codes, or to obtain such codes in the future, services should fulfil the following criteria:

- Charge: no more than normal call or SMS rates.
- Purpose: public service or customer service.

Each such service would be subject to individual approval by the Authority, and in some cases, its tariff might need to be reduced. According to the summary above, the most likely current services to be candidates for future short codes are:

1. 3-digit emergency and public service codes to be provided by all operators: 112, 125, 175, 122 and/or 140. Furthermore, the codes 117, for the Lebanese Air Force, and 160, for the Police, should be moved to the 17xx public institution range as these codes are not being used for emergency services.
2. The codes used for internal customer services by Ogero (100, 120, 130, 139, 145, 1515)
3. 3-digit codes starting with 11 used for operators' internal customer services (such as billing information).
4. 4-digit codes starting with 134x or 143x-5x used for operators' internal customer services.
5. The 4-digit public institution access codes on 17xx⁶.

It is proposed that the ranges 13xx and 14xx be reserved for operators' internal customer services. Here "operators" include data providers such as National Broadband Licensees and non-facilities-based service providers such as Mobile Virtual Network Operators.

It should be noted that any one code may be used by more than one operator, and if they so choose with a different meaning from other operators. Where cross-network access to these services is desired (for example, to enable fault reporting from a different network) full length national numbers will be needed instead. This is in line with MIC 2 current practice of providing access to the same customer service on, for example, both 113 from its own network and 03 800113 from any phone. The new specially tariffed ranges starting with 8 will be preferred for such numbers.

In addition, the Authority proposes to reserve the ranges 18xx and 19xx for future carrier selection codes (to enable callers to access alternative long-distance carriers call-by-call in a single sequence of dialled digits).

Question 14. Do you agree with the proposed criteria for services to be provided on 1xx(x) short codes? If not, please suggest your preferred alternative criteria.

Question 15. Should there be a dedicated range of codes for emergency services?

Question 16. Are there additions or corrections to the list here of current services which are likely to fulfil these criteria?

Question 17. Do you agree with the proposal to reserve the ranges 13xx and 14xx for internal customer services? If not, please say why and state your alternative proposal.

⁶ These services are provided directly for public authorities by the operators, unlike services for foreign embassies, which are provided by a VAS provider.

Question 18. *Do you agree with the proposal to reserve the ranges 18xx and 19xx for future carrier selection codes? If not, please say why and state your preferred way to provide carrier selection codes.*

6.3 Future premium rate and shared cost service numbering

The first numbering consultation document proposed to use the new first digits 8 and 9 for shared cost (non-premium rate specially tariffed services) and premium rate services respectively. It also proposed to open only certain sub-ranges for initial use. Some sub-ranges might offer shorter numbers (e.g. six digits instead of eight) and others might have restrictions, for example on the maximum tariff or total cost of the call or message. Pending final decisions on these issues, the Authority now makes the following additional proposals for these ranges, to minimise customer confusion:

- As is normal for national numbers, any one number will always lead to the same service no matter what network it is dialled from.
- Unless there is a good reason to the contrary, a single service should be advertised on a single number.
- If voice and SMS services use the same number, the two services should be closely related (normally, they would be voice and SMS versions of the same service).

The Authority recognises the potential importance of attractive or memorable⁷ numbers for these services and therefore wishes the relevant allocation mechanisms to enable such numbers to be used. The first consultation document put forward two options: individual number allocation for each service, and allocating blocks of 1,000 numbers from each relevant range to service providers⁸ (from which they could choose appropriate numbers for their services). For reasons of operational efficiency, the Authority now tends towards block allocation for the time being. However, it remains open to other views

Once the new substructure of these ranges has been decided and they have been opened, the Authority proposes a period of six months for all premium rate and shared cost services to migrate to new numbers, during which service providers may keep changed number announcements (uncharged) on the old codes. Any residual use of 1xx(x) numbers for premium rate services after the end date would be by individual agreement.

Question 19. *Do you agree with the proposed rules for avoiding customer confusion in relation to premium rate and shared cost services in the future numbering ranges?*

Question 20. *Are you content with the proposal to allocate numbers from these ranges to service providers in blocks of 1,000 numbers for the time being? If not, please explain why, and give your preferred approach to allocation of these numbers.*

Question 21. *Do you see any difficulties with the proposal to allow six months for services to migrate from 1xx(x) short codes to the new ranges? Are you aware of any specific services for which a longer migration period would be desirable?*

⁷ These may be known as “golden” (or other precious metal) numbers, or vanity numbers.

⁸ For the time being, it is the Authority’s intention to allocate numbers only to network operators and not directly to value added service providers.

7 Implementation of new numbering plan in Lebanon

The first numbering consultation document set out the following changes to the numbering plan:

- All geographic numbers will take 2 in place of 0 as the first dialled digit.
- Current mobile numbers will be moved to two distinct ranges starting with 7 for each operator. MIC1 numbers starting with 03 (followed by 1, 2, 3, 4 or 5) will move to the 71 range, while MIC2 numbers starting with 03 (followed by 6, 7, 8, 9 or 0) will move to the 75 range. MIC1 numbers starting with 70 (followed by 1 or 2) will move to 72, while MIC2 numbers starting with 70 (followed by 0, 8 or 9) will move to 76.
- Mobile number ranges starting with 73 and 74 will be reserved for Liban Telecom.
- Some short codes starting with 1 (for value-added services) will be changed to new numbers starting with 8 or 9, while others may be withdrawn or changed to different short codes.

The changes to short codes were discussed in more detail in the previous chapter. This chapter looks at implementation of the changes to fixed and mobile numbers.

Sections below address the following topics:

- Timing of the change to fixed numbers.
- Timing and phasing of the changes to mobile numbers.
- Practical actions required from the industry, the regulator and users in preparation for the changes, and afterwards.
- Management and co-ordination of changes.
- Meeting the costs of change.

7.1 Timing of the change to fixed numbers

The single main driver for the changes is rapid growth in the mobile industry. Fostering this growth requires increased and distinctive numbering capacity for mobile phones, and also fair competitive conditions for all mobile service providers.

New mobile numbering capacity starting with 7 can be brought into service before changes to geographic numbers, mobile numbers and short codes take place, and to a large extent independently of them. (International incoming calls to new mobile numbers would be distinguished from old geographic numbers by counting whether they have 8 rather than 7 digits.) Mobile capacity is not therefore the critical pressure for the fixed numbering change. Rather, it is the ability to give clear long-term numbering identities to mobile and other new services, untainted by association with the current geographic National Destination Codes. The new clear identity “7” for mobile numbers made possible by the fixed numbering change will be important long term, but a few months’ delay in implementing it will have no adverse effect.

Similarly, new specially tariffed numbers starting with 8 and 9 can be brought into service independently of the main changes. We therefore propose that the main change to fixed numbers should be planned to occur as soon as practically possible; however, it should also allow for a robust switchover to the new numbers with minimal risk of network problems or serious customer inconvenience, and without incurring significant and avoidable extra costs.

Determining an actual date will depend on practical factors that are best known to the operators. The Authority expects that a lead-time of a year should be adequate. However, the fixed network operator will have more preparations to do than the mobile operators, and may have special difficulties (for example with a few older exchanges).

The change to geographic numbers is a simple, systematic change that is well adapted to national publicity messages using broadcast media. As is discussed further below, the complex changes to mobile numbers cannot be publicised in the same way, but the simple message “mobile numbers are changing too – look for detailed information about this” could be broadcast at the same time.

Given the possibility of national publicity, it will probably be easiest for all fixed numbers to change at the same time, on a single well-publicised day. The main arguments used against such simultaneous changes are that they can require too much operator effort concentrated into a short period, and can lead to network overload or even instability if errors are made while reprogramming exchanges, or if there are large volumes of misdialled calls. Luckily, in this case, the change permits indefinite parallel running of old and new numbers. This means that preparations can be spread over a comfortable period, and routing to new numbers can be thoroughly tested before the new arrangements go live.

Question 22. Should the changes to geographic numbers take place on a single, well-publicised day or would it be better to split them into stages? If the latter, please indicate (with explanation) the stages you would prefer and their relative timing.

Question 23. Will a lead-time of a year give enough opportunity to prepare for a smooth changeover?

7.2 Timing and phasing of the changes to mobile numbers

Figure 4 below shows the specific mobile number changes that preserve as much as possible of customers' numbers (that is, the last six digits), given the block changes that were set out above.

Old mobile number	New mobile number
030 xxxxx	750 xxxxx
031 xxxxx	711 xxxxx
032 xxxxx	712 xxxxx
033 xxxxx	713 xxxxx
034 xxxxx	714 xxxxx
035 xxxxx	715 xxxxx
036 xxxxx	756 xxxxx
037 xxxxx	757 xxxxx
038 xxxxx	758 xxxxx
039 xxxxx	759 xxxxx
701 xxxxx	721 xxxxx
702 xxxxx	722 xxxxx
708 xxxxx	768 xxxxx
709 xxxxx	769 xxxxx

Figure 4 Migration of mobile numbers

In order to avoid making this list longer, mobile operators must issue new mobile numbers (which will not need changing) from their new blocks (71 or 72 for MIC1 / Licensee 1, 75 or 76 for MIC2 / Licensee 2) as soon as possible. After a given date, no new numbers should be issued which will be subject to change. All the numbers to which mobile numbers will be changed should be made available (running in parallel with existing numbers) at the start of the change period, to permit people to begin using the new numbers at any time (in advance of being obliged to do so).

As already mentioned, the nature of these changes makes them unsuitable for publicity through a single broadcast message. Other forms of publicity which could be considered are:

- Widely distributed leaflets with a list of codes similar to the table above, and also the dates when these numbers may and/or must be used in place of existing numbers. Among other things, these should be distributed with phone bills, and included in the package with prepaid cards.
- Press (newspaper or magazine) advertisements containing the same information, together with encouragement to “cut this out and keep it safely with your phone”.
- Notices prominently displayed next to payphones and any other phones that are accessible to the general public.
- Free automated telephone information services which the user could interrogate with an old number, and which would then return the new number and relevant change dates. This information could be provided in both voice and text (SMS) formats.
- An Internet page, prominently linked to the Authority’s website and all operators’ websites, containing all this information, including a “translation machine” that, fed an old number, will return a new number. This will be especially useful for callers from other countries.
- Informative text messages sent to mobile phones (with an easy way for the recipient to opt out of receiving them).
- Changed Number Announcements on all old numbers, which for a period connect the call after giving a free message on what the new number will be, and thereafter simply provide the free message and require the caller to redial using the new number.

Clearly, these different forms of publicity have different costs and practical implications.

Question 24. What are your preferences among the forms of publicity for the mobile number changes that are mentioned above? Please explain why you hold these preferences. Have you other suggestions for forms of publicity that would reduce costs to operators and/or inconvenience to users?

As regards timing and phasing of the changes to mobile numbers, the following main options may be identified:

- Change all mobile numbers at the same time (and, possibly, at the same time as fixed numbers). This would maximise the utility of shared publicity between the fixed and mobile changes. However, it would also have the highest costs for Changed Number Announcement equipment, the most demanding operator manpower profile, and the highest risk of serious network problems (in case of exchange reprogramming errors, or unexpectedly high levels of misdialling old numbers).

- Change mobile numbers in two phases, for example first those starting with 03 followed (some months later) by those starting with 70 (or the opposite way round). Changing 03 numbers first would get the larger-volume change over with first; on the other hand, changing the 70 numbers first would provide a learning experience of possible value for the larger change.
- The numbers starting with 03 could also be changed in two phases, one for each operator. A total of three phases could make publicity messages simpler and even permit broadcasting to be used for each phase; for example “if you are calling a mobile number that starts with 031, 032, 033, 034 or 035, then the 03 will change to 71 on [date] – the rest of the number will stay the same”.

Factors to be taken into account when considering timing include:

- The later any given block of numbers is changed, the more customers will have migrated to new numbers of their own accord, thereby avoiding a forced number change and reducing the network load of misdialling when the change happens. This natural churn will be a more significant factor when number blocks cater for prepaid customers than when they cater for postpaid customers.
- A prolonged series of number changes is tedious for everyone. The sooner the changes are completed, the sooner the benefits of the change can start to be realised.

Overall, the Authority tends to favour the two-phase approach, because of the possibility of broadcast messages; and leaving changes to the 70 range until last, since its benefits are even harder to explain to the public. To make publicity easier, the first phase could be on the same day as the fixed number change, with the other phase, say, 3 months later or 6 months later. However, since both phasing and timing are practical matters, it seeks views on all these issues from industry members.

Question 25. Should mobile numbers be changed in one, two or three phases? Should any mobile number changes happen on the same day as the change to fixed numbers? If mobile number changes happen on different days from the change to fixed numbers, should they happen before or after the change to fixed numbers? If you favour more than one phase, in what order should the phases take place and how far apart should they be? Please explain your answers.

7.3 Practical actions required from the regulator, the industry, and users

The main practical burden is preparation for the changes, although some follow-up actions are also required. Below we list preparatory tasks separately for the regulator, the industry and users, with a combined list of follow-up actions. Section 7.4 below discusses co-ordination of all these actions among the industry and the regulator.

7.3.1 Preparatory Tasks for the Regulator

When taking on responsibility for the numbering plan, the regulator will:

- Establish a numbering database (and require each Service Provider to establish a numbering database)
- Identify and recover spare number ranges and prepare them for re-release

In preparation for the numbering changes, the regulator will:

- In conjunction with MoT, advise the Telecommunications Standards Bureau (TSB) of the ITU-T and Lebanon's overseas embassies of the changes and request dissemination of the information within their respective areas. An advance announcement as early as possible, followed by reminders to international correspondents (say, one month, one week and one day before the changeover), is wise and should minimise international misdialling. (ITU-T recommendation E.164 mentions a period of two years in this context, but in practice much shorter periods are used without difficulty.)
- Identify blocks of numbers in the new scheme that can be used by Service Providers for testing before the change, and release them to Service Providers when requested.
- Arrange for test calls to the new numbers from overseas locations, to ensure that the new numbering arrangements are correctly reflected in the overseas administrations' routing tables. Special attention should be paid to the Test Roaming Cards provided by the licensed operators to foreign operators with whom roaming agreement are signed.
- Through the established Service Provider co-ordination structure, monitor progress with the implementation.
- Ensure that consistent contingency plans have been prepared by all Service Providers.

7.3.2 Preparatory Tasks for Service Providers

- Identify and implement network and Operational Support System changes⁹. These will include not only Central Office, national transit layer and inbound international routing tables, and the Intelligent Network nodes that support prepaid calling cards, but also billing, order handling, fault repair and customer service systems and directories. Internal instructions to staff must be prepared, and an expert team put in place to lead and support the changes. Annex B provides a preliminary list of points that mobile network operators will need to consider; most of the items on the list will also apply in the fixed network.
- Inform customers of the changes in a timely manner, clearly explaining how to modify how they dial numbers. A well planned and co-ordinated publicity campaign, using both national and targeted media as appropriate, may seem expensive but will probably prove worthwhile in terms of avoiding customer dissatisfaction as well as maintaining call revenues through the change.
- Explain to customers the tasks that they will need to undertake (see 7.3.3 below). Publish reminders as necessary. Consider providing support for some customer groups who may have particular problems with the change, such as small businesses or disabled people.
- Prepare trapping of misdialled calls. Identifying misdialled calls to the fixed network is comparatively easy. From the changeover day, any call starting with 0 or any call without 8 dialled digits (after a timeout) is misdialled and should be routed to a changed number announcement (CNA). Identifying misdialled calls to mobile phones will also be straightforward but will require deeper number analysis, and its details will depend on the phasing and timing that are decided upon. The CNA period is to be determined, and may change in the light of actual levels of misdialling; planning should assume at least a month but in general at most 6 months of CNA.
- Prepare network announcements for trapped calls reminding customers of the need to use the new number. They should be carefully dimensioned in numbers and capacity of recording to support the forecast load derived from misdialled numbers for a period of at least 3 months following the change implementation.
- Implement the test numbers made available by the regulator.

⁹ Operational Support Systems vary by switch manufacturer and each must be properly changed.

- Test both their own individual networks and operational support systems and interworking between networks, including correct charging of interconnect rates for calls to the new numbers and correct sending of new Calling Line Identities.
- Develop contingency plans that detail how to respond in the unlikely event that an unexpected problem occurs.

7.3.3 Preparatory Tasks for Users

- Change the numbers stored in telephone equipment, including mobile phones, fax machines, PCs, PBXs, alarm systems, point of sale terminals etc. Where feasible and with customers' agreement, licensed operators should consider using over-the-air applications to directly update numbers stored on customers' equipment.
- Change any programming of customer premises equipment (for example PBXs which may bar certain calls or private payphones which need to charge callers correctly).
- Change company and personal records and databases to reflect the new numbers, remembering any systems that might use calling line identification.
- Amend stationery, advertisements, shop and vehicle signage, websites and any other public appearance of telephone numbers.

7.3.4 Tasks at and after the Changeover

- During the predetermined time (usually a period of some night hours, say 0100 to 0500 preceding a non-business day), service providers must switch all parallel run old numbering over to Changed Number Announcements and test these connections.
- Users must start calling the new numbers and not use the old ones.
- The co-ordination arrangements set up in preparation for the change must remain in place, and indeed may be especially needed at this point if any problems arise. Service Providers should monitor traffic patterns, especially CNA usage and any congestion. Especially during the first week after the changeover, they must be ready to issue supplementary publicity and/or boost CNA capacity if necessary.
- CNAs may be withdrawn when traffic to them has dropped to negligible levels.
- Once the changeover process is complete, the Authority's staff should prepare a report on the process recording the experience and any lessons learned. This will be of value within the country for any future changes, and, if the change has been successful, could also be a useful piece of public relations material.

Question 26. Are there any other actions needed in relation to numbering changes which should be added to the above lists, to help form complete checklists

7.4 Co-ordination and management of numbering changes

It is essential for the industry to work together under the Authority's guidance to achieve a smooth result. An example of such co-operation was set during the earlier change when local dialling was replaced by full national dialling for all calls, so any successful arrangements from that period could be revived. Separate working groups will be needed for technical and marketing co-ordination. The Authority will take the initiative in setting up co-ordination meetings. It will be represented on each working group, and may choose to lead either or both.

Selected working group members should exchange personal contact details for possible emergency use at the time of and soon after the changeover.

7.5 Meeting the costs of change

It is normal practice during numbering changes for each operator to bear the costs of changes to its own network and systems. All operators will gain from co-ordinated publicity, whose costs will need to be apportioned on an equitable basis (for example, in proportion to each operator's number of customers or gross revenues). The Authority itself may usefully contribute to the publicity effort in kind, for example by giving media interviews explaining why the changes are a Good Thing for Lebanon, adding such material to its website, and (if budgets permit) producing leaflets about the changes for wide distribution.

Question 27. Can you suggest any other ways of implementing the planned numbering changes so as to keep costs and inconvenience to users and industry to the minimum?

The Premium Rate Services (PRS) market in Lebanon

Good numbering plans require an understanding of the services that are being numbered. We therefore provide a snapshot of Lebanon's premium service market based on the analysis done by the TRA..as follows:

- The voice short code revenues represent approx. 1% of the overall voice (airtime) revenues.
- The SMS short codes revenues represent approx. 12% of the overall SMS revenues.
- The voice short codes revenues represent 55% of the overall short codes revenues.
- The SMS short codes revenues represent 45% of the overall short codes revenues.
- The market share between operators is almost equal for voice revenues and slightly MIC2 exceeds for SMS revenues.

As is stated above, , the two operators MIC1 and MIC2 appear to be equally balanced in this market, with MIC2 showing a slight lead in SMS. There is now however some price differentiation between them in the prepaid market: MIC1 charges \$0.25 for 1 unit for SMS and \$0.42 for 1 unit for voice, while MIC2 charges \$0.09 for 1 unit for SMS and \$0.47 for 1 unit for voice.

From the analysis done, it is obvious that the premium service revenues are split roughly half and half between voice and SMS services. They show some seasonal variation and overall a rising trend.

Voice surcharges		SMS surcharges	
US cents per minute	Number of services	US cents per SMS	Number of services
0	4	30	1
25	1	45	12
30	1	60	2
35	5	75	13
55	8	90	51
75	13	113	17
100	50	300	4
		450	2
		525	9
		600	4
Total	82	Total	115

Figure 5 MIC2 post-paid premium charges

Figure 5, based on the internal analysis done by TRA, gives an idea of predominant charges for post-paid users. We see that the majority of services will cost the user around USD 1 for a one minute call or a single message. Some SMS services cost much more than this, but these appear to be mainly subscription services where the charge covers a month of messages, which may be daily. The charges for pre-paid users appear to work out approximately twice as expensive as those for post-paid users. These charging levels are high to very high by European standards

The great majority of premium services are provided by Value Added Service Providers (VASPs). There are five main Value Added Service Providers for voice premium services and 21 for premium SMS. The two largest VASPs, Libancall and Actel, are active in both voice and SMS, having between them approx. around 80% of voice premium revenues and around 40% of SMS premium revenues.

The services are predominantly, though not exclusively, for entertainment and linked with television programmes. More details are provided in Figure 6 for the top 10 services (by MIC1's revenue for the whole of 2007), which together provided 42.6% of its total PRS revenue for the year.

	Service description	Code	Type	MIC1 Value Added Service Provider (also MIC2 except service 10)	MIC2 charge basis postpaid (US cents)	MIC2 charge basis prepaid	MIC1 charge basis postpaid (US cents)	MIC1 charge basis prepaid
1	Memo Call	1420	voice	Libancall	(75+13) per min	3 units per min	(75+13) per min	4 units per 40 sec
2	SMS news	1085	SMS	Libancall	(525+20) per SMS	70 units per SMS	(480+20) per SMS	20 units per SMS
3	Radio Strike ringtones and logos	1485	voice	Actel	(100+13) per min	4 units per min	(100+13) per min	6 units per 40 sec
4	Information on demand	1006	voice	Libancall	(100+13) per min	4 units per min	(100+13) per min	6 units per 40 sec
5	Dardasha TV registration	1092	SMS	Iconnect	(600+20) per SMS	80 units per SMS	(480+20) per SMS	20 units per SMS
6	Information on demand	1006	SMS	Libancall	(90+20) per SMS	12 units per min	(80+20) per SMS	4 units per SMS
7	UPI news	1095	SMS	Cellcast	(525+20) per SMS	70 units per SMS	(480+20) per SMS	20 units per SMS
8	French Embassy	1214	voice	Tele Performance	(55+13) per min	3 units per min	(55+13) per min	2 units per 40 sec
9	Strike TV Live show	1399	voice	Actel	(100+13) per min	4 units per min	(100+13) per min	6 units per 40 sec
10	SMS2TV - Ghiras TV	1029	SMS	Cellcast	(450+20) per SMS	60 units per SMS	(80+20) per SMS	4 units per SMS

Figure 6 Top ten premium services by MIC1 revenue in 2007

For all these services except the last, it appeared that MIC1 and MIC2 were offering the same service on the same code in October 2007. For voice services, their charges appear to be identical, while for SMS they are similar but not identical.

Annex A Mobile operator plans for numbering change

This Annex contains a preliminary list of points that should be addressed by each mobile operator in preparation for the change in the numbering plan, so as to ensure minimum disturbance in the service provided to the consumers.

1. Brief description of the current numbering plan v/s the new numbering plan

It could be a table showing the current numbering plan and the new one. The table should include at least the country code, network destination code, subscriber number format, national dialling code and on-network dialling.

2. General overview of the GSM network:

- a. list of nodes, services and applications that will be affected by a numbering plan change

The list should include among others:

- Core network: HLR/AUC, MSC, VLR, GMSC, IAS, SCP, SMAS, IVR, IN nodes, GPRS,...
- Core services: twin cards, closed user group, ...
- IN applications: VPN, Personal Number, ...
- VAS platforms: SMSC, UMS, WAP, OTA platform, CBC, ...
- In-house developed applications (if applicable)
- 3rd party applications (if applicable)
- External interfaces
- Roaming partners
- Web services: web to sms, phone book, sms alert,...

- b. suppliers for each node, service or application

For each node listed, the provider should be specified.

3. Technical feasibility study

The technical feasibility should provide a precise idea on what has to be done in order to succeed in the numbering plan change. It should analyze the impact on the whole network as well as on external interfaces. A detailed feasibility study on each network element should be added as an annex.

- a. Modification to be made on each node
- b. Operational impact

4. Description of each step in the numbering plan change (specifying the duration)

- a. Technical pre-study

Each element of the network affected by the numbering plan will require an operational pre-study resulting in a detailed plan that will show the interdependence between various entities (internal resources, suppliers, the Authority)

- b. Preparation

Based on the pre-study, a data preparation work as well as a backup should be planned for. Also, all the commands needed to instruct the node should be prepared for execution.

c. Freezing period

Activities related to configurations and modifications on all network elements affected by the numbering plan change should cease. Some critical migration commands will be executed on test nodes.

d. Implementation

The implementation phase is the loading of the new data and commands on the nodes in preparation for the migration. It also considers the compilation of new modules for applications and services.

Special announcements should be prepared to inform subscribers of the changes implemented.

e. Migration

Migration will occur on a one-night stand mode, all nodes will migrate sequentially following a specific planning to be pre-determined by the operator during the pre-study phase.

External interfaces and applications will migrate at the same time.

f. Grace period

Following the migration, a grace period should be observed to ensure that all modified commands are running correctly.

During this grace period, announcements will be played to inform the end user of these changes. The operator should specify the period of time during which the announcement will be played depending on the loss rate.

5. Detailed cost of the project

The overall cost should include the technical pre-study, the implementation as well as the experts needed for the whole project (incl. grace period). The cost should be subdivided into 3rd party cost, internal overcharges, advertising cost, etc...

Annex B List of consultation questions

Question 1. Are the above principles for number allocation the correct ones to use? Would you like to suggest other principles for number allocation? If yes, please provide detailed explanation?

Question 2. Do you agree that the Authority should allocate numbers starting with 1 as individual numbers and refuse requests where alternative, appropriate numbers are available?

Question 3. Do you agree that geographic numbers should be allocated in blocks of 1,000 numbers, and applications for multiple contiguous blocks should be encouraged for geographic areas of high demand for service?

Question 4. Do you agree that mobile network numbers should be allocated in blocks of 10,000 numbers (except when new licences are granted), and applications for multiple contiguous blocks should be accepted at times of high growth in service?

Question 5. Do you agree that Service Providers having short codes that are to be transferred to numbers beginning with 8 or 9 should be allocated blocks from which they can choose for themselves which numbers to use for particular services?

Question 6. Do you agree that the Authority should adopt numbering allocation processes such as those shown below? Please identify any aspects of the processes which you feel could be improved.

Question 7. Do you agree that sub-allocations should be permitted, subject to the above constraints, but that transfers of numbers should be permitted only in the transfer of ownership of a service from one Service Provider to another?

Question 8. Do you agree that Service Providers should be required to make an annual return by a given deadline on their use of and forecasts for the allocated numbers? Do you find the three year forecast acceptable?

Question 9. Do you agree that the Authority should publish an annual report summarising its numbering activities and (in aggregated form) the information supplied to it in the Service Providers' annual returns?

Question 10. Are the conditions set out above the appropriate ones for number allocations to Service Providers to be subject to? Please identify any desirable changes in these conditions.

Question 11. Are the Rights of Use of numbers set out above the correct ones to guarantee to customers? Please identify any desirable changes in these Rights of Use.

Question 12. Please provide any supplementary information on current short code use, pointing to its implications for the proposals.

Question 13. Do you agree with the overall picture of the premium rate service market provided in Annex A? Please provide any supplementary information which could affect the numbering proposals.

Question 14. Do you agree with the proposed criteria for services to be provided on 1xx(x) short codes? If not, please suggest your preferred alternative criteria.

Question 15. Should there be a dedicated range of codes for emergency services?

Question 16. *Are there additions or corrections to the list here of current services which are likely to fulfil these criteria?*

Question 17. *Do you agree with the proposal to reserve the ranges 13xx and 14xx for internal customer services? If not, please say why and state your alternative proposal.*

Question 18. *Do you agree with the proposal to reserve the ranges 18xx and 19xx for future carrier selection codes? If not, please say why and state your preferred way to provide carrier selection codes*

Question 19. *Do you agree with the proposed rules for avoiding customer confusion in relation to premium rate and shared cost services in the future numbering ranges?*

Question 20. *Are you content with the proposal to allocate numbers from these ranges to service providers in blocks of 1,000 numbers for the time being? If not, please explain why, and give your preferred approach to allocation of these numbers.*

Question 21. *Do you see any difficulties with the proposal to allow six months for services to migrate from 1xx(x) short codes to the new ranges? Are you aware of any specific services for which a longer migration period would be desirable?*

Question 22. *Should the changes to geographic numbers take place on a single, well-publicised day or would it be better to split them into stages? If the latter, please indicate (with explanation) the stages you would prefer and their relative timing.*

Question 23. *Will a lead-time of a year give enough opportunity to prepare for a smooth changeover?*

Question 24. *What are your preferences among the forms of publicity for the mobile number changes that are mentioned above? Please explain why you hold these preferences. Have you other suggestions for forms of publicity that would reduce costs to operators and/or inconvenience to users?*

Question 25. *Should mobile numbers be changed in one, two or three phases? Should any mobile number changes happen on the same day as the change to fixed numbers? If mobile number changes happen on different days from the change to fixed numbers, should they happen before or after the change to fixed numbers? If you favour more than one phase, in what order should the phases take place and how far apart should they be? Please explain your answers.*

Question 26. *Are there any other actions needed in relation to numbering changes which should be added to the above lists, to help form complete checklists for all concerned?*

Question 27. *Can you suggest any other ways of implementing the planned numbering changes so as to keep costs and inconvenience to users and industry to the minimum?*