



Implementation Plan on

Number Portability

For

The Republic of Trinidad & Tobago

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1. Introduction

1.1 Rationale

The liberalization of the telecommunications sector in Trinidad and Tobago has resulted in a change in market structure for both the fixed line and mobile markets over the past three years. In the fixed line market, the incumbent TSTT has been declared dominant, holding on to the vast majority of fixed line POTs customers. Columbus Communications Trinidad Limited (FLOW) is in a distant second place (in terms of number of POTs customers). In the mobile market, the HHI has remained at approximately 5000 for the last three years¹ indicating a duopoly in this market sector. The mobile market is also characterized by a high penetration rate of 139% (*Source: Quarterly Market Update – Q1 2012, TATT*) which suggests that many consumers may have more than one mobile phone on different mobile networks. This may be indicative of consumers attempting to take advantage of perceived cost savings for on-net versus off-net rates. The Authority now considers it opportune to deepen competition in the fixed line and mobile markets.

Competition can be further promoted by introducing number portability. There are three types of number portability namely: location number portability, service number portability and service provider number portability. These three types of number portability basically enable consumers to switch either location, service or service provider without changing their telephone numbers. Concessionaires in Trinidad and Tobago are required by the Telecommunications Act No 4 of 2001 and the Telecommunications (Interconnection) Regulations 2006 to offer **service provider number portability** as and when directed by the Authority.

Currently, users who wish to change concessionaire², location (outside the rate area) or service type are required to change telephone numbers. This is likely to cause substantial inconvenience. For example, corporate users may well incur costs associated with the production of new

¹ Source: Annual Market Report 2010 and Quarterly Market Update – Q1 2012, TATT

² Concessionaire is used interchangeably with telephone service provider and service provider which are standard industry terms.

branding and information material so as to reflect the change in telephone contact information. This may act as a deterrent to changing service providers.

Number portability brings benefits to both the users who wish to port as well as to those who do not wish to port by encouraging concessionaires to offer improved packages to their subscribers in order to retain them. More attractive packages and improved quality of service are benefits which the users in Trinidad and Tobago may enjoy as a result of the introduction of number portability. Accordingly, the Authority is now proposing to introduce service provider number portability in the Republic of Trinidad and Tobago.

1.2 Objectives

The objectives of this Plan are as follows:

1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago
2. To propose a schedule for the implementation of Number Portability

1.3 Regulatory Framework

The following clauses provide regulatory direction for number portability to be implemented:

Section 25 (2) (j) of the Act provides that in respect of a concessionaire's obligations, the Authority shall require a concessionaire to *"...provide, to the extent technically feasible, number portability when required to do so and in accordance with the requirements prescribed, by the Authority."*

Condition A42 of each concession for the provision of public telecommunications services provides that the concessionaire shall, in accordance with any regulations relating to number portability, facilitate the portability of numbers assigned to any customer of any operator of public telecommunications networks or provider of public telecommunications services.

Regulation 9 of the Telecommunications (Interconnection) Regulations 2006 ("the Interconnection Regulations") mandates a concessionaire *"...to configure its network to facilitate number portability between similar networks as and when directed by the Authority"*.

Regulation 2 of the Interconnection Regulations states “...number portability means the ability of a customer to retain the same telephone number on changing telephone service providers”.

1.4 Scope of document

This document will serve as the basis for consultation with all stakeholders and interested parties as to the objectives outlined above.

1.5 Review Cycle

As the country’s telecommunications industry matures, the need will arise to revise and update this Plan. As such, the Authority shall review and revise the Plan as it deems appropriate with stakeholders and with the public.

1.6 Consultation Process

The Authority sought the views and opinions of the concessionaires and stakeholders by two public consultations on 1st April 2010 and 31st March, 2011 respectively, on the proposals made in this document. The Authority received a number of comments and recommendations in those consultations and made appropriate revisions to the *Draft Implementation plan on Number Portability for the Republic of Trinidad and Tobago*. The Decisions on Recommendations (DOR) matrices, attached as Annex 1 and Annex 2, summarize the comments and recommendations received in the first and second consultations and the decisions taken by the Authority.

The Authority now publishes the final document on the *Implementation plan on Number Portability for the Republic of Trinidad and Tobago*.

2. Definitions

The following are definitions for terms used in this document:

Concessionaire²	As defined in the Telecommunications (Interconnection) Regulations 2006
Donor network	The network of the concessionaire which is releasing the user's telephone number to the concessionaire requested by the user.
NPDB	Number Portability Database
Number Portability	As defined in the Telecommunications (Interconnection) Regulations 2006
Originating network	The network on which a call has been originated
OSS³	Operational Support Systems enable telecommunications companies to manage, monitor and control the telecommunications networks. Operational Support Systems include billing, customer care systems, directory services, network element and network management.
Recipient network	The network of the concessionaire to which the number is being transferred.
User	As defined in the Telecommunications Act, 2001

³ <http://www.yourdictionary.com/telecom/oss>

3. Types of Number Portability

There are three basic types of Number Portability:

- Service Provider Portability
- Location or Geographic Portability
- Service Portability

3.1 Service Provider Portability

This facility generally permits users of telecommunications services to change their service provider and still retain their telephone number. This can apply to users changing between fixed providers, between mobile providers, or between a fixed and mobile provider where this is required by the regulator.

3.2 Location or Geographic Portability

This facility generally permits a user to change location and still use his original telephone number. Historically, the incumbent's network allowed users to retain their fixed telephone number only when they moved within the same rate centre. It was also permitted if the same telephone exchange served both their old location and the new location.

3.3 Service Portability

This facility generally allows a subscriber to retain his telephone number when switching from one service to another service provided by the same public telecommunications concessionaire without impairment of quality, reliability or convenience. Examples of this are

- i. A user of fixed service changing to mobile service offered by the same domestic provider and retaining the same fixed line telephone number or
- ii. Migration from a TDMA based mobile network to a GSM based mobile network on the same domestic provider whilst retaining the same telephone number.
- iii. A user of fixed service migrating from a traditional circuit switched fixed line network to a VOIP fixed line network offered by the same domestic service provider whilst retaining the same telephone number.

3.4 Choice of Number Portability for Trinidad and Tobago

3.4.1 Location Portability

Location Portability is applicable to fixed line networks. Historically, fixed line networks typically were divided into rate centres that were not easily amenable to Location Number Portability. The tariff structure for the incumbent's fixed line network is based on an antiquated rate centre concept and distance. Hence, in the incumbent's fixed line network, location number portability has been limited to users who move from one location to another location in the same rate centre or served by the same exchange.

Should location portability be introduced with this rate structure concept, users will not be able or will find it extremely difficult to predict what their new telephone bill will be, given that it would depend on the customers' calling patterns. Hence the Authority considers that a simplification of the rate structure i.e. making it a flat rate structure is necessary before requiring the introduction of location portability. In the absence of a 'unified' rate structure unpredictable billing patterns may act as a disincentive to users to port their telephone number when they change location to an area that is outside of their current rate area. Until a single national rate for fixed line service is introduced, the Authority expects that there will be suppressed demand for location portability outside of the rate area at this time.

However, the Authority recognizes that the newer domestic fixed voice service providers utilize a flat rate billing structure and as such, can offer location portability to its users, given the newer technology deployed to offer services. The implementation of location number portability will realize more benefits to users. The Authority will revisit this issue at a later date.

3.4.2 Service Number Portability

Service Portability enables a user to change his service without having to change his telephone number. Historically, the incumbent has transferred mobile users from older TDMA technology to the current GSM technology without the user having to change their mobile numbers. This fact suggests that the incumbent deployed some sort of number portability platform to enable the users' original number on the TDMA network to be migrated to the newer GSM technology with the users enjoying the same services or even new services.

Currently, the incumbent has started migrating existing circuit switched land line users to its Next Generation Network (NGN). The user retains the existing suite of services (and telephone number) that he enjoyed whilst on the older circuit switched network. The above again suggests that the incumbent may have deployed some sort of number portability platform to enable the user's original number to be migrated from the older circuit switched network to the NGN. To some extent, this issue can be seen as a competitive decision on the part of the concessionaire concerned.

The Authority does not wish to deter the technological development of a concessionaire's network and as such makes no policy decision on this issue. The Authority will revisit this issue at a later date as the market matures.

3.4.3 Service Provider Number Portability

Service provider number portability enables the user to change his service provider without the inconvenience of changing his telephone number. This is the form of portability that is specifically referred to in the *Telecommunications (Interconnection) Regulations, 2006*. This facility applies to mobile to mobile service provider number portability, fixed line to fixed line service provider number portability as well as fixed line to mobile service provider number portability.

The Quarterly Market Update, Q4 2011, produced by the Authority states that as at December 2011 the penetration rates for fixed and mobile services in Trinidad and Tobago were 22.1% and 139% respectively⁴. This disparity between fixed and mobile penetration is due to the fact that while fixed lines are generally house-hold based and mobile is individual based, penetration is nonetheless computed on a per subscriber basis.

The high mobile penetration rate reflects the proliferation of mobile telephones arising from the availability of mobile networks and services in areas where the fixed line network is unavailable and from the personal and /or individual nature of mobile devices.

Mobile networks typically have more modern and flexible Operational Support Systems (OSSs) when compared to traditional fixed line networks. Hence they can be easily modified to support service provider number portability. Additionally, mobile billing systems are more flexible than fixed line legacy billing systems and can more easily facilitate service provider number

⁴ Quarterly Market Update – Q4 2011, TATT

portability. The Authority is of the view that the introduction of this form of number portability in the mobile market will bring about more choice to users in Trinidad and Tobago.

Statement of Purpose on Service Provider Number Portability:

The Authority requires that

- 1. Service provider number portability be implemented by the domestic mobile telecommunications concessionaires in Trinidad and Tobago within the timeframes referred to in Section 5 of this document.*

- 2. Service provider number portability be implemented by the domestic fixed line telecommunications concessionaires in Trinidad and Tobago within the timeframes referred to in Section 5 of this document.*

4. The Implementation of Service Provider Number Portability

4.1 Methods of Implementation

There are basically two methods of implementing service provider number portability, either of which can be used for the porting of both mobile and fixed line numbers:

- a) bilateral
- b) centralized /clearing house

4.1.1 Bilateral

In this method, the administration of ported numbers is the responsibility of the service providers who maintain their own databases with ported numbers and routing information. The information is shared among the databases. However due to the redundancy in data sharing using this approach, it is considered to be an inefficient system.

4.1.2 Centralized

In this approach, the administration of ported numbers is done by a neutral party, with service providers responsible only for the routing of the calls. This is considered to be a very efficient method and is the most popular approach adopted in Europe.

4.2 Implementation Schemes

These two methods mentioned above give rise to a number of implementation schemes for the querying and routing of calls made to ported numbers as follows:

- a) Onward Routing - OR
- b) Query on Release- QoR
- c) Call drop back
- d) All Call Query- ACQ

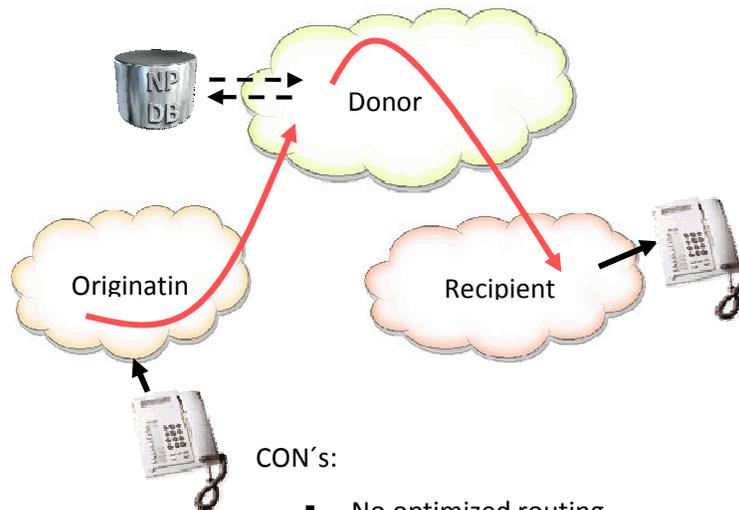
The choice implemented by various countries was determined by the technology available and in use at the time and the cost of implementation.

Descriptions of the methods used to query and route calls made to ported numbers follow.

4.2.1 Onward Routing (OR) (Fixed line application)

Figure 1

OR (Onward Routing) Scheme.



- No optimized routing
- Tromboning
- Increase of call set-up time
- No possibility for billing differentiation

Source: Inter Connect Communications Numbering Master Class, Bath, England. 11-15 July 2005
Number Portability Basic Principles- Part 1 by Gary Richenaker

The Onward Routing method is a bi-lateral database approach and the call progression is as follows⁵ (Figure 1 refers):

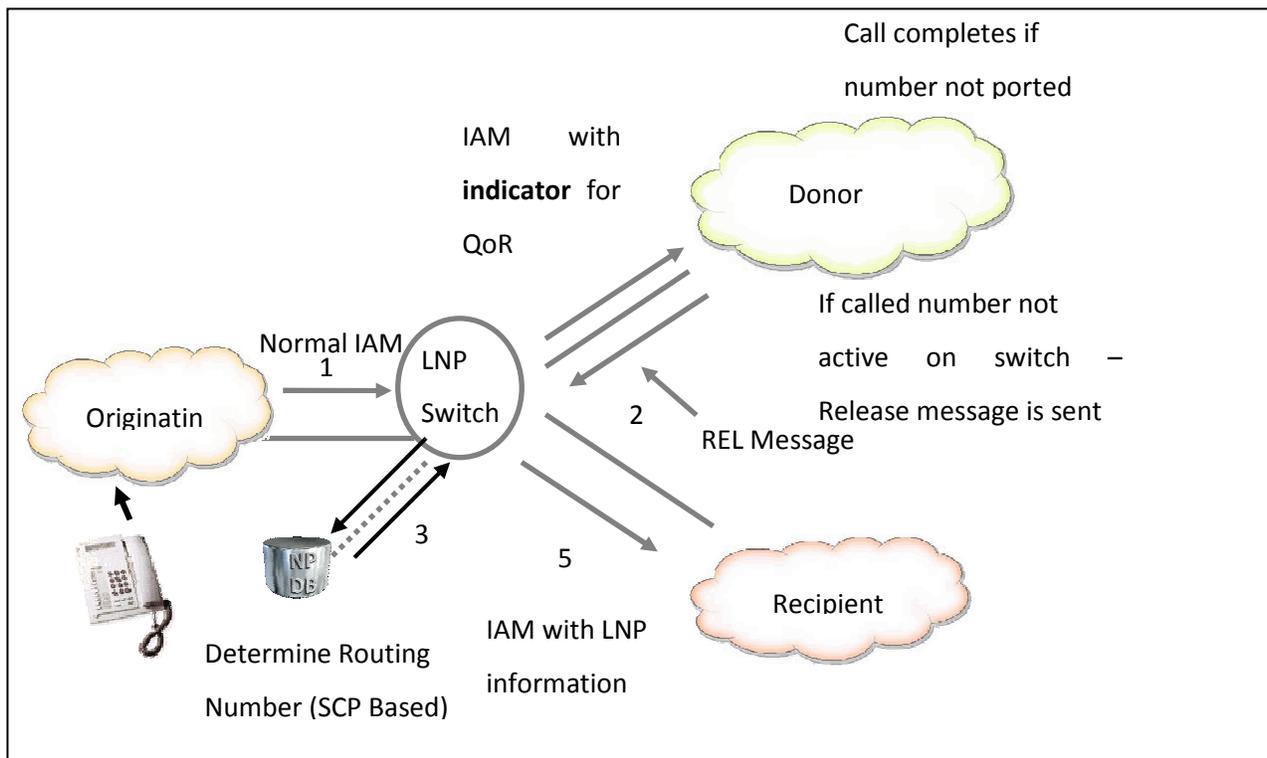
- 1) The dialed number is routed to the donor network as this is where the Originating Network knows that it has been assigned.
- 2) The donor network identifies the dialed directory number as no longer being in its inventory because it has been ported to another network and checks with an internal network-specific Number Portability Database (NPDB).

⁵ www.ietf.org/rfc/rfc3482.txt

- 3) The internal NPDB provides the routing number associated with the dialled number to the donor network.
- 4) The donor network uses the routing number to route the call to the recipient network where the user has ported his number.

4.2.2 Query on Release (Fixed line application)

Figure 2



Source: Inter Connect Communications Numbering Master Class, Bath, England. 11-15 July 2005
 Number Portability Basic Principles- Part 1 by Gary Richenaker

The call progression for the Query on Release method of routing calls to ported numbers uses a centralized database as follows⁶ (Figure 2 refers):

The originated call is routed to the donor network for completion. If the called directory number is resident on the donor network, the call is completed

⁶ www.ietf.org/rfc/rfc3482.txt

If however the called directory number has been ported, the donor network detects that and releases the call to the originating network with an indication that the number has been ported

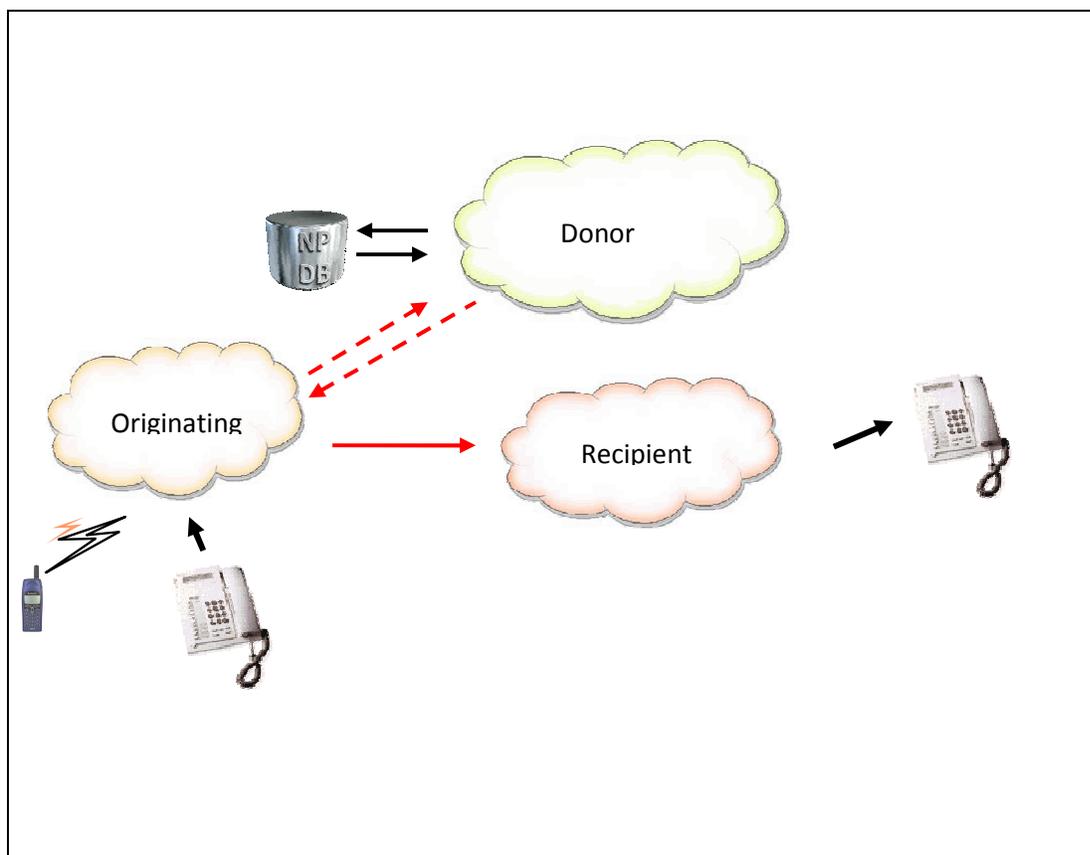
The originating network queries its copy of the centrally administered Number Portability database

The routing information for the called directory number is provided by the Number Portability database to the originating network

The originating network completes the call to the appropriate network where the called number currently resides.

4.2.3 Call Drop Back (Fixed line application)

Figure 3



Source: Inter Connect Communications Numbering Master Class, Bath, England. 11-15 July 2005
Number Portability Basic Principles- Part 1 by Gary Richenaker

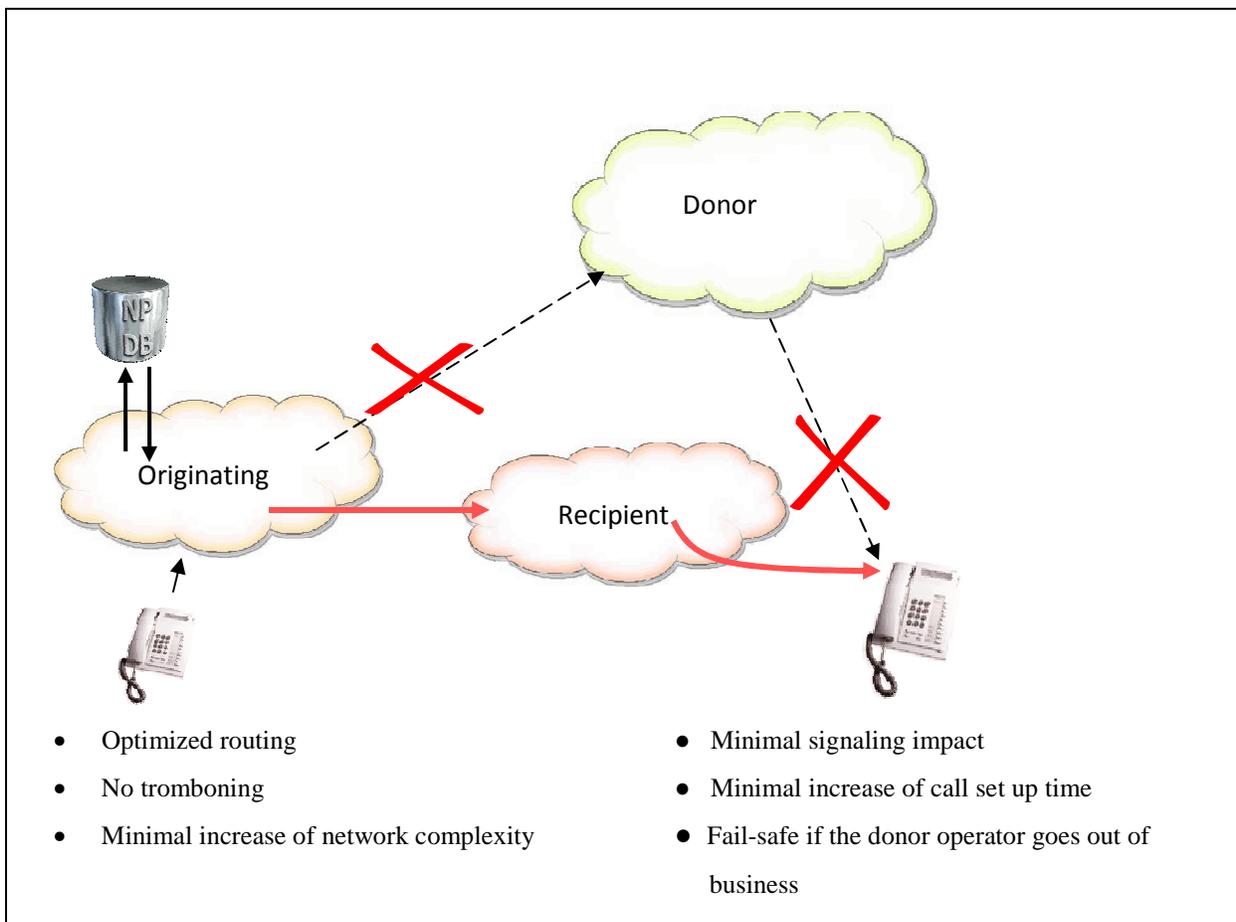
The diagram above (Fig 3) shows the call progression for the Call Drop-back scheme for routing calls to ported numbers and uses a distributed database approach. This scheme is also known as "Return to Pivot (RTP)."

The call progression is as follows⁷:

- (1) The called directory number is routed from its originating network to the donor network.
- (2) The donor network detects that the dialled number is no longer resident on its network and queries its internal Number Portability database.
- (3) The internal NPDB provides the routing number of the dialled number which is passed on to the originating network.
- (4) The originating network uses the new routing number to complete the call

4.2.4 All Call Query (ACQ) - Direct Routing (Fixed Line application)

Figure 4



Source: Inter Connect Communications Numbering Master Class, Bath, England. 11-15 July 2005
Number Portability Basic Principles- Part 1 by Gary Richenaker

⁷ www.ietf.org/rfc/rfc3482.txt

Fig. 5 shows two (2) examples of a mobile call that is routed to a ported mobile number on its new home network and routed to a ported mobile number which is roaming.

The call progression for example (1) is as follows:

- a) The mobile phone initiates a call which is sent by its network to the centralized database (NPDB) to query routing information for the number called
- b) Once the routing information is retrieved, it is used by the originating network to route the call to the new network on which the ported number now resides

The call progression for example (2) is as follows:

- The mobile phone initiates a call to a ported number which is currently roaming
- The initiating network sends the call to the NPDB to request routing information
- Once the routing information has been received, the call is sent to the new network of the ported number
- The new home network queries its Home Location Register (HLR) as to where the ported number is located and receives the information that the ported number is roaming and the routing information of the visited network
- The call is passed to the visited network for completion

4.3 Popular method for implementation of Number Portability

Internationally, the All Call Query (ACQ) method of implementation is by far the most popular method⁹ (Appendix 1). The Dominican Republic which launched Number Portability for both fixed line and mobile markets on 30th September, 2009 chose the All Calls Query /centralize database mode of implementation. Some of the other methods have disadvantages such as longer call set up times and increased potential for call blocking¹⁰. The ACQ method however, provides direct routing from the originating network to the network to which the telephone number has been ported and does not have the disadvantages cited above. It is therefore the most efficient method of implementing Number Portability. The Regulator in Singapore, the Infocomm Development Authority of Singapore (IDA), when it introduced a centralized database for Number Portability stated : *“This is deemed more efficient and importantly beneficial for the*

⁹<http://www.erodocdb.dk/Docs/doc98/official/Word/ECCREP031rev1.DOC>

¹⁰ <http://www.iec.org> – web proforum tutorials.

telecom sector in the long run as it can better support more complex routings expected from the next-generation services and application¹¹.”

¹¹ <http://www.ida.gov.sg/News%20and%20Events/20050829134538.aspx?getPagetype=20>

5. Proposed Implementation Plan for Number Portability in Trinidad and Tobago

A consultant shall be engaged by the Authority to work with the concessionaires to have number portability implemented. The concessionaires shall form working committees to address the following aspects of service provider number portability:

1. Technical specifications for an effective and efficient number portability solution for mobile and fixed line services in Trinidad and Tobago.
2. The individual concessionaire's network and OSS applicable costs to implement NP. These costs shall be confirmed by quotations from the concessionaires' respective suppliers.
3. The administrative procedures necessary for inter-operator working to support a porting time of no more than five working days for fixed line and no more than three working days for mobile services. These procedures shall not be burdensome on the customers so as to deter them from porting.
4. Implementation of the NP clearinghouse/database solution.
5. Contractual arrangements between the concessionaires and the chosen clearinghouse/database solution provider as well as inter concessionaire arrangements which need to be negotiated.

Committees shall be formed comprising representatives from every concessionaire to address the various aspects detailed above. It is proposed that these committees be constituted as follows:

- a. Technical specifications - for number portability solution
- b. Administrative procedures - for porting fixed line and mobile numbers
- c. Financial - for recommending cost recovery mechanism and other costs
- d. Legal- contract negotiation

The Authority reserves the right to attend the meetings of these committees.

The Authority requires that the actual mobile and fixed number portability service be made available to the public no longer than nine (9) months after the project has been started. The Authority shall indicate the start date of the project to the concessionaires in writing. The implementation of number portability on both the Fixed and Mobile Networks shall

commence at the same time. It is expected that mobile number portability will be launched before fixed number portability. Upgrades to fixed networks and their OSSs are expected to be more time consuming than mobile networks.

The expected work outputs and milestones to make number portability a reality will be guided by the consultant hired by the Authority. The consultant will be expected to use this document as a guideline for the launch of NP. The individual concessionaires may require their own consultant to assist in the various aspects of the work required for NP launch within their networks.

Statement of Purpose on Implementation of Service Provider Number Portability:

The Authority requires that

1. Service provider number portability be made available to the public by the domestic mobile and fixed line telecommunications concessionaires in Trinidad and Tobago no longer than nine (9) months after the project has been started. It is expected that mobile number portability will be put into service before fixed number portability.

2. The implementation of number portability on both the Fixed and Mobile Networks shall commence at the same time.

6. Cost considerations

There are two (2) broad categories of costs arising from the implementation of service provider number portability:

1. Establishment Costs: These are all applicable capital costs incurred by concessionaires to make available the infrastructure to enable all users to port their telephone numbers
2. Consumption Costs: These are applicable costs incurred directly by concessionaires in providing number portability.

6.1 Establishment costs

Establishment costs may be separated into the following categories:

- a) Shared costs : these are applicable costs to be shared among concessionaires for commonly used equipment and facilities
- b) Concessionaire costs: these are applicable costs which individual concessionaires incur to get their networks ready for number portability

6.1.1 Shared establishment costs

There may be applicable capital costs which the concessionaires will share to establish service provider NP. The Authority proposes the following manner in which such costs shall be shared.

Statement of Purpose on shared establishment costs

The Authority proposes that common applicable capital costs to establish the number portability system be divided in terms of percentage of telephony revenues amongst the concessionaires for each market sector (fixed and mobile), as supported by the most recent audited financial statements for the concessionaires involved. Concessionaires shall be allowed to propose their own mechanisms for cost sharing which is subject to the Authority's approval.

6.1.2 Individual concessionaire establishment costs

Concessionaires are required to submit their individual applicable costs to the Authority, detailing the changes required to their network infrastructure and OSS and their associated costs confirmed by quotations from their respective suppliers. The Authority shall engage the services

of a consultant to audit the submitted costs with a view of determining the relevant and applicable costs which are specific to the implementation of number portability.

6.1.3 Cost recovery for individual concessionaire establishment costs

Establishment costs that have been approved by the Authority shall be recoverable. The costs determined as relevant / applicable to the establishment of number portability are the only costs which shall be permitted for cost recovery. The Authority reserves the right to determine what costs shall be deemed relevant and/or applicable. The Authority shall propose a cost recovery mechanism. However, concessionaires are allowed to propose their own cost recovery mechanism. Such mechanism shall be considered by the Authority.

Statement of Purpose on individual establishment costs

Establishment costs that have been approved by the Authority shall be recoverable. The Authority shall propose a cost recovery mechanism for individual concessionaire establishment costs.

Concessionaires shall be allowed to propose their own mechanisms for cost recovery which is subject to the Authority's approval.

6.2 Consumption costs

Consumption costs are the operational, maintenance and administrative costs associated with the operation of service provider number portability. Costs to support service provider number portability are incurred by:

- a. Service providers
- b. The clearinghouse/database number portability service provider (which shall not be a domestic telecommunications concessionaire)

6.2.1 Service Provider Costs

The Authority proposes that all consumption costs incurred by the service providers in providing number portability be borne by the said service providers.

6.2.2 The Clearinghouse/database system costs

The use of the number portability clearinghouse/database system will incur costs to the service providers. The costs incurred by a donor concessionaire for porting a number i.e. costs incurred

by using the services of a centralized clearinghouse/database, shall be recovered from the recipient concessionaire.

Statement of Purpose on consumption costs

The Authority proposes that the in-house consumption costs for operating number portability shall be borne by all operators. However, costs incurred in using the services of a centralized database for porting shall be recovered by the donor service provider from the recipient service provider. The costs shall be in accordance with those negotiated between the working committee and the NP solution provider with oversight from the Authority.

6.3 Cost to port

The Authority is of the view that number portability will benefit the operators and customers alike. The ability to port a telephone number should therefore be available to all customers without impediment. It is therefore the Authority's view that there shall be no cost to the customer to port a number.

Statement of Purpose on cost to port

The Authority proposes that no charge shall be levied on users when porting their mobile and fixed line telephone numbers.

7. Other issues

7.1 Critical success factors

The following critical success factors have been identified as being necessary for the success of Number Portability¹²:

- **Time to port**- the time taken between the request being made to port a number and the port being completed. The current trend is to reduce the time to port from days to hours as users expect to have their new service implemented in the shortest possible time.
- **Whether there is a cost to the customer** - This has been discussed in section 6.3 above.
- **How to initiate the port** – The user should not feel intimidated by his current service provider so it is the practice by a number of countries that the request for the port be made to the service provider to which the user is moving or to the clearinghouse/database provider.
- **Publicity given**- raising the customer awareness of the porting facility- there should be a vibrant ad campaign to educate and advise users of their right to port a number and the procedure and costs if any. Public service advertising should be undertaken jointly by the concessionaires and the Authority.

7.1.1 Time to port

The time to port a number was identified as one of the critical success factors in introducing fixed line and mobile number portability. It is recognized that a cumbersome and/or lengthy procedure will deter customers from utilizing the facility. A short porting time will increase competition as users will be able to switch over to their preferred concessionaire without tedious and frustrating delays. The average time to port in Spain (mobile service) is 5 days and is expected to reduce to 24 hours in the near future¹³. In the US, the time to port a fixed line to a fixed line has been reduced from four (4) business days to one (1) business day. The time to port a mobile number is two and one half hours which is an industry agreed standard in the US. Ofcom (UK) mandated that the time to port numbers should be reduced from 5 days to 2 days

¹² <http://www.sunriseconsultants.com/mnp.html>

¹³ http://ec.europa.eu/information_society/doc/factsheets/14thimplementation/14th-progress-report-es-final.pdf

with effect from April 1, 2008 with a further reduction to two hours from September 1, 2009.¹⁴ Further examples of times to port are shown in Appendix 2.

Statement of Purpose on time to port

The Authority proposes that concessionaires implement a solution that supports a time to port of:

- a) no more than five working days initially for fixed line numbers and*
- b) no more than three working days initially for mobile numbers.*

7.1.2 Initiating a request to port

The customer wishing to port his telephone number shall make the request at the offices of the provider to which the number is being ported, the database/clearinghouse administrator or other designated third party. This is to prevent the customer from being dissuaded from porting by the current provider. Where possible, proof of ownership of the account may be required such as a recent bill (post paid land line and post paid mobile customers only) showing the account number for the telephone number being ported and the requisite identification.

7.2 Denial to port

Customers who have cleared off their bills from the last (most recent) billing cycle for the requested ported number shall not be denied porting. This stipulation applies only to post paid fixed and mobile customers. Concessionaires do not generate bills for pre-paid mobile customers, who currently comprise ~90% of the mobile market. *(Concessionaires are to note that, once the porting process is initiated, should a new bill be produced by the donor concessionaire for the consumer requesting the port during the porting period, the porting process cannot be stopped).*

The customer must pay all bills generated by the donor concessionaire either during or after the porting process. The handling of these payments shall be included in the detailed customer procedures developed in consultation with concessionaires, who have considerable experience in such matters.

¹⁴ <http://www.ofcom.org.uk/consult/condocs/gc18review/statement/>

Statement of Purpose on denial or delay of porting for outstanding balances

The Authority proposes that concessionaires shall not deny or delay implementation of the porting process for outstanding balances on the requested number to be ported, provided that customers have cleared their bills from the last (most recent) billing cycle at the time the porting request was made.

7.3 SMS service

SMS service is a feature enjoyed by all mobile users whether they are operating on their own network or roaming. It is the user's reasonable expectation that should they exercise their choice to port their mobile telephone number to a competing mobile network concessionaire that SMS service will be available on the new mobile concessionaire. Features enjoyed on one public telecommunications concessionaire's network should be available to ported users on the new public telecommunications concessionaire's network unless those features are not available on that network. SMS must be provided for ported mobile handsets in the initial implementation of service provider number portability.

Statement of Purpose on availability of SMS for ported mobile telephones

The concessionaires shall be required to provide SMS service to all ported mobile telephones.

7.4 Unlocking of mobile handsets

In accordance with the terms of a concession for the operation of a public telecommunications network and/or the provision of public telecommunications services, the Authority recognises that a concessionaire may wish to lock or otherwise restrict the use of terminal equipment to access only that concessionaire's network or service supplied to a user. In such a case, the concession provides that, upon the termination and /or expiration of the user's contract for service, the concessionaire shall, at no cost, remove such lock or restriction as per section C 21 of the concession contract.

Within the context of number portability, a mobile user who wishes to re-use his handset on the recipient network after porting his mobile telephone number may only re-use such handset after termination of his contract for service with the concessionaire of the donor network and after the handset has been unlocked or the restriction otherwise removed by that concessionaire.

It is note-worthy however, that early termination of a user contract may be subject to a penalty in respect of any subsidy that might have been provided by the concessionaire to the user under or in connection with the contract. Therefore, upon early termination of the contract, a user may be required to, for example, pay any difference in the cost of a handset that might have been provided to the user on a subsidized basis in accordance with the terms of the user contract.

Therefore, if a user wishes to port his mobile telephone number, the user may:

1. purchase a new mobile handset from the concessionaire of the recipient network; or
2. retain the handset formerly used on the donor network:
 - i. upon termination of the user contract with the concessionaire of the donor network; and
 - ii. after having the lock or restriction removed by the concessionaire of the donor network at no additional cost to the user; and
 - iii. if applicable, after paying or otherwise satisfying any penalties that might arise in respect of any subsidies that might have been granted to the user under the contract of service on a pro rated basis.

Statement of Purpose on unlocking mobile handsets

The Authority proposes that concessionaires shall remove, at no cost to the user, their lock code on mobile telephone handsets at the request of the user provided the contract term has expired.

Where the contract term has not expired, section C20b of the concessionaires' document shall apply.

7.5 “Off net” alert

When number portability is implemented, a user will not be able to distinguish between an “on net” call versus an “off net” on the basis of the prefix (central office code) of the number. As such, a method should be implemented to alert callers to ported numbers that “off net” costs apply to the call¹⁵. The methods used in other jurisdictions are:

- an alert tone
- an announcement
- user access to database of ported numbers

The Authority proposes that an announcement be used to alert the user of an “off net” call which may attract a higher tariff.

Statement of Purpose on tariff transparency

- 1. The Authority proposes that concessionaires must provide a method whereby users shall be alerted when the number dialed has been ported and a different tariff shall be applied to the call.*
- 2. The originating network shall be required to provide the “off net” alert.*

7.6 Abuse of porting facility

It is recognized that users may be tempted to abuse the number porting facility as there is no cost to the user to port. In order to deter abuse, the user shall be allowed to port, at no cost, once in every six (6) month period per telephone number.

Statement of Purpose on abuse of porting facility

Users shall be permitted to port a telephone number, at no cost, once in every six month period.

¹⁵<http://www.erodocdb.dk/docs/doc98/official/pdf/ECCREP031rev1.PDF>,
www.elsevierbusinessmanagement.com/telpol August 2006 Issue 7 page 398 Table 8

Appendix 1- Number Portability Implementation in Europe

The European Union

The method of implementation of Number Portability in Europe has not been consistent due to the network technology in use at the time of implementation. For example, six EU Member States have introduced Mobile Number Portability in different ways¹⁶:

France and the UK selected an on-switch solution as the longer term solution. The Netherlands bypassed using an interim solution and decided on a long term IN solution. Sweden and Finland have introduced an interim on-switch solution but intend to migrate to a long term IN solution. Germany has a number of technical solutions working in parallel.

See Table 1 (below) for a list of countries in Europe where number portability has been implemented. It should be noted that service provider number portability has been the most popular form of implementation and the most popular method of implementation has been All Calls Query.

The Caribbean

It is to be noted that the Cayman Islands with a population of 55,517 (2011) is the only English speaking Caribbean nation to have introduced service provider number portability to date. This was done in February 2012. Number portability has been deployed in the Dominican Republic, Martinique and Guadeloupe and St Maarten.

¹⁶ Study on the cost allocation for Number Portability, Carrier Selection and Carrier Pre-selection- Final report for DGX111of the European Commission by Europe Economics and Arcome Vol.1 October 1999

Table 1¹⁷

Country	Type of database	Routing of fixed to mobile	Routing of mobile to mobile	Time to port	Type of portability
Austria	Distributed	OR or ACQ	ACQ	3 wdays	Service provider
Belgium	Centralised	ACQ	ACQ & QoR ¹⁸	2 days	Service provider
Croatia	Centralised	ACQ	ACQ	5 days	Service provider
Cyprus	Distributed	ACQ	ACQ	14 days	Service provider
Estonia	Centralised	ACQ	ACQ	7wdays	Service provider
Finland	Centralised	ACQ	ACQ	5 wdays	Service provider
France	Centralised	Phase 1 OR Phase2 ACQ	Phase 1 OR Phase 2 ACQ	10 days	Service provider
Germany	Centralised	OR / ACQ	ACQ	4wdays+2	Service provider
Hungary	Centralised	ACQ / QoR	ACQ / QoR	14wdays	Service provider
Iceland	Centralised	ACQ	ACQ	10wdays	Service provider
Ireland	Centralised	OR	ACQ	2 hrs	Service provider
Italy	Centralised	ACQ	ACQ	5 wdays	Service provider
Lithuania	Centralised	ACQ	ACQ	28 days	Service provider
Malta	Distributed	OR	ACQ	4hrs	Service provider
Norway	Centralised	ACQ	ACQ	7 days	Service provider
Portugal	Centralized	ACQ/QoR	ACQ/QoR	5-20 w days	Service provider
Slovenia	Centralised	ACQ	ACQ	5 wdays	Service provider
Spain	Distributed	OR	OR	5 days	Service provider
Sweden	Centralised	OR/ACQ	OR/ACQ	5 wdays	Service provider
Switzerland	Centralised	OR	OR	5 wdays	Service provider
United Kingdom	Distributed	OR	OR	2 wdays +1cal. week	Service provider

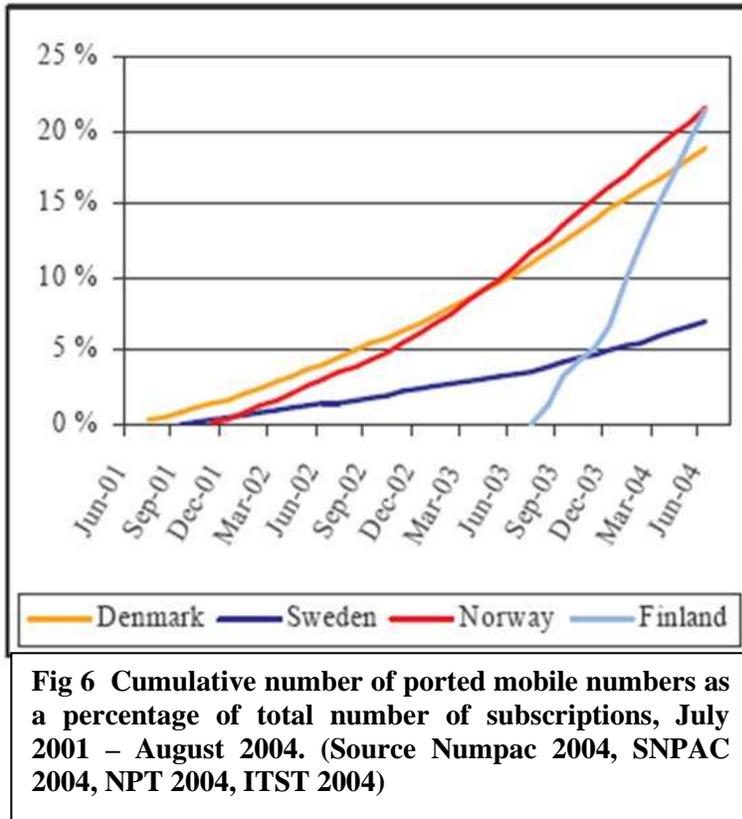
Source: <http://www.erodocdb.dk/Docs/doc98/official/Word/ECCREP031rev1.DOC> (2005)

¹⁷ <http://www.erodocdb.dk/Docs/doc98/official/Word/ECCREP031rev1.DOC> (2005)

¹⁸ ACQ- All Call Query , OR- Onward Routing , QoR- Query on Release

Appendix 2 Effects of Mobile Number Portability

Fig. 6 below shows the experience of some other European countries¹⁹ after number portability was introduced.



The number of mobile ports attained 10% of their total subscriptions in Denmark and Norway two years after the implementation of Mobile Number Portability. However this was not the case in Sweden which achieved just 5% after two years. Finland on the other hand achieved over 20% churn in one year after Mobile Number Portability was introduced. This can be attributed to the regulatory environment in which the mobile operators were allowed to market their products.

In Figure 7 below, it can be seen that prior to MNP in Finland, the churn rate was around 15%. After MNP, the churn went up to just over 30%. Some of the reasons for this increase in churn were as follows²⁰:

¹⁹ http://www.netlab.tkk.fi/opetus//s38042/s04/Presentations/06102004_Smura/Smura_paper.pdf

- There was no cost to the user to port numbers
- The Regulator did not allow operators to subsidize handsets, market long term contracts or bundle mobile subscriptions
- Intense marketing campaigns were conducted

Churn rate in Finland

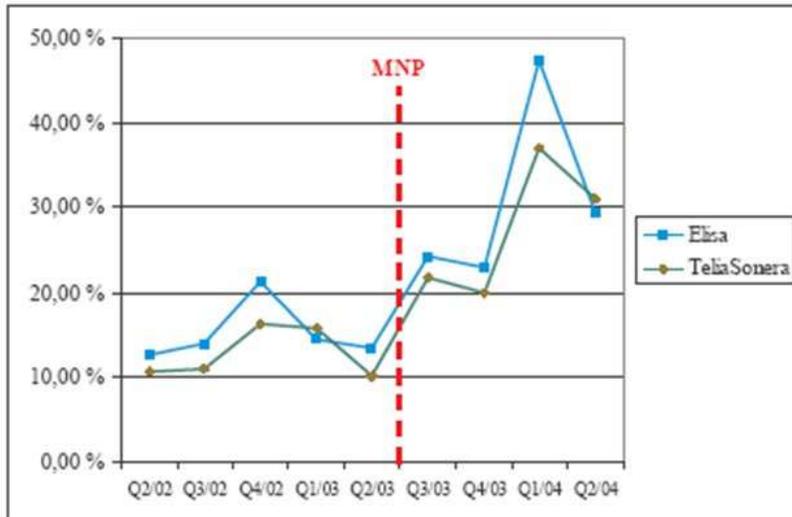


Fig.7 Churn evolution among the largest Finnish mobile operators

Source:

http://www.netlab.tkk.fi/opetus/s38042/s04/Presentations/06102004_Smura/Smura_paper.pdf

²⁰ http://www.netlab.tkk.fi/opetus/s38042/s04/Presentations/06102004_Smura/Smura_paper.pdf

Appendix 3- Fixed line networks OSSs

Fixed line networks from incumbent PTTs (define or change-out) typically have older proprietary OSSs, customer care and billing systems. These systems are tightly integrated to the existing fixed line network and were never designed from inception to accommodate number portability. In some countries, an entire change-out of the fixed line OSS was necessary to accommodate number portability, which proved to be costly and time consuming to implement²¹.

²¹ TRMC – Telecommunications Seminar in Regulation and Numbering February 13-16, 2006 Trinidad

Appendix 4 - Number Portability database cost comparison

The centralized clearinghouse administration has been implemented in many countries due to its network efficiency and cost benefits over the long run. Figure 8 shows the relative costs for the models of implementation of Number Portability database administrations.

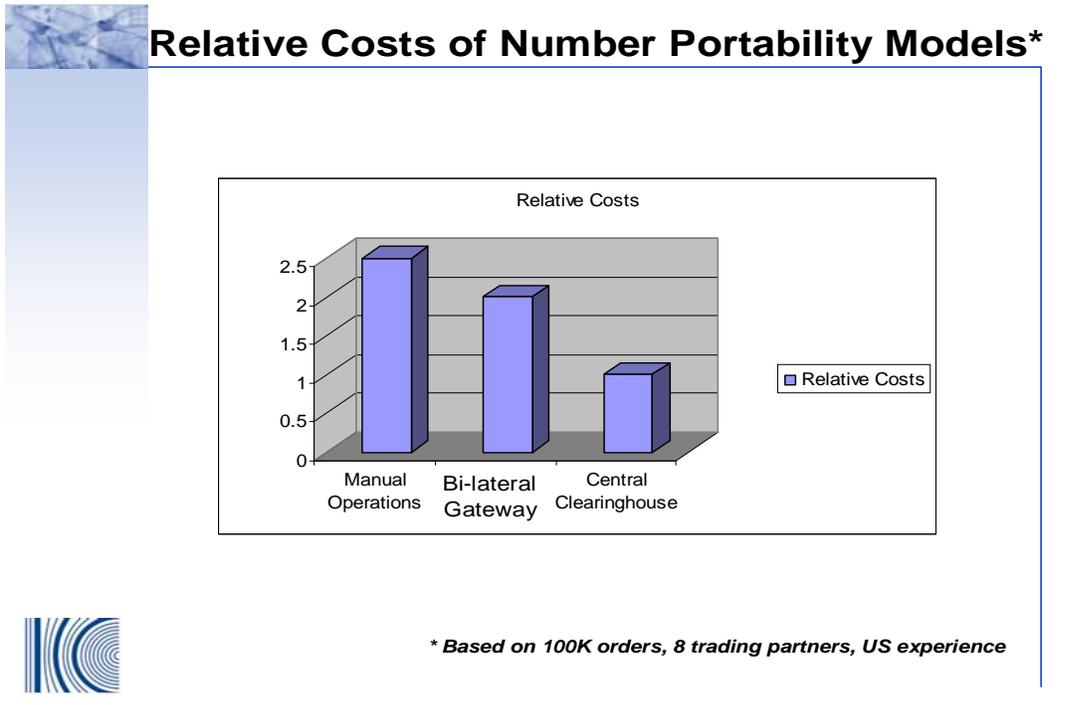


Fig 8 : Source: Inter Connect Communications Numbering Master Class , Bath, England. 11-15 July 2005 Number Portability Basic Principles- Part 2 by Naveen Suri

The centralized clearinghouse is a neutral third party who will handle all charges for database dips by the various concessionaires for calls made to ported numbers. They will more than likely host the database for ported numbers.

Appendix 5 - Costs incurred in provision of Number Portability

Table 2 – Costs Incurred in Provision of Number Portability

	System set-up cost	Per-operator set-up	Per-line set-up	Additional conveyance	Other administration
Number Portability					
On-switch solutions					
<i>Costs involved</i>	<ul style="list-style-type: none"> • Software evolutions in switches • Adaptation of information systems • Creation of inter-operator service management tools and procedures • Adaptation of maintenance and customer support procedures 	<ul style="list-style-type: none"> • Initial programming of switches (except for 2nd number solution) 	<ul style="list-style-type: none"> • Modification of subscriber data 	<ul style="list-style-type: none"> • Tromboning and non-optimal routing of calls 	<ul style="list-style-type: none"> • Allocation of non-geographic numbers
<i>Significance of costs</i>	High proportion of total cost	Small proportion of total costs	Very small	Varies depending on technical solution: but can be quite high	Negligible
<i>Main party incurring cost</i>	The bulk of the costs will fall on the incumbent or donor network operator, although new entrants will also incur some costs	Low impact on the incumbent operator as well as other originating and transiting operators	Medium for the incumbent and low for other operators	High impact on the donor network operator and medium for others	Very low impact on the NRA
Off-switch solutions					
<i>Costs involved</i>	<ul style="list-style-type: none"> • Set-up of Intelligent Network • Adaptation of information systems • Creation of inter-operator service management tools and procedures • Adaptation of maintenance and customer support procedures 	<ul style="list-style-type: none"> • Initial programming of switches • Access to national NP database 	<ul style="list-style-type: none"> • Modification of subscriber data 	<ul style="list-style-type: none"> • Additional conveyance of IN query 	<ul style="list-style-type: none"> • Management of a national ported numbers database • Allocation of non-geographic numbers
<i>Significance of costs</i>	Significant proportion of total cost (higher than on-switch solutions)	Higher proportion of total costs than for on-switch solutions	Very small	Negligible	Very small
<i>Main party incurring cost</i>	High impact on all operators, but low on other operators	Medium impact on all operators	Medium impact on the incumbent and low on other operators	Very low impact on all call-originating operators	Very low impact on the NRA

Source: http://www.telecomportal.com/Assets_papers/Number_portability/EC_Number_Portability_99.pdf

Appendix 6 – Offshore Clearinghouse

Countries using off shore third party database²²

The following provides examples of countries that have opted to introduce service provider number portability by utilising an offshore solution for their clearinghouse:

1. EETT, Greek National Telecommunications and Port Commission awarded a number of portability contracts to Telcordia that enables Greece to fulfil its obligations to the EU directive 2002 on implementing Number Portability. Number portability is now available to 5.5 M fixed lines and 10 M wireless lines.
2. Lithuania selected Telcordia Clearing house solution for all licensed carriers to provide fixed line and wireless portability to 3M users.
3. Pakistan selected Telcordia Clearing house solution for Mobile Number Portability in 2007
4. Egypt uses Telcordia Clearinghouse solution for Mobile Number Portability in 2007. The NTRA provided number portability as part of the incentive for mobile operators bidding for the third mobile license in Egypt
5. Mexico quickly rolled out number portability for 98 million mobile and fixed line subscribers in less than 4 months in 2008

The Dominican Republic opted to use an off shore database for their number portability solution. They have 10 million subscribers using fixed and mobile services.

²² www.telcordia.com/news_events/presskit

Annex 1 Decisions on Recommendations from First Round of Consultation

The following summarizes the comments and recommendations received from stakeholders on the first draft of this document (dated April 1, 2010), and the decisions made by TATT as incorporated in this document (dated 31st March 2011).

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
Introduction				
	CCTL	CCTL commends the Authority for taking the steps necessary towards implementing number portability in Trinidad and Tobago. The implementation of number portability is a requirement of the Telecommunication Act 2001. Section (25)(2)(j) of the Act states clearly that “ the Authority shall require a concessionaire to provide, to the extent technically feasible, number portability when required to do so and in accordance with the requirements prescribed, by the Authority;”		Noted

²³ Regional regulatory or Governmental agencies, Existing service and/ or network provider and affiliates, Potential service and/ or network providers and affiliates, Service/ Network Provider Associations/ Clubs/ Groups, General Public

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	CCTL	<p>Telephone numbers are national resources, as such, as competition develops; we firmly believe that this resource should be used in a way that most effectively and efficiently fosters the development of a competitive market. In other words, an operator should not be allowed to retain a competitive advantage by virtue of its hold on a national resource. The ability to port numbers, particularly porting numbers from one service provider to another, offers customers real freedom of choice. The availability of service provider number portability removes the major barrier for customers wanting to switch from one service provider to another.</p> <p>This barrier is particularly high for business customers, who despite being provided with more varied service options and competitive prices will choose to remain with their current provider because of the cost of switching. This includes the cost of redoing stationary and other advertising material, plus the potential disruption of business due to lost of contacts in</p>		Agreed

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	CCTL	<p>the process of changing provider and telephone numbers. Based on information provided in the Annual Market Report 2008 published by TATT, business customers account for about twenty percent of fixed lines and approximately fifty percent of fixed line revenues.</p> <p>CCTL believes that service provider number portability is necessary to further the development of competition. This is particularly critical to the development of fixed line telephony in the Trinidad and Tobago market, and in markets across the Caribbean. Despite market liberalization incumbent providers continue to dominate this market segment. In Trinidad and Tobago, Telecommunications Services of Trinidad and Tobago (TSTT) was recently declared dominant in fixed voice telephony markets. In this determination TATT makes the point for the implementation of fixed service provider number portability by stating definitively that <i>“Effective competition will be possible only if consumers are able to switch providers without incurring significant monetary or other costs.”</i> CCTL strongly supports this position.</p>		<p>Noted</p> <p>Agreed</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	CCTL	<p>There will be a cost to the implementation of number portability. However, the decision to implement number portability cannot be based on the short term cost implications, but rather on the long term benefits that robust and sustainable competition will bring to the entire market when number portability is available. With the availability of service provider's number portability, service providers would be encouraged to reduce cost and innovate in order to retain customers. Innovation, faster, and more cost effective service delivery will increase competitiveness and productivity. This will result in increased investments, leading to increased economic growth.</p> <p>In order to get a feel for the cost and benefit of implementing number portability, a look at the cost spent on the implementation of number portability in Dominican Republic is instructive. Instituto Dominicano de las Telecomunicaciones (INDOTEL) have reported that in their implementation process they determined through an audit of</p>		<p>The Authority visited the Dominican Republic through the kind invitation of the regulator, Indotel. Valuable information was collected on the implementation of NP. Some of this information has been incorporated into the revised consultative document, taking into account the local regulatory framework.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
		<p>investment cost that a figure of USD \$ 20.5 million was recoverable for the implementation of number portability. They also determined that the best way to recover this was through a one off regulatory fee. The fee levied was eighty PESOS Dominicans (RD \$ 80.00) on each working line (fixed & mobile) in Dominican Republic.</p> <p>The latest Annual Market Report: Telecommunications and Broadcasting Sectors published by TATT gives the number of fixed line subscribers as 314.8 K and the total number of mobile subscribers as 1,806 K. If for example a similar approach was used in Trinidad and Tobago, where all active telephone lines pay a regulatory fee towards the implementation of number portability and assuming an incremental cost of 75% of the figure reported by Dominican Republic (US\$15 million); this would translate to a one time sur-charge or regulatory fee of TT\$45 for each fixed and mobile subscriber. When viewed in this way, one gets a perspective of potential costs to the market versus the longer term benefits.</p>		<p>Noted</p>

Draft Implementation Plan on Number Portability for the Republic of Trinidad and Tobago

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
		<p>Given the benefits service provider number portability will bring to the market and the economy in general, CCTL strongly supports the move to implement service provider number portability in Trinidad and Tobago. We are therefore very pleased to be given the opportunity to participate in this process. Our responses to the specific issues raised in the consultation document are outlined below.</p>		
	TSTT	<p>TSTT welcomes the opportunity to provide comments and recommendations on the Authority's consultation document "<u>Draft Implementation Plan on Number Portability for the Republic of Trinidad and Tobago</u>", as follows:</p> <p><u>The Need for Survey and Cost Benefit Assessment</u></p> <p>Any regulatory intervention that has the potential to significantly impact the telecommunications sector must be carefully considered and certain basic studies undertaken in</p>		<p>The Authority wishes to remind concessionaires that s.25(2)(j) of the Telecommunications Act, 2001("the Act") provides that in</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	<p>order to determine if the proposed policy objective is apt.</p> <p>We respectfully submit that the absence of a cost benefit analysis is a significant oversight, the absence of which undermines the validity of the findings within TATT's document.</p> <p>Cost-benefit analyses are typically used to evaluate the desirability of a given intervention. It is an analysis of the cost effectiveness of different alternatives in order to see whether the benefits outweigh the costs. The aim is to gauge the efficiency of the intervention relative to the status quo. TSTT submits that given the high costs to be incurred with respect to the proposed NP service the need for a cost benefit analysis is essential if only to ensure that the overall benefits to be derived will outweigh the costs to be borne by the operators and in that regard, cost recovery by the operators must be a realistic expectation.</p>		<p>respect of a concessionaire's obligations [under its concession] the Authority shall require a concessionaire to provide, to the extent feasible, number portability when required to do so and in accordance with the requirements prescribed by the Authority. To this end, Condition A42 of the Concession provides that the concessionaire shall, in accordance with any regulations relating to number portability, facilitate the portability of numbers assigned to any customer of any operator of public telecommunications networks or provider of telecommunications services. Therefore, the obligation to implement number portability exists</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	We concur with the view expressed by Digicel (Cayman		<p>independently of the finding of any cost/benefit analysis that might be conducted by the Authority.</p> <p>Even if the Authority opted to undertake a Cost/Benefit analysis it would be difficult to conduct since the benefit is qualitative rather than quantitative e.g. increased competition, increased customer choice etc Additionally, consumer behavior is notoriously difficult to predict.</p> <p>In any event, the Authority has stated in principle that the overall capital cost to implement Number Portability is recoverable by service providers.</p> <p>The Authority disagrees that the</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	<p>Islands) in its response to the Information and Communications Technology Authority's (ICTA) consultation on Local Number Portability, which is quoted as follows:</p> <p><i>“As with any possible regulatory intervention with potentially significant policy and/or cost implications, we agree that the starting point for the Authority should be to attempt to assess empirically the case for LNP. Assessing the costs of the implementation of LNP by network is one measure. Another measure is the likely level of demand for LNP. The likely level of demand could be assessed via a market survey of CI residents and businesses. Carrying out both these exercises would be prudent and more analogous to the thorough approach taken by those constructing a business plan to determine whether investment would be wise. An assessment of likely demand will also help the Authority to cross reference its calculations with respect to the possible benefits.”</i></p> <p>Given the potential of a decision to introduce number portability, TSTT is concerned that there does not appear to be a concomitant commitment by the Authority to take a similarly</p>		<p>likely level of demand could be easily assessed in advance by a market survey given the factors involved in customer decision making processes. Key factors that affect customers are: 1) ease to port 2) cost to port and 3) time to port. e.g. a 4 hour time to port will likely lead to higher up take of NP than a 5 day time to port. It may be more instructive to examine the effects in the countries where NP was introduced and to look at the factors that influence customers' behaviours to assess the likely demand for NP. However, the Authority shall undertake a customer survey to determine demand for number portability.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	<p>business approach in its decision-making, especially where the costs are anticipated to be burdensome to operators, without a reasonable expectation for recovering same. We submit that the Authority is duty bound to act responsibly not only in the interests of consumers but also to operators in order to create a holistically competitive environment. Thus TSTT proposes that in the undertaking of a cost benefit analysis, the issues of robust competition, survivability of operators, including a reasonable expectation of return on investments must be critically examined.</p> <p>Robust competition</p> <p>TSTT questions the timing of this policy objective given that the telecommunications market is already competitive. TSTT contends the level of competition between operators as another critical factor to consider when implementing NP. Haucap¹ (2003) stresses the importance of the level of competition and maturity of the market when deciding on introducing MNP. According to his article, the more competition there is, the lower the need for the MNP service, because operators are likely to provide subscribers with the best tariffs and service</p>		<p>A Cost/benefit analysis is not the only means used to evaluate the desirability of a given regulatory intervention. Other factors, equally important in themselves, also apply.</p> <p>The Authority opines that there is still opportunity for a more competitive marketplace. The Hirschman-Herfindahl Index indicates that the level of competition can be improved and innovative ways need to be devised to further develop competition such as number portability.</p>

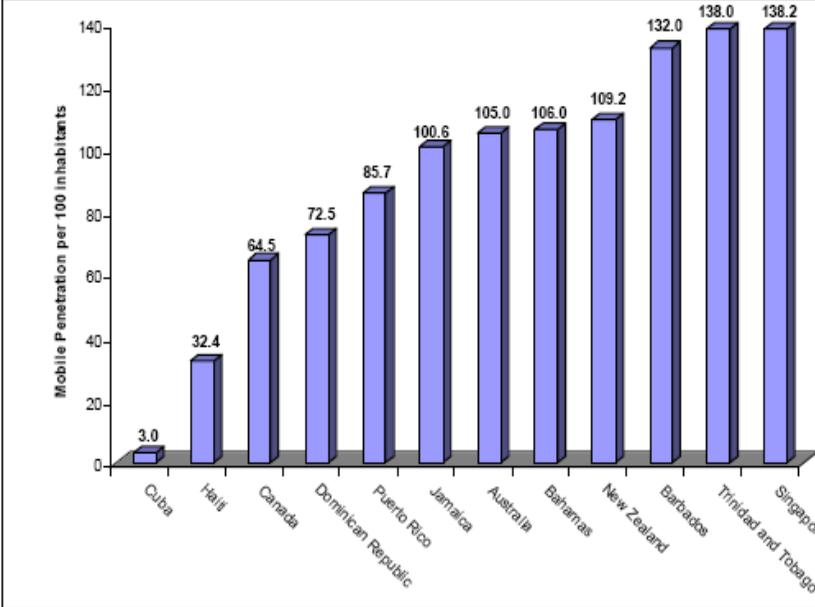
Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	<p>quality possible. They are likely to find the need to innovate and outdo their competitors in order to retain their subscribers.</p> <p>¹ <i>Haucap, J. (2003). The economics of mobile telephone regulation. University of the Federal Armed Forces, 2003.</i></p> <p>Survivability of operators</p> <p>With the implementation of NP, operators will be faced with both direct and indirect costs. Direct costs are the costs of developing and implementing an NP system (set-up costs). Also, costs per actual porting process are mainly the costs of carrying out the porting, e.g. advice to the customer, communications between the donor and the receiver networks, administrative work related to the number switch, and so on. In tandem indirect cost relate to the loss of tariff transparency, since NP can make it more difficult for consumers to distinguish between different networks when placing a call. TSTT notes, if these costs are underestimated and the benefits are overestimated the survival of the industry could be in jeopardy. This is not an unreasonable assumption since the concept of demand and supply must be carefully balanced, any</p>		<p>See Section 6 of the consultative document. The Authority has requested operators to provide information on the ability to alert customers of off net calls. Most operators have indicated that the feature is available, whilst one has indicated that it is not. This feature will be used to allow customers to distinguish between inter-operator and intra-operator calls. Since operators can recover applicable and relevant cost, there is no danger to survival of the industry.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	<p>policy implementation causing that balance to shift into disequilibrium can place an unfair burden to one or more providers.</p> <p>Return on Investment Independent of the type of NP to be implemented in the marketplace, for NP to work, there must be at least two operators offering service in the geographic area where the user that wishes to maintain their number and move over to another operator resides. Historically, areas having only one supplier are those having the lowest income levels, remote areas and community size small. This is the case for instance of TSTT's fixed line business, which under coverage requirements coming from its concession contract has had to expand it to unprofitable areas and segments of the population. Under NP requirements TSTT would have to invest also in those unprofitable businesses to have ready a number portability that may not materialize ever, since no other competitor would serve these unprofitable areas and segments</p>		<p>TSTT is not the only concessionaire with obligations for national coverage and thereby unprofitable areas. This requirement affects all operators with national concessions. The Authority is implementing a Universal Service fund to address service to uneconomic areas and to assist operators in meeting their obligations.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	<p>of the population.</p> <p>Nor can NP service be looked at in isolation from the other consultations that are currently before the sector; specifically Local Loop Unbundling (LLU), Numbering and, most recently, the determination on Indirect Access (IA). Each of these consultations has an impact on the industry and costs associated with them to be borne by providers for the most part. Costs may indeed be far greater than that which is anticipated when one takes the entire range of Regulatory requirements into consideration.</p> <p>TSTT submits that the introduction of simultaneous and various policy prescriptions place onerous cost burdens on operators.</p> <p>In a situation where overall costs may very well exceed the intended benefits, we anticipate a negative ripple effect where operators unable to show attractive rates of return, will lose</p>		<p>This statement ‘that costs associated with these consultations are borne by providers’ neglects the fact that these same providers are allowed to recover these costs. See Section 6 of consultative document for cost recovery. Costs for LLU and IA and their respective cost recovery mechanisms have already been clearly articulated</p> <p>See above.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	<p>investor confidence, and potentially leading to impaired quality of service and negative competitive growth so on.</p> <p>Given the level of competition in Trinidad and Tobago and the Authority's apparent decision to move towards NP, we ask that the Authority give serious consideration to the following:</p> <p><u>Mobile Services</u></p> <p>Trinidad and Tobago experienced a strong and rapid growth of competition thereby significantly reducing prices, and increasing mobile penetration. It seems that competitive forces are working without a need for mobile NP.</p> <p>Despite there being two (2) providers in Trinidad and Tobago, Bmobile and Digicel, the market remains highly competitive. This view is supported in the Authority's very own Annual Market Report (pg 41) as follows:</p> <p><i>"for the period 2003 to 2008, the mobile penetration rate per 100 inhabitants in Trinidad and Tobago constantly increased with the exception of 2007. As competitive tactics between Bmobile and Digicel continued to persist in 2008, the mobile</i></p>		<p>The Authority disagrees. The Hirschman-Herfindahl Index which is used to indicate the competitiveness of a market, says that competition in the mobile market can be improved.</p> <p>Additionally, penetration does not by itself provide an indication of the level of competition in a market. The significantly high mobile penetration level in Trinidad and Tobago has been primarily due to a</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	<p><i>penetration rate stood at 138, a 19.1 per cent growth from 2007...”</i></p> <p>This penetration rate of 138 is the highest in the Caribbean region.</p> <p>TATT's Annual Market Report (2008) illustrates the Mobile Penetration Rates for some selected countries as follows Figure 1: 2008 Mobile Penetration for Selected Countries</p>		<p>majority of persons possessing multiple subscriptions (at least 1 per operator). There are a number of reasons why persons choose to have two mobile phones instead of one, including:</p> <ol style="list-style-type: none"> 1. It is more economical to call on-net than it is to call off-net; 2. It is inconvenient and potentially costly to change one's telephone number, which is required to switch provider in the current environment. <p>The implementation of number portability seeks to address the latter issue. It is therefore not surprising that in countries where number portability has been implemented, the penetration rates are lower than in countries where it hasn't been implemented.</p>

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	TSTT	 <p>Source: BMI Americas Telecommunications Report Q2 2008, and TATT</p> <p>We note the comparison in mobile penetration rates particularly among Trinidad and Tobago, Barbados, Canada, the Dominican Republic and Singapore as follows:</p> <p>In the Dominican Republic, which has a low mobile penetration rate relative to Trinidad and Tobago, number portability in both mobile and local telephony was launched</p>		<p>A truly competitive market is one in which service providers are encouraged to offer high quality services at prices that are affordable to the consumer. This could therefore only exist in an environment where consumers can easily change service provider on the basis of rates and quality of service. Number Portability therefore facilitates competition as it reduces the barrier to switch providers for the consumer. This then facilitates competition as service providers seek to become more efficient, improve service quality and offer more affordable packages to retain or attract customers.</p> <p>In the Dominican Republic,</p>

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	TSTT	<p><u>Fixed Telephone Services</u></p> <p>Competition in the fixed services industry has already started with the liberalization of the sector, the entry of new facility-based competitors, and the competitive pressures that mobile operators are imposing on TSTT. Regarding fixed services, the Annual Market Report (p, 20) outlines:</p> <p><i>“...Seven operators are authorized by the Authority to provide fixed telecommunications services, only two operators offered domestic voice services in 2008 – TSTT through their Public Switched Telephone Network and FLOW via their cable television network”.</i></p> <p>For 2008, the fixed voice market recorded approximately 314.8 thousand subscribers. This represented an overall 2 per cent growth in subscribership from the last period, as opposed to the 6 per cent fall in subscribers between 2006 and 2007. According to the Authority, from a pricing perspective, FLOW appears to have some customer packages comparable to or</p>		<p>number. This would be particularly important for the business community.</p> <p>Number Portability will therefore stimulate competition in the fixed line market as all operators will now be able to attract customers who wish to change their service provider and maintain their current telephone number.</p> <p>TSTT does not state the source of its statement:</p> <p><i>“Telecommunications regulation theory requires number portability or any other regulatory tool used to mimic competition only be introduced in proven cases of competitive failure.”</i></p>

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	TSTT	<p>even better with those of TSTT. This may have encouraged new persons entering the fixed voice market and the reason for the boost in subscribers for 2008. Therefore it could be argued as a result of one provider entering the market the level of competition in fixed line services also increased.</p> <p><i>It stands to reason therefore that the competitive environment with regard to fixed services has the potential to proliferate if any of the remaining five (5) operators authorized to provide fixed services decides to enter the market. Surprisingly, at this stage, it would appear that the Regulator has determined, notwithstanding introduction of five operators in the market that competition will fail. We submit that such an assessment is no more than mere speculation and an intervention by way of introducing number portability is premature.</i></p> <p><i>Telecommunications regulation theory requires number portability or any other regulatory tool used to mimic competition only be introduced in proven cases of competitive failure.</i></p>		<p>This statement is not entirely accurate. Regulatory intervention is not intended to take place only after there is competitive failure. Regulatory intervention can also be used to improve market efficiency.”</p>

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		<p><u>Benchmarking</u></p> <p>We note continued reliance by TATT on benchmarking analysis. TSTT considers this to be a grave mistake particularly as the benchmarked countries used in the document are largely countries of the European Conference of Postal and Telecommunications Administration (CEPT). TSTT notes these countries are so dissimilar to Trinidad and Tobago in terms of size, resources, population and market structure and other factors unique to them that comparisons with Trinidad and Tobago are almost meaningless.</p> <p>At the very least, the Authority should consider countries that are more comparable to Trinidad and Tobago that attempted to introduce NP and/or reasons for not doing so. For example, in Jamaica an article printed in the "<u>Gleaner Newspaper</u>²²" on May 15, 2009 clearly showed that the Office of Utilities Regulation (OUR) was not ready to take on the issue of NP for</p>		<p>The Authority notes TSTT's comment, but the Jamaican example provided does not seem to</p>

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		<p>much of the reasons stated by TSTT. David Geddes the director of consumer and public affairs (OUR) told the Financial Gleaner <i>“First of all, we would have to research to determine if this is financially viable, and then have a series of consultations, and we are nowhere near conducting such a research at this time,”</i> While indicating that the matter could be taken up by the OUR "in the long term," Geddes pointed out that <i>NP was not now on the front burner for regulatory action.</i> Similar perspectives could be found within the Caribbean region where Regulators held off from implementing NP since significant research would need to be carried out before introducing NP.</p> <p>²²http://www.jamaica-gleaner.com/gleaner/20090515/business/business11.html</p>		<p>be relevant to TSTT's argument. It would seem that the OUR is just not ready to conduct the relevant research at this time. The article presents no other reasons as implied by TSTT. However, based on this same article, C&W's LIME in Jamaica seems to be pushing for mobile number portability implementation in Jamaica since it is no longer the dominant mobile operator there. The article states: <i>“LIME Jamaica country manager, Geoff Houston is advancing the position that allowing switching mobile users to retain the same number when they move would benefit subscribers and create a</i></p>

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				<p><i>level playing field among local telecoms operators.”²⁴</i></p> <p>The article also quotes the LIME executive as saying: <i>"Digicel definitely has the most to lose, so it is in their interest not to support mobile number portability," ... "And this is where it gets to losing sight of the customer,"... "This is the traditional trait of a monopolistic thinking. Starting to lose sight of the customer, lose sight of the value offering, lose sight of offering the customer a choice and start to get awfully protective and I think that is the behavioural traits you are beginning to see in the Jamaica market."</i></p>

²⁴ <http://www.jamaica-gleaner.com/gleaner/20090515/business/business11.html>

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		<p><u>Numbering Methodology Revision</u></p> <p>Trinidad and Tobago is a participating country in the North American Numbering Plan (NANP). An NPA NXX is defined as the Numbering Plan Area (NPA) and Central Office Code (NXX) of an end users telephone number (e.g. the first six digits of 868.625.9449). Each NPA-NXX block contains a total of 10,000 available telephone numbers (Code Exhaust, 2008).</p>		<p>In the Caribbean, a number of countries have implemented NP or at least set a date for number portability implementation, including: Puerto Rico, Guadeloupe, French Guiana, Martinique, St. Barthelemy, St. Maarten, Dominican Republic and the Cayman Islands²⁵.</p> <p>The Authority is of the view that concessionaires will report the usage of all CO codes in their exchanges and the fill of each CO code will be determined. The substantive code holder may request</p>

²⁵ <http://signalsconsultingcaribbean.blogspot.com/2009/09/caribbean-number-portability-notes.html>

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		<p>As TSTT understands it, new NXX codes would only be required to serve new customers, as existing customers (fixed/mobile) have already been assigned telephone numbers from the NXX codes already in use. This will impact significantly how the level of near exhaustion of a particular code is managed. In addition, issuing blocks of 10,000 need not occur more rapidly and may even occur less rapidly.</p> <p>For example, if a customer when porting to an alternative service provider retains his original number; then the new operator does not face an increase in NXX code demand as a result. The current methodologies that operators use to forecast exhaustion levels are thus affected. The same goes for pooling and recycling of numbers.</p> <p>Thus should NP be proven to be in the best interest then our current numbering methodology will need to be revisited.</p> <p><u>NP as a cost saving option for subscribers</u></p> <p>The above statement is often given as a rationale for the introduction of NP. However, with the technology available to</p>		<p>an additional CO code provided the fill level of a currently used CO code is 75% and the forecast shows that their number stock will exhaust in six (6) months. It should be noted that ported telephone numbers which are no longer used by the customer shall be returned to the substantive code holder. There is no need for any revision of the Numbering methodology due to the introduction of number portability at this time.</p>

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		<p>subscribers today the cost to notify others of a change in number is not as significant as it was in the past. Subscribers now have available to them a plethora of applications and services such as “facebook” and “blackberry messenger (BBM)” respectively which are free and which can broadcast to multiple persons in a subscribers network. Consider the example where a person’s email changes (hacked into, terminated by user). If that user wanted to inform their circle of friends of a change on email, that person could use facebook or BBM to broadcast and inform his/her network that their email has changed. To change a number is tantamount to changing an email in the present environment; users no longer have to incur significant cost to notify their most frequent correspondents of a telephone number that has changed.</p> <p>Moreover, businesses are generally on the World Wide Web. A change of number could be simply achieved by updating its web page without incurring any significant costs.</p>		<p>The Authority disagrees. It cannot be assumed that every customer who wishes to switch networks will use Facebook and BBM to inform their business associates/customers and friends of their change of number. There are also costs associated with stationary and other administrative changes. Number portability assures that callers always get to their party whichever service provider the called party may switch to.</p>

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Section 1				
1.1 Rationale	Digicel	<p>Before the introduction of service provider number portability (NP) a cost-benefit analysis must be performed to assess whether the benefit of this plan will be outweighed by the significant cost to be undertaken by providers. TATT should also consider the impact on quality of service to end users given the extensive technical risks and issues that may arise from the implementation of this plan in its current form.</p> <p>At present TATT has cited no economic or other rationale for the implementation of NP. In the United Kingdom, Hong Kong and other parts of Asia, Bahrain and countries in the Middle East, across Europe and even here in the Caribbean in Barbados the relevant regulator undertook a detailed cost benefit analysis to determine such issues as whether there is a positive net benefit to NP taking into account the current level of competition in the market, the costs of switching providers as well as whether consumers actually view the inability to</p>	<p>TATT should engage a foreign consultant to carry out the necessary economic analysis that will then determine whether it would be in the public interest to implement the NP policy by assessing whether a net benefit would arise from the plan.</p> <p>This economic evaluation should be aimed at evaluating the benefits to be gained by NP, establishing how those benefits will be distributed, evaluating the costs likely to be incurred, establishing</p>	<p>The Authority disagrees with this statement.</p> <p>The Authority wishes to remind concessionaires that s.25(2)(j) of the Telecommunications Act, 2001("the Act") provides that in respect of a concessionaire's obligations [under its concession] the Authority shall require a concessionaire to provide, to the extent feasible, number portability when required to do so and in accordance with the requirements prescribed by the Authority. To this end, Condition A42 of the Concession provides that the concessionaire shall, in accordance</p>

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1.1 Rationale	Digicel	<p>retain their number as a major inconvenience.</p> <p>Until such time, TATT is acting presumptuously, arbitrarily and irrationally by assuming with no foundation whatsoever that the implementation of NP will have a net beneficial effect on the public, notwithstanding any adverse implications for concessionaires (and we argue the public as well). The end result of such policy decisions may very well be judicial review proceedings that stall the plan from coming on stream.</p> <p>TATT has shown no regard for the monetary costs of modifying and reconfiguring systems as well as the hiring of additional staff and engaging resources for number portability all collectively impacting on the service provider's costs and therefore consumer rates. This plan may have the effect of increasing prices across the board which will have to be paid by even subscribers who have not ported their numbers.</p> <p>The Authority briefly sets out its hopes for NP such as avoidance of branding and other costs for corporate users</p>	<p>precisely by whom they will be borne and ultimately providing an estimate of the aggregate costs and benefits on a national level to demonstrate any net benefit outweighing the costs and therefore being in the public interest. This was the process followed several years ago by Oftel in the UK as well as other countries that have embarked on a NP policy.</p> <p>To proceed with the implementation of NP in the absence of positive economic evidence supporting the public benefits to be derived is not only unprecedented, but also reflective of the Authority's</p>	<p>with any regulations relating to number portability, facilitate the portability of numbers assigned to any customer of any operator of public telecommunications networks or provider of telecommunications services. Therefore, the obligation to implement number portability exists independently of the finding of any cost/benefit analysis that might be conducted by the Authority.</p> <p>The absence of a cost /benefit analysis does not invalidate the findings of the TATT document. Indeed an economic analysis will necessarily entail making certain assumptions which cannot be tested prior to implementation and the</p>

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1.1 Rationale	Digicel	changing numbers as well as improved subscription packages to retain subscribers as benefits that will accrue to consumers from NP. This simplistic statement of the Authority's expectations does not constitute a proper rationale for the implementation of the proposed NP plan. It fails to take into account the financial outlay required to design and operate the relevant system under the NP policy, which will detract from concessionaire's ability to deliver the level of subsidies and promotions currently on stream or even to maintain the existing price schedule.	ignorance of the prevailing economic and market conditions locally that are quite different from the jurisdictions that sought to implement such policies elsewhere such as the market size, extraordinarily high penetration level, financial considerations for implementing NP in a market of this size, churn levels, practical implications for porting time as unlocking of phones will be required, whether the proportion of subscribers who at this time would take advantage of NP is significant (that is whether there would be a material	market may not behave in that manner. Other factors, qualitative in nature must also be taken into account e.g. need to increase consumer choice and deepen competition. In any event, the Authority has stated in principle that the overall cost to implement Number Portability is recoverable by service providers. Cost recovery has been dealt with in Section 6. Many EU countries introduced NP simply because it was Law and not because it was proven to be economically viable. In fact, it has been found that despite the direct and indirect costs of introducing MNP in Europe, almost all cost-benefit analyses came out

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1.1 Rationale	Digicel		<p>demand level for NP by subscribers in the current state of the market and so long after liberalisation) and the already low retail rates that exist in the market, which are quite competitive relative to international rates.</p> <p>The Authority should publish Number Portability rules to deal with many of the issues that may arise between concessionaires as well as the public, some of which are set</p>	<p>positive²⁶. The needs of customers and deepening of competition were the drivers.</p> <p>Please see the Authority's comments on above in response to similar observations made by TSTT.</p> <p>The Authority has no data that suggests that the costs of calls have increased in jurisdictions that have introduced NP.</p> <p>Issues would need to be identified to the Authority by the operators. It is clear that procedures will have to be developed by the</p>

²⁶ Buehler et al .Mobile number portability in Europe- Telecommunications Policy 30 (2006) pg 398 at www.elsevierbusinessandmanagement.com/locate/telpol.

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1.1 Rationale	Digicel	<p>Further the costs of installing systems for mobile number portability and then fixed portability would be greater than if the two were done in tandem. The issue of full number portability between fixed and mobile would need to be addressed as well. The Authority should note that in countries such as the Dominican Republic¹ and Mexico² both were launched at the same time in 2009 and 2008 respectively.</p> <p>¹http://www.bnamericas.com/news/telecommunications/Number_portability_launched_regulator_wants_war_of_competition*</p> <p>²http://www.jornada.unam.mx/2008/04/15/index.php?seccion=economia&article=024n2eco</p> <p>In any event, the countries that have launched number portability for fixed and mobile sectors at different times first proceed with the fixed line as that is where competition is</p>	out in our response.	<p>cessionaires to support the introduction of number portability and support good customer service. However, this is primarily the responsibility of the concessionaires. A rational approach would be the setting up of a committee comprised of representatives of the various concessionaires to deal with these issues. The Authority stands ready to work together with the concessionaires.</p> <p>The Authority simply stated in its document that mobile number portability is to be implemented first and gave the necessary reasons to support its decision. Fixed line was done first for historical reasons</p>

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1.1 Rationale	Digicel	<p>usually lacking. This is precisely the case here in Trinidad and Tobago where notwithstanding the introduction of fixed line services by Columbus Communications (Flow), TSTT continues to have a dominant position as confirmed by TATT's determination on April 14, 2009. The implementation of fixed line number portability prior to mobile is the approach adopted in Hong Kong, Japan, Denmark, Greece and Germany.</p> <p>The Authority should note that the decision to implement number portability in almost all of the countries cited in Table 1 of Appendix 1 was influenced more by their obligation to comply with the Universal Services Directive (2002/22/EU) requiring all telephone providers to implement number portability in the European Union, rather than the economic considerations ordinarily governing that decision after the conduct of a cost benefit analysis.</p>		<p>which do not reflect today's realities. It is clearly easier to launch NP in a mobile network than a fixed network. If operators see cost savings/benefits in implementing both fixed and mobile number portability <u>systems</u> simultaneously, the Authority will not oppose such a decision.</p> <p>In fact, it has been found that despite the direct and indirect costs of introducing MNP in Europe, almost all cost-benefit analyses came out positive²⁷. It is to be noted that this analysis was done after the implementation of NP and as such more meaningful data would have</p>

²⁷ Mobile number portability in Europe- Buehler et al .Telecommunications Policy 30 (2006) pg 398 at www.elsevierbusinessandmanagement.com/locate/telpol.

Draft Implementation Plan on Number Portability for the Republic of Trinidad and Tobago

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1.1 Rationale	Digicel			<p>been available rather than assumptions made prior to the implementation of NP.</p> <p>The Law is clear concerning porting between fixed and mobile networks and the Authority stands by its statement. This issue has been clearly dealt with in the document and nothing further needs to be said.</p>

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1.1 Rationale	TSTT	<p>TSTT notes the Authority's rationale that NP is likely to spur on competition by removing the inconvenience to customers and enabling easier porting; forcing operators to create more attractive packages in its retention strategies and finally that NP is mandated by the Telecommunications Act and therefore must be implemented. We submit that the rationale offered in each instance depends on the assumption(s) supporting them and that the Authority has failed in considering the impact on the sector as a whole; the impact on operators has been largely ignored, even though this consultation document indicates clearly that it will be the operators who will bear the full cost of this proposed initiative.</p> <p><u>Switching costs and Number Portability.</u></p> <p>The introduction of NP could, in theory, intensify competition. The main direct effect of NP would be to reduce switching costs that a telephone customer faces if the decision is made to change service provider. The presence of consumer switching costs means that the consumer incurs a utility loss if he/she decides to change provider and give up his/her telephone</p>	<p><u>Switching costs and Number Portability</u></p> <p>Conventional wisdom has assumed that switching costs would generate a "bargain-then-rip off" pricing structure. However recent theoretical and</p>	<p>Noted. However the consultative document also states that operators shall be able to recover the establishment cost of implementing NP.</p> <p>The Authority is of the view that the domestic harvesting effects are likely to be greater than the investment effects, that is to say that the presence of costs for switching providers results in the suppression of competition. As a</p>

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1.1 Rationale	TSTT	<p>number. Since consumers generally value keeping the same telephone number, NP reduces switching costs, thereby increasing their benefits.</p> <p>Traditionally it has been accepted that consumer switching costs confer market power to network providers. If operators cannot charge a different price to existing and new customers, they face a trade-off between charging lower prices in early periods, even sacrificing profits, in order to attract new customers and increase market share (“investment effect”) and then placing them in a lock-in position, thereby increasing market shares, which will be used ultimately to raise prices in later periods (“harvesting effect”). The harvesting and investment effects work in opposite directions in terms of market average price. Which effect dominates? It depends.</p> <p>Conventional wisdom suggests that the harvesting effect dominates. (Farrell and Klemperer, 2007.)³ According to this view, switching costs typically make markets less competitive, in the sense that prices are higher in equilibrium. Under this view switching costs suggest a particular pattern of prices, a “bargain-then-rip off” structure.</p>	<p>empirical research suggests otherwise: switching costs could lead to competitive outcomes. If investment effect dominates the harvesting effect, the introduction of NP as a mean of reducing switching costs may increase average price instead of reducing it.</p>	<p>result, the implementation of a policy which reduces the cost of switching providers will contribute to higher levels of competition.</p>

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1.1 Rationale	TSTT	<p>³<i>There is a substantial literature on consumer switching costs, which are pervasive in many network industries such as telecommunications, airlines, banks, computers, operating systems, etc. The sources of switching costs could be many: learning costs; high searching costs that make time-consuming or difficult to locate or learn about rival suppliers; familiarity or habits; contractual penalties if customers terminate contract before they expire; uncertainty about rival suppliers' quality, etc. See Farrell, J. and P. Klemperer. (2007). "Coordination and Lock-In: Competition with Switching Costs and Network Effects." Mimeo. December. University of California, Berkeley.</i></p> <p>However recent theoretical and empirical research casts doubt on the conventional view. Dubé, Hitch and Rossi (2007), Cabral (2009) and others suggest that the investment effect could dominate the harvesting effect, so that switching costs would lead to more competitive markets⁴</p>		

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1.1 Rationale	TSTT	<p>⁴Dubé, J., G. Hitsch and P. Rossi, (2009). “Do Switching Costs Make Markets Less Competitive?” <i>Journal of Marketing Research</i>, Vol 46 issue 4, August, p. 435-445. And Cabral, Lui³s, (2009), “Small Switching Costs Lead to Lower Prices,” <i>Journal of Marketing Research</i> 46, p. 449-451.</p> <p>Therefore, the effect of reducing switching costs on prices is <i>ambiguous</i>: it could reduce average price or it could increase it, depending of which of the two opposing effects dominates. In other words, switching costs can make markets more or less competitive.</p> <p>“TSTT noted previously theoretical models in which firms charge a single price. These models compare markets with and without switching costs. <u>A decrease in switching costs has an ambiguous effect on equilibrium prices.</u> The effect depends on the relative number of old and new consumers and the importance of “lock-in” relative to the incentives for attracting new customers.”⁵</p> <p>⁵Viard, Brian. (2007). “Do Switching Costs Make Markets</p>		

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
1.1 Rationale	TSTT	<p>More or Less Competitive?: The Case of 800-Number Portability". <i>RAND Journal of Economics</i>, Vol. 38, No 1, Spring, pp. 146-163.</p> <p>In the case of number portability for 800-numbers in 1993 in the US, Viard found that switching costs made markets less competitive. But this is not always the case.</p> <p>In carrying out its mandate to develop a competitive market, the Authority has failed to consider the impact of this NP initiative on a significant stakeholder, the telecommunications provider. TSTT submits that if the concerns of the provider are not heard, ultimately the very consumer whose interests the Authority is seeking to promote above other stakeholders will not see the anticipated benefit. The continued practice of imposing onerous burdens upon operators, without a cost benefit analysis in support of such action, will negatively affect the sustainability of a provider's business and ultimately stagnate competitiveness within the sector.</p> <p>The best alternative for improving consumer surplus is to let</p>		<p>Please note that operators shall be able to recover their investment costs.</p> <p>The Authority therefore disagrees.</p>

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1.1 Rationale	TSTT	<p>competitive forces to unravel. Retention mechanisms, lower prices, better quality of services etc are all expected results of the competitive process and not as a result on the imposition of number portability. The ability to create attractive retention packages is a competitive strategy that can be curtailed by the Regulator depending on how the Regulator has perceived the individual operator seeking to revise its tariffs and so on. It may very well happen that an operator that has been forced to invest millions of dollars to enable porting may be prohibited from competing effectively because asymmetric regulation imposes pricing inflexibility on that operator.</p> <p>Finally, we recognize that the Telecommunications Act, 2001 gave TATT discretion with respect to the introduction of NP. The rationale there was to give the opportunity to determine the suitability of this measure for the sector, at a given time or at all. We believe that TATT's introduction of NP at this time is hugely misconceived as there is a lack of empirical evidence in support of this decision and the costs are certain and substantial. It is difficult to see how the Authority can</p>		<p>The Authority agrees that it has discretion with respect to the introduction of NP. The Authority therefore is carrying out its mandate according to the Law.</p> <p>The HHI index as well as the mobile penetration rate both indicate that there are existing market</p>

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1.1 Rationale	TSTT	conclude, based on the rationale and evidence it presents, that the uncertain and speculative benefits of introducing number portability outweigh the certain and substantial costs that will be incurred to implement it. Given the financial implications for many providers, any decision to incur such expenditures must be reasonable and should be shown to have been taken in a fair and transparent manner. This cannot be demonstrated at this time.		inefficiencies and NP will assist in making the market more competitive.
Section 3				
3.4.1 Location or Geographic Portability	CCTL	The Telecommunications Act 2001 addresses the issue of number portability within the context of interconnection, that is, having multiple carriers interconnected in a market. As such, it is our considered view that location portability was not contemplated in this context and should not be	Maintain the requirements for number portability in the Interconnection Regulations, consistent with the intentions of the Telecommunications	Noted. The Telecommunications Act, 2001 speaks about number portability in the context of interconnection. It does not define number portability.

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	CCTL	<p>mandated by law. There is no need to amend the definition of number portability in the Interconnection Regulations, in order to achieve what was not intended by the Act.</p> <p>We concur that a simplified rating scheme (preferably one rate for all domestic calls) is preferred for the implementation of location portability. However we do not believe that location number portability should be regulated. We believe that market forces should be allowed to take its course as it relates to location number portability. In fact, CCTL already provides location number portability.</p>	<p>Act 2001.</p> <p>Location number portability should be left to the dictates of the market.</p>	<p>The Telecommunications (Interconnection) Regulations defines number portability in a specific manner – namely, service provider number portability.</p>
<p>3.4.1.Statement of Purpose on location number portability:</p> <p><i>1. The Authority requires that location number portability be implemented by domestic fixed line concessionaires</i></p>	TSTT	<p>The Authority is correct in recognizing that location number portability is impractical until such time as a single national rate is implemented. Until such time, the introduction of location number portability (and other forms of number portability such as service provider number portability) will only serve to confuse customers.</p> <p>TSTT also encourages the Authority to allow TSTT to offer</p>	<p>The Authority should amend that statement of purpose to recognize that location number portability should not be implemented until such time as the Authority approves a single national rate for TSTT and allows all domestic fixed line</p>	<p>The Authority does not agree that no service provider be allowed to provide location number portability until TSTT can do so. Let the market decide. There are concessionaires that can provide location portability now so there is no reason as to why they should not</p>

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<p><i>The Authority will seek to amend the definition of number portability in Regulation 2 of the Telecommunications (Interconnection) Regulations, 2006 when this implementation is finalised.</i></p>	<p>TSTT</p>	<p>freely the same flat rate billing structures that the Authority recognizes in its Draft Implementation Plan are now being provided by newer domestic fixed voice service providers.</p> <p>However, while these limitations are recognized in the Authority's discourse, when it comes to the statement of purpose on location number portability on page 11, the Authority makes no mention of these factors. The Authority simply requires that location number portability be implemented by domestic fixed line concessionaires.</p> <p><u>Absence of a cost-benefit analysis</u></p> <p>Before discussing <i>how</i> and <i>when</i> number portability (NP) would be implemented in T&T, the costs and benefits of the proposed measure need to be examined closely. Or in other words, there is a need to explain the economic and regulatory arguments of <i>why</i> the Authority wants to introduce NP and whether NP is a convenient measure for T&T. The Authority recognizes that the liberalization of the telecommunications sector in Trinidad and Tobago has resulted in increased</p>	<p>concessionaires to offer the same flat rate billing structures that it recognizes are important so as to not create customer confusion and frustration.</p> <p>TSTT notes, the introduction of such policy should carefully investigate the demand of customers willing to use NP against the costs operators will be confronted with to implement NP as a starting point.</p>	<p>do so.</p> <p>The Authority agrees that all domestic fixed line concessionaires should have the same (national) flat rate billing structure, but not necessarily the same flat rate. Competitive forces should be allowed to dictate the rates.</p> <p>The absence of a cost /benefit analysis has been dealt with. There is no need to identify a market failure in this particular instance.</p>

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3.4.1	TSTT	<p>competition in both the fixed line and mobile markets over the past three years.</p> <p>Good regulatory practice dictates that for a regulatory intervention to be introduced, first one has to identify what the market failure is. Second, once the market failure has been identified, one needs to evaluate alternative remedies for it. Third, the proposed remedy must be such that the benefits of the intervention are greater than its costs.</p> <p>The Authority has not carried out a cost/benefit analysis of the NP it wants to introduce. The Authority has not even indicated what the market failure is. When explaining the rationale on NP the Authority limits to conjecture that</p> <p style="padding-left: 40px;">“users who wish to change concessionaire, location (outside the rate area) or service type are currently required to change telephone numbers... This <i>may</i> act as a deterrent to competition...”</p> <p>On the other hand, the Authority simply asserts without any</p>	<p>TSTT urges the Authority to approach the question of whether or not to implement NP with a more open mind other than the drafting of its consultative document will suggest.</p> <p>TSTT suggest the Authority follow the three (3) step approach aligning with regulatory best practice.</p> <p>1) Identify market failure; 2) Evaluate alternatives to</p>	See above

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3.4.1	TSTT	<p>justification that</p> <p>“...competition can be further promoted by mandating number portability which enables consumers to switch provider or service and change location without changing their telephone numbers.”</p> <p>Regulators elsewhere meet the three criteria mentioned above when proposing a regulatory intervention. For instance, this is the case of Ofcom in the UK. In its 2005 policy paper, <i>Better Policy Making, Ofcom's approach to impact assessment</i> , Ofcom says (p. 3)</p> <p>“The option of not intervening...should always be seriously considered. Sometimes the fact that a market is working imperfectly is used to justify taking action. But no market ever works perfectly, while the effects of...regulation and its unintended consequences, may be worse than the effects of the imperfect market”</p> <p>“One of our key regulatory principles is that we have a bias against intervention. This means that a high hurdle must be overcome before we regulate. If intervention is justified, we aim to choose the least intrusive means of achieving our objectives, recognizing the potential for regulation to reduce competition”.</p> <p>The Authority has not quantified the potential benefits or the costs of implementing NP. Benefits of NP can be classified as</p>	<p>remedy the failure;</p> <p>3) Propose most economically viable alternative.</p>	

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3.4.1	TSTT	<p>follows:⁶</p> <p><i>⁶See NERA, 1998. Feasibility study and Cost Benefit Analysis of Number Portability for Mobile Services in Hong Kong. May.</i></p> <p><i>Type 1:</i> Those benefits that accrue to subscribers who retain their phone number when changing operators. Subscribers will switch to alternative operators if the call bill saving and any other additional benefits (the discount) exceed the costs of switching between operators. These could include the cost of a new handset, the cost of connection, the time taken to research the market and register with a new operator, as well as the cost of changing a number in the absence of NP.</p> <p><i>Type 2:</i> These benefits are the efficiency improvements and any associated price reductions that result from increased competitive pressure.</p> <p><i>Type 3:</i> These are the other resource savings that arise from fewer number changes, and include fewer misdialled calls and changes to information stored in customer equipment.</p>	<p>The Authority will need to engage in some survey analysis to ascertain how high the demand for NP may be from both subscribers and operators.</p> <p>Regarding subscribers the Authority will have to survey in segmented groups since these segmented groups will give some indication if NP will be a success in Trinidad and Tobago as they will react differently if NP is introduced,</p>	<p>As previously stated, consumer behavior for this particular service is difficult to predict. What the Authority has done is to ascertain the factors that influenced customer take-up of NP in other jurisdictions, and hence taken steps to ensure a successful implementation of the service via mitigation of factors that negatively influenced customer behavior. In this way, it is anticipated that a successful outcome will be realized.</p>

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3.4.1	TSTT	Costs of NP. The Authority has outlined the key categorical cost concepts around NP. A detailed calculation of costs should be developed to determine the cost of each NP alternative.	for example: <ul style="list-style-type: none"> • pre paid versus post paid; • Residential versus business; and • By age groups (young versus old) 	Costs for network and operational systems will have to be provided by the operators for any cost exercise to be done.
3.4.2 Service Number Portability	CCTL	Service number portability refers to number portability from one service to another (e.g. mobile to fixed or fixed to mobile). The examples of service number portability given in the consultation document are therefore not true service number portability but number portability across technological platforms for a given service. We support TATT's position that service number portability should not be considered at this time. We take note of the Authority's position that it may revisit this as the market matures. However we wish to point to the fact that true service number portability, such as fixed to mobile, would require	TATT should correctly define service number portability.	The Authority disagrees. Service number portability is being defined as the change in service type within the same technology e.g. fixed line services or mobile services. See http://www.faq.org/rfcs/rfc3482.html .

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3.4.2	CCTL	<p>radical changes to the existing retail pricing and interconnection pricing regimes. Under the calling party pays rating structure for mobile calls, the retail rates charged for fixed to mobile calls are significantly higher than for fixed to fixed calls. If fixed to mobile portability is allowed, then customers making a call to a previously fixed number now ported to a mobile network would have a difficulty estimating their telephone charges. This is a similar to the scenario raised by TATT concerning fixed location number portability in a multi-tiered tariff regime. This impact would be magnified in the case of fixed to mobile number portability, given the more significant rate differentials.</p> <p>International experience suggests that fixed to mobile number portability is more consistent with a receiving party pays environment.</p>		Noted.

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<p>3.4.3 Service Provider Portability: Timing for fixed Number Portability</p>	<p>CCTL</p>	<p>TATT makes the point that service provider portability in the mobile market will bring about more choice to users in Trinidad and Tobago. We agree with this statement, but would go further to say that fixed line users in Trinidad and Tobago stand to benefit more from service provider portability as currently the mobile market is much more competitive than the fixed.</p> <p>The characteristics of mobile telephony (mobility, personal communication & a predominantly prepaid subscriber base) contribute to the competitiveness of mobile telephony, as demonstrated in the high mobile penetration rates when compared to fixed lines.</p> <p>In its latest market report TATT indicated that for the period 2007 to 2008 mobile subscription increased by 19.6% compared to a marginal 2% for fixed lines. At the same time there is fixed line infrastructure already in place to serve more customers than are currently being served. More effective competition in the fixed line market would stimulate innovation, leading to more efficient use of existing resources</p>	<p>The implementation process for service provider number portability should address both fixed and mobile at the same time. Focus should be given to achieving fixed number portability in the specified timeframe of within one year of finalizing the framework.</p>	<p>It is noteworthy that it is easier to implement service provider number portability on mobile networks than on fixed line networks. The Authority stands by its statement based on international experiences on implementation of number portability. The Authority's visit to the Dominican Republic in September 2010 confirmed this opinion.</p>

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3.4.3	CCTL	<p>and increase competition in the wire line market.</p> <p>It is our considered view that the implementation of service provider number portability on fixed lines would have more impact towards promoting increased competition. With the availability of fixed line number portability, a major barrier to customers switching providers will be eliminated. Customers will be able to switch providers without incurring significant costs and inconvenience in the process. In Trinidad and Tobago (as in most other parts of the world) business customers, particularly medium to large businesses, use a fixed line number and not a mobile number for listing in business directories and for advertising purposes.</p> <p>For the above reasons we believe that focus should be given to fixed service provider number portability. We do not believe that a phased approach is useful within the context of the Trinidad and Tobago market. It is our considered view that both fixed and mobile should be addressed together. If technical and operational readiness allows mobile to be</p>		

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3.4.3	CCTL	<p>completed ahead of fixed that is understandable. However, fixed service provider number portability should not be left until mobile is completed. We therefore disagree with the Authority's position of a phased approach to service provider portability, with fixed line portability being done in the second phase.</p> <p>In Dominican Republic for example both fixed line and mobile number portability were implemented concurrently. In Latin American countries such as Brazil, Chile and Colombia both fixed and mobile were done at the same time, or at least as part of the same process. Given the global experience in fixed service provider number portability there is no reason for it to be left until mobile is completed. Additionally, a holistic process for implementation would ensure cost and other resource efficiencies are realized. TATT should also take account of the special challenges that are involved in mobile number portability (prepaid contracts, handset subsidy and need to change SIM card) which do not obtain for fixed line.</p>		<p>Noted. However, if the operators agree and wish to implement both fixed and mobile number portability simultaneously, the Authority will not oppose this decision.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
3.4.3	CCTL	<p>Empirical analysis has demonstrated, from TATT's own analysis we might add, that the mobile market is very competitive and exhibits high penetration even without mobile service provider number portability. In this consultation document TATT references the findings of its analysis reported in TATT Annual Market Report 2008, which shows large differentials between fixed and mobile penetration and growth rates.</p> <p>Further, in the document <i>Determination: Dominance in Retail Domestic Fixed Telephony Markets – March 2010 – pg 14</i> TATT states that “... effective competition will be possible only if consumers are able to switch providers without incurring significant monetary or other costs.” TATT indicated that barrier to switching was one of the factors considered in the determination of dominance. Note was also made of the fact that despite cheaper rates, few business customers have switched to CCTL. TATT correctly identified number portability as one of the factors that present a barrier to consumers switching fixed line providers.</p>		High penetration does not necessarily mean that the market is very competitive.

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<p>3.4.3 Implementation Timeframe</p>	<p>CCTL</p>	<p>Given the overwhelming empirical evidence, if TATT's objective for implementing service provider number portability is to promote competition, then it follows logically that the focus should be on introducing number portability in the fixed market space.</p> <p>In terms of the timeframe for implementing fixed to fixed service provider number portability, CCTL agrees with the timeframe suggested by TATT, i.e. one year from the date the implementation plan is published. Our position is informed by the fact that :</p> <ul style="list-style-type: none"> • The capability for porting numbers across fixed line platforms, circuit switch to NGN is already available. As TATT mentioned in the consultation document TSTT currently ports numbers across these platforms in its own network. This capability can be readily adapted to support number portability from TSTT's circuit switch or NGN infrastructure to the networks of other fixed line providers. • Providers in North America and Latin American regions are providing number portability using similar POTS infrastructure as that of TSTT. <p>We believe the proposed timeframe is sufficient to address all</p>	<p>We agree with the timeframe of one year after the publication of the plan, as the timeframe for implementing fixed service provider number portability.</p>	<p>Noted</p> <p>Please note that the Authority has expanded the section on the implementation of NP in the 2nd consultative document.</p>

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<p>3.4.3 Flexibility of Operational and Support Systems.</p>	<p>CCTL</p>	<p>the associated operational and administrative issues including the development of the related processes and the testing of retail, interconnection billing systems.</p> <p>In relation to TATT's statement that it shall assess whether fixed to mobile service provider number portability should be introduced, we refer TATT the points made earlier in Section 3.4.2 on service number portability.</p> <p>CCTL disagrees with TATT's statement that the operational support systems (OSS) of mobile networks are more flexible than those of fixed line networks. As an example, the new generation network (NGN) architecture of CCTL's network is more modern and flexible than the network architecture of legacy GSM networks. TATT also contends that mobile billing systems are more flexible than fixed line billing systems. We would ask TATT to indicate the empirical analysis on which this assertion is based.</p>		<p>The Telecommunications (Interconnection) Regulations, 2006 Paragraph 9 mandates number portability between similar networks. Fixed to mobile number portability requires a change to the Regulations.</p> <p>For clarification, TATT was referring to OSSs on legacy PSTNs as compared to newer mobile network OSSs. It is acknowledged that CCTLs newer NGN architecture may have a more flexible OSS than traditional incumbent legacy PSTN systems.</p>

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3.4.3	Digicel	<p>The Authority took into account the extremely high mobile penetration in Trinidad and Tobago at 138.2% with an associated growth rate of 19.6% from the Annual Market Report. We doubt that the penetration rate in any territory would have been that high at the time of the introduction of an NP policy on the basis of promoting consumer choice. The penetration rate in itself strongly suggests that a large section of the population for some time after liberalisation of the industry still has two phones, one on either existing network. What greater choice is achieved if the observable consumer behaviour pattern is that persons have two phones and can obviously take advantage of the best rates or promotions on either network for each call they are prepared to make.</p> <p>The Authority also makes unsubstantiated comments that NP will bring about more choice to users without providing any supporting evidence for this view.</p> <p>The Authority also makes a bald statement that mobile billing systems are more flexible than fixed and can more easily</p>	<p>The cost benefit analysis should consider the impact of the prevalent 'two phone culture' in its assessment of costs and benefits of NP. Digicel would be grateful if the net benefit from NP could be identified or the existing limited choice could be demonstrated, where vast numbers of subscribers nationally already have the benefit of both providers' service by maintaining two phones.</p> <p>TATT should also be mindful that changes to the software and systems of concessionaires will not be at an insignificant cost in terms of time, money</p>	<p>All these issues will have to be addressed by the operators. It is not</p>

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3.4.3	Digicel	<p>facilitate NP, which suggests that it will be quite easy to alter a mobile provider's billing system.</p> <p>Our billing software provider has stated that existing application will require extensive work, including the scheduling of contractor some of whom are based outside Trinidad and Tobago, on issues such as (a) re-rating of the roaming charges, (b) a management process for the issuance of new numbers to concessionaires by TATT, (c) re-designing the zoning and processing on all data warehouses and (d) major adjustments will have to be made to products such as 'Credit U, Credit Me' whereby Digicel subscriber can send credit to each other only. It is possible that it may even no longer be feasible to offer some of these products to consumers, based on the level of re-programming which will be required and /or the resulting increased probability of errors.</p> <p>We note that TATT will seek to determine the readiness of domestic concessionaires' networks but no mention is made of how this will be done and what criteria will be used.</p>	<p>and other resources, even with a mobile network. TATT should ensure that such costs and the possible impact on tariffs as well as the quality of service and potential disruptions to consumers are included in a cost benefit analysis of implementing the NP proposal.</p> <p>In the interests of transparency and objectivity the Authority should state upfront what factors will be taken into account to determine a concessionaire's readiness.</p> <p>The Authority suggests that the underlying objective of NP would be to create more choice</p>	<p>the purpose of this document to work out the concessionaire related details for the implementation of NP.</p> <p>The second round consultation document includes an expanded section on the implementation of NP. Additionally, the statement in Chapter 3.4.3 has been deleted.</p> <p>The Authority recognizes that some subscribers seem to have settled into carrying two phones to take</p>

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3.4.3	Digicel		<p>for consumers. However in Trinidad and Tobago since liberalisation in 2006 it has been made clear that a large portion of the population is willing to carry two phones and use the promotions running on either network to their advantage as appropriate.</p> <p>Local consumers are therefore not lacking in choice at all.</p> <p>Further part of the economic realities of being a new entrant is that a concessionaire will have to go from zero to build up its subscribership, as Digicel did over the past 4 years without the benefit of</p>	<p>advantage of the packages of the two current mobile concessionaires. Is Digicel suggesting that with the introduction of a third mobile concessionaire, consumers will be forced to carry 3 phones?</p> <p>The Hirschman-Herfindahl Index indicates otherwise</p> <p>Noted</p>

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3.4.3	Digicel		<p>that time of number portability when penetration levels were far lower. The arbitration panel convened by TATT to determine the issue of reciprocity of interconnection rates even made several references to the economic realities that new entrants must face such as lower interconnection rates due to same being set at the level of economically efficient operators from the first day of operation even though the new entrant is the furthest from that while the incumbent may even have costs lower than that at the time of liberalisation.</p>	

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3.4.3	Digicel		<p>Hence even if there were an argument for choice, one of those economic realities that must be faced is that the new entrant will have to capture subscribers just as Digicel did by having them change their numbers or simply have two phones. This did not prevent Digicel from achieving a significant market share within the first 4 years of operation and will not prevent a third operator either.</p> <p>In addition, to the vast multiple phone phenomena in Trinidad and Tobago, the Authority should carry out an assessment of the extent to which prepaid</p>	<p>The Authority does not agree that a third mobile operator will be able to accomplish what Digicel did considering the current economic and market realities. NP will certainly assist any new entrants in the mobile and fixed line markets in gaining market share.</p> <p>The Authority is of the view that having an unlocked phone is not the same as service provider number portability as the consumer has to obtain a new number to operate on</p>

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3.4.3	Digicel		<p>phones are unlocked locally. If this is widespread as we suspect it is, then in fact there is no need for number portability as the subscriber are mainly prepaid and are already availing themselves of unlocking measures to access another concessionaire's network.</p> <p>The numbers of subscribers who would actually switch only if NP is available should be investigated and estimated and the Authority should then determine if it would be worthwhile given those facts to implement this costly NP plan nationally.</p>	<p>another network if NP is not available.</p> <p>Again, consumer behavior is difficult to predict.</p> <p>It is not the remit of the Authority to determine what marketing strategies concessionaires employ to attract and retain subs.</p>

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<p><i>(Interconnection) Regulations, 2006 Clause 9 within one (1) year after the final publication of this document. Hence fixed line to fixed line service provider number portability is to be made available one (1) year after final publication of this document.</i></p>	<p>TSTT</p>	<p>feasible, the Authority may then amend its regulations to require fixed to mobile service provider number portability. The Authority should recognize, however, that in doing so it is acknowledging the substitutability between fixed and mobile services.</p> <p>It is interesting that the only direction that the Authority is considering for inter-service provider number portability is from fixed to mobile and not the other direction (mobile to fixed). Fixed access and fixed calling services may not provide so much substitutability for mobile access and mobile calling services as mobile does for fixed. An example may help illustrate why the substitutability works better in one direction and not so much in the other. As personal computers have become popular since the 1980s, they have substituted for typewriters, so much so that the market for typewriters has largely disappeared. While computers provide substitutability for typewriters, few today would look upon typewriters as a viable substitute for a computer. In a similar fashion, the convenience of the mobility and small form factor of mobile access and services has made them into powerful substitutes</p>	<p>rates will have to be considered in this model.</p> <p>If the demand for fixed line to mobile service provider portability is significant and the Authority wishes to implement, TSTT notes this too has a cost attached in the requisite upgrade of its network; as such a cost benefit analysis and a separate round of consultations should be developed for comments and recommendations from the parties of interest.</p>	<p>Noted</p>

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3.4.3	TSTT	<p>for fixed access and fixed calling services. All across the world we see customers adopting mobile telephones and in many cases dropping their fixed wire line service. We do not see so many, if any examples of people dropping their mobile service and going back to relying entirely on fixed wire line service for voice access and voice calling.</p> <p>Inasmuch as the Authority is prepared to consider fixed to mobile substitutability to enhance the efficacy of number portability, it cannot then ignore such the issue of substitutability in its determinations of relevant markets (and consequently dominance) in fixed access and fixed voice calling.</p> <p>The fact that the Authority can even suggest fixed to mobile service provider number portability within one year is cause for concern regarding its recently taken decisions on relevant markets and dominance. We urge the Authority to revisit those decisions as soon as possible or at least in line with decision regarding fixed to mobile number portability for much needed consistency.</p>	<p>At this time therefore, we recommend that the Authority undertake an immediate review of the markets.</p>	<p>The Authority shall review fixed to fixed and mobile to mobile service provider number portability for at least a year to determine the demands of the market. Should the market require fixed to mobile number portability, and it is technically and operationally feasible, the Telecommunications (Interconnection) Regulations will be amended to reflect same. This is not the same as what TSTT is stating.</p>

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Section 4				
Section 4.2.5 and 4.3	Digicel	<p>If NP is to be implemented, the All Call Query (ACQ) method may be more suited to larger jurisdictions where the number of calls would make it more cost effective. Using internal databases would be more economical for providers in smaller jurisdictions such as Trinidad and Tobago and appropriate agreements can be made for the entering of information in the relevant databases.</p> <p>In addition, the consumers (including those that do not port their numbers) may end up paying for the ongoing costs of checking the databases in each call and further interconnection charges for instance on outbound roaming for ported numbers, which will give rise to an interconnection charge that is not currently incurred. This charge for outbound roamers would be avoided with internal databases.</p> <p>This option will also avoid the risk associated with a</p>	<p>The Authority should consider the cost of the extensive overhaul of internal systems and higher consumer rates, both of which would be necessary to facilitate the centralised database.</p> <p>The justification that the proposed ACQ plan is the most popular and efficient, as it would better support the more complex routings expected from next generation services and applications, has not been properly supported by any substantial evidence showing</p>	<p>Noted. Again, the Authority has expanded the section on implementation of NP in its 2nd round consultative document. The Authority shall not oppose any cost effective proposal that is efficient, reliable and easily implementable, once the working group of concessionaires is in agreement. If the internal database system is deemed more efficient and cost effective by the concessionaires, then the Authority has no objection to its implementation.</p>

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Section 4.2.5 and 4.3	Digicel	centralised database that any technical issues with same would impact all mobile subscribers regardless of their current network provider. It would also become unnecessary to establish signalling links between an external party and each provider for dealing with the queries outside of the provider's network.	its suitability for Trinidad and Tobago. In particular the Authority should address why the ACQ system cannot be based on internal databases even if the above justifications were valid. That option does not seem to have been considered in section 4.2.	
Section 5				
5.1 Proposed Option for Implementation	CCTL	We agree with TATT's proposal to use the All Call Query (ACQ) approach for implementing service provider number portability. This approach is consistent with international best practice and offers the best opportunity for a cost effective long term solution to support sustainable market development.	We support the ACQ approach to implementing number portability.	Noted

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<p>5.1 Statement of Purpose on option for service provider number portability</p> <p><i>The Authority proposes that service provider mobile and fixed number portability be implemented using the All Calls Query direct call routing method.</i></p>	<p>TSTT</p>	<p>The selection of the appropriate method to implement NP will depend on the costs of each alternative based largely on the technical solution adopted for NP. This is why a costing exercise should be part of the evaluation that the Authority has to undertake for the introduction of NP in T&T. The evaluation of NP options will have to estimate costs for the main approaches (onward routing) or direct routing, and for the implementation variation of decentralized (operator control) or centralized control.</p> <p>The costs of each alternative depend on scale, how they are to be borne, and how they arise. In circumstances of low proportions of traffic to ported numbers, systems which rely on the donor network to route the call (onward routing) are possibly optimal whereas, in circumstances of higher proportions of traffic to ported numbers, systems which rely on the originating network to directly route calls to the correct network might consume fewer resources overall. Whether onward routing or direct routing is more appropriate for Trinidad and Tobago will depend on the above mentioned</p>	<p>The key criteria to select the most effective method of NP would be to choose the model of parsimony; TSTT notes this is where the Authority's benchmarking exercise has failed given what work for one country may not necessarily work for another. Thus, the Authority will need to test these methods of implementations against each other tailored to Trinidad and Tobago's context and select the most viable alternative.</p> <p>For instance if it is expected to have a low porting traffic then the "onward routing" would be least expensive solution.</p>	<p>The Authority stands by its recommendation for the ACQ method. The document clearly indicates the reasons for this recommendation. As noted above, an internal database (that is updated periodically) may be a more cost effective implementation. If so, then the Authority has no objection to its implementation. The concessionaires shall be allowed to decide on the most efficient method to deploy.</p> <p>It is difficult at this time to predict the level of porting that may occur in the market.</p>

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5.1	TSTT	<p>variables such as scale of ported traffic that is expected to come from NP. The answer is not clear cut, and depends on costs and volumes for Trinidad and Tobago.</p> <p>A centralized system used for Query on Release only requires support transactions for calls to ported numbers, and therefore requires lower transactional capacity. Of course, a centralized system can also be used for querying all calls, and routing directly to the recipient network, but typically such systems require greater transactional capability at peak traffic periods, which is correspondingly expensive.</p> <p>An 'onward routing' solution for very low levels of ported numbers might be implementable using existing network infrastructure, whereas a 'direct routing' solution requires investment in a ported numbers database, though may benefit from lower operating costs. Scale economies are important when consideration is given to "onward routing" or "direct routing" alternatives. Fixed costs of NP in Trinidad and Tobago have to be spread over fewer customers than in larger countries such as the US or Mexico with subscriber bases of</p>	<p>Inversely, if it is expected a high porting traffic then "direct routing" can be more cost effective.</p>	

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		<p>between 70 -250 million. In a country of significantly smaller population size such as Trinidad and Tobago it may make sense to consider the option with the lowest fixed cost, i.e. “onward routing”</p>		
<p>5.1.1 <u>Establishment of Clearinghouse</u></p> <p>Centralized Clearing House Approach</p> <p>Need for comprehensive cost analysis of various approaches</p>	<p>CCTL</p>	<p>The most logical fit with the ACQ implementation approach is a centralized database approach. International best practice indicates that number portability transaction processing including database operations is best done through a neutral centralized clearinghouse.</p> <p>In examining the various clearing house scenarios, TATT presents three options; local public, local third party and international third party. TATT has proposed an international third party approach by simply looking at a list of advantages and disadvantages of the various options. CCTL would strongly urge the Authority to conduct a thorough analysis on the various options before making a decision on which direction to go.</p> <p>A major part of this analysis would be securing cost estimates including securing quotations from vendors and evaluating the</p>	<p>The selection of a clearing house approach must be informed by appropriate and thorough cost analysis.</p>	<p>Noted. The Authority is willing to work together with concessionaires in realizing the most cost effective implementation of NP for Trinidad and Tobago. The 2nd version of the consultative document does indeed agree with the approach for competitive bids for a database/clearinghouse based on an RFP developed and issued by a working group of concessionaires.</p>

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5.1.1	CCTL	<p>feasibility of the various options. It is not prudent to outsource the clearinghouse function to an international third party before doing the necessary evaluation on all the options.</p> <p>Competitive bids for outsourcing should also be obtained as part of the process of deciding whether outsourcing is the way to go. By not evaluating the cost options before making a decision, we are not in a position to determine the most cost effective solution. We also run the risk of not getting the best deals from the international clearinghouses we approach for solutions.</p> <p>In addition to the options presented by TATT, there may also be opportunities to explore the option of a regional clearinghouse. The main operators in Trinidad and Tobago are part of regional networks. This option should be explored as well. While no other English speaking Caribbean country has as yet implemented number portability we are aware that it is on the agenda for consideration in other territories. For example the Office of Utilities Regulation (OUR) in Jamaica is planning to undertake a cost benefit analysis on number</p>		<p>The Authority has no objection to considering implementing a regional solution for NP, once concessionaires and national regulators are in agreement and cost sharing can be determined in a timely manner. However, other regulators eg Jamaica have adopted different approaches to NP and thus</p>

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5.1.1	CCTL	<p>portability in Jamaica. A regional centralized database solution would go some ways towards reducing the cost for individual countries. For clarity, CCTL sees this as just one other possibility to be explored.</p> <p>Some of the disadvantages TATT mentioned for the international option for example, have serious negative consequences such as foreign exchange cost and international network costs. CCTL does not have a problem with outsourcing in principle, and it may indeed be the most cost effective way, but CCTL believes that quantitative data should be obtained and the appropriate analysis done to inform a decision of this nature.</p>		a regional solution may not be easily realized in a timely manner.
<p>5.1.1.2 <i>Statement on establishment of a clearinghouse</i></p> <p><i>The Authority proposes that the clearinghouse for ported numbers be</i></p> <p><i>a) outsourced to an international provider</i></p>	TSTT	The Authority proposes that, initially, the clearinghouse for ported numbers be outsourced to an international provider. It has not, however, specified how such an international provider will be identified or selected. Since these details are not yet determined, more work is needed to specify how such a provider will be identified and then selected. This represents a substantial cost of providing service and should not be taken	The criteria for deciding whether outsourcing the clearing house or establish a domestic clearing house should come out as a result of comparing costs and benefits of each alternative. A priori is	Noted. Please see comment above. It will be the responsibility of the concessionaires to determine the most cost effective NP proposal received via an (expected) competitive bidding process. The Authority is willing to work

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<p><i>in the first instance and</i></p> <p>b) <i>established in Trinidad and Tobago at a later stage should it prove to be the more cost effective and efficient long term option</i></p> <p>5.1.1.2</p>	<p>TSTT</p>	<p>lightly.</p> <p>The Authority recognizes that using an international provider for the clearinghouse for ported numbers raises questions of possible interference in domestic Trinidad and Tobago communications by foreign authorities and by foreign persons. As one example, using an ACQ system with a foreign clearinghouse for all calls to domestic Trinidad and Tobago customers means that records of all calls to any or all of those domestic customers could be created or maintained. Indeed, some such records would necessarily have to be maintained for the clearinghouse provider's own billing to Trinidad and Tobago service providers. Would a foreign provider of a clearinghouse have to respond to requests from its own local law enforcement authorities for information that it possesses that is stored in or passes through the local authority's country, even on domestic calls between Trinidad and Tobago customers? Would a foreign provider of a clearinghouse have to respond to a request from Trinidad and Tobago law enforcement authorities for information it possesses, even</p>	<p>not clear which is the most cost efficient option for the long term.</p> <p>These issues should be addressed in the second round consultation.</p>	<p>together with concessionaires on this issue.</p> <p>The operator has the option of not sending the calling number information on the SS7 links and the logging of calling numbers by the clearinghouse should not be an issue. Thus using a foreign clearinghouse/database should not be a security risk to the concessionaires or to T&T.</p>

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5.1.1.2	TSTT	<p>though the information is stored outside Trinidad and Tobago? If a foreign person were to intrude on the foreign clearinghouse and obtain information on the calls made by Trinidad and Tobago customers, would such intrusion be illegal? Under which jurisdiction would it be illegal? Would Trinidad and Tobago authorities be able to prosecute such intruders even though the perpetrator is located outside Trinidad and Tobago and committed his trespass outside Trinidad and Tobago? These important questions must be resolved before a foreign-based externally outsourced clearinghouse can be a viable solution.</p> <p>TSTT reiterates the Authority has determined that it will require service provider number portability to be implemented by domestic mobile operators within six months. Six months is not a realistic timeframe for this requirement, especially given the current level of detail of the Authority's plans for selecting an international provider for a clearinghouse, the procurement process that surely must be followed to contract the international provider, the negotiations with the international provider's host country to resolve the legal and privacy</p>	<p>Transparency of selecting an external clearing house should be visible to all concessionaires.</p>	<p>Noted. See previous comment on implementation timeframes in other jurisdictions.</p> <p>Concessionaires should note that they would be responsible for selecting the NP solution, not the Authority.</p> <p>If the working group of concessionaires determines that the</p>

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5.1.1.2	TSTT	<p>implications of basing part of Trinidad and Tobago's telecommunications infrastructure on foreign soil and it being subject to foreign laws and open to possible intrusion by foreign persons.</p> <p>The Authority mentions examples of countries that have outsourced clearinghouses that are not relevant for T&T. Certainly Pakistan is not a good example.</p> <p>Whether the clearinghouse should be outsourced or domestic is another issue that should be analyzed in a more general evaluation of benefits and costs of NP in T&T.</p> <p>TSTT notes among the challenges associated with having an outsourced clearing house will be:</p> <p><u>Funding</u></p> <p>Funding for setting up clearing houses must first be agreed between operators, and processes must be established to ensure</p>	<p>TSTT suggest the Authority factor in its deliberations the challenges associated with having an outsourced clearing house.</p>	<p>timeframes for implementation of NP are not practical even with best efforts, then the Authority will be so guided. However, it is to be noted that the Authority determined timeframes from jurisdictions that have implemented NP and considers them to be reasonable and realistic.</p> <p>The Authority has modified the document to state that funding for</p>

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5.1.1.2	TSTT	<p>payments are met. In the absence of strong justification, there is little financial incentive for operators to invest in such policy.</p> <p><u>Corruption in data</u></p> <p>Corruption of data could result from occurrences in capacity outage, data corruption, or inference by outside parties in the database</p> <p>TSTT is concerned for any failure for whatever purpose involving an external clearing house could cause TSTT to incur significant losses. Any prudent operator would seek to insure against potential losses and therefore the additional insurance costs should also be included in any cost estimate of NP.</p> <p><u>Security of data</u></p> <p>Assuming NP passed the cost benefit analysis in the Republic</p>		<p>the necessary shared facilities to establish number portability will be funded by the operators on a revenue basis ie the operator with the largest share of revenues in that market segment will pay the most followed by the next highest etc.</p> <p>See Section 6.1</p>

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5.1.1.2	TSTT	<p>of Trinidad and Tobago, TSTT notes that some consideration would also need to be given on data protection. Compliance cost are likely to result with a clearing house <i>outsourced to an international provider</i> these cost are not shown by the Authority's analysis</p> <p>With regard to statement (b) above, placing the clearing house on-shore subsequent to the use of an off-shore clearing house could affect the cost of the NP solution, particularly after significant investment would have been incurred in the participation by providers in an off-shore clearing house. A cost benefit analysis prior to the establishment of NP would of necessity examine the benefits of one option over another at the outset.</p>	<p>By the Authority proposing to establish a clearing house on-shore subsequently indicates the proposal to have an external clearing house is not a long term option. TSTT notes the proposal to establish a clearing house off-shore and subsequently placing another on-shore doubles the costs facing providers. Proper planning should be done at the very beginning to determine the most suitable option.</p>	<p>For the purposes of clarification: The Authority indicated utilizing the services of an already established off-shore facility/entity for clearinghouse activities, not establishing an off shore facility in another jurisdiction.</p> <p>There are technical solutions to these issues - for example duplication and/or mirroring of databases. It is the responsibility of the concessionaires to ensure that the solution chosen is robust.</p>

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5.1.1.2	TSTT			<p>Redundancy is usually provided by database suppliers and the likelihood of corruption of data is small.</p> <p>The establishment of an on shore clearinghouse/database shall be determined by the working group of concessionaires. The Authority will not object to the most cost effective implementation of NP.</p>
Section 6				
Section 6	Digicel	<p>The Authority has set out the various types of costs to be incurred with the implementation of number portability but no consideration is given to the quantification of these items discussed under establishment and consumption costs and whether these costs will exceed the aggregate benefit of number portability to consumers.</p> <p>When these costs are sought to be recovered (as they will have</p>	<p>The Authority should consider the use of an information exchange and ACQ routing without a third party central database as is done in Hong Kong³.</p> <p>³http://www.ofta.gov.hk/en/standards/hktaspec/hkta2108.p</p>	<p>The Authority shall not object to this alternative implementation once it proves to be more cost effective and it satisfies the security concerns of the concessionaires. It is left up to the concessionaires to collect the information that will determine the best solution. The</p>

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Section 6	Digicel	<p>to be) there is a real and significant risk of upward pressure on tariffs which will be borne even by those consumers who have no desire to port numbers. Generally such measures will also reduce the resources that are available for discount promotions and subsidies on phones.</p> <p>Under section 6.3 the Authority notes that NP is a stimulus to competition to encourage the supply and enjoyment of better service and benefits and hence there should be no fee for NP. Whilst we agree that the underlying intent of NP should be the stimulation of competition, it is precisely for that reason that NP is inappropriate for Trinidad and Tobago at this time. There is a penetration level of 138%, large sections of the population have two phones and retail rates are already amongst the lowest regionally. The market itself has created the necessary conditions for healthy competition between the existing providers.</p> <p>The Authority has stated as well that there is to be no fee for the porting of numbers and points out that post-paid customers</p>	<p>df and http://www.ofta.gov.hk/zh/standards/hktaspec/hkta2102_v7.pdf</p> <p>Concessionaires will essentially use internal directories for the queries which can be updated periodically from a central database containing only numbers. This may entail lower establishment costs and far less costs per ported number.</p> <p>The concessionaires may jointly own the entity controlling the database of numbers but as the queries go directly to internal directories</p>	<p>Authority again reiterates its willingness to work together with the concessionaires on the most cost effective solution.</p> <p>The HHI for the mobile sector shows that there is still room for improvement.</p>

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Section 6	Digicel	<p>may be charged 'large penalties' for terminating prior to the expiration of their contract. The Authority fails to recognise that concessionaires cannot recover the costs of implementing NP from such penalties. That 'penalty' figure would really be the sum of the foregone subscriptions and the subsidy on the phone, which is not only the validly foreseeable loss arising from the early termination but is also distinct from the costs incurred in implementing NP.</p> <p>The argument that 'penalties' may be a justification for not charging a fee for porting is further weakened by the fact that the overwhelming majority of subscribers are prepaid, which renders that point moot with respect to them. For prepaid subscribers who may choose to port, if this is done with no fee then the concessionaires may rightly have to revisit the subsidy granted on phones to recover such costs arising from prepaid porting subscribers which impacts on sales of prepaid phones to all prepaid subscribers even existing subscribers who are remaining on the same network and merely upgrading their handsets.</p>	<p>there will be less use of signalling links as well as avoidance of unnecessary interconnection and transit costs or other charges payable to the third party with responsibility for the database.</p> <p>The ACQ with distributive databases will also avoid the possibility that sensitive competitor information will leave the concessionaires network as the queries will no longer have to go to one clearinghouse. Only the numbers need be updated from the database.</p> <p>It is unfair to have all consumers bear the costs of</p>	<p>The Authority agrees.</p> <p>There should be no reason for sensitive competitor information to be available to the clearinghouse /centralized database.</p> <p>The Authority disagrees. The benefit/service (NP) is available to</p>

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Section 6	Digicel	It would even be economically inefficient to require the concessionaires to make available to the public a benefit without any recovery of that cost from the specific parties whose choices give rise to the cost.	<p>number portability even through a LRAIC cost modelling approach. Rather the introduction of a fee per porting consumer would rightfully allow the concessionaires to recover the costs of porting only from those subscribers who seek that benefit which gives rise to the costs associated with the implementation.</p> <p>The NP plan in its current form would only serve to potentially increase the costs of concessionaires to provide NP and open consumers to the risk of lower quality of service or interruptions of service by</p>	<p>all subscribers whether or not they use it. So the cost is to be shared amongst all subscribers. In this manner, the cost per subscriber is small and can be spread out over a (to be determined) timeframe once the overall costs are determined. The Authority has already stated that concessionaires will be allowed to recover the capital cost of implementation of NP. Please note that there have been changes to section 6 in the 2nd consultative version of this document.</p> <p>The Authority said that heavy fines imposed on post paid subscribers for breaking their contracts before time will act as a disincentive for</p>

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Section 6	Digicel		<p>compelling the introduction of new systems and databases to the networks of both providers.</p> <p>Moreover the concessionaires must be allowed to cover their reasonable costs through a fee imposed on the concessionaire seeking to port. The fee should even include a portion of shared costs (which can be paid in the same way as interconnection charges by net payments after the parties have confirmed the quantity of ported numbers per month). The concessionaires should establish a reciprocal rate or at least a ceiling for these porting transaction costs based on a</p>	<p>them to port. Concessionaires shall be allowed to recover the unpaid portion of the cost of the handset and unlock the phone at no cost to the subscriber as per paragraphs C20 and C21 of the Concessionaire document. Unjust penalties shall not be permitted by the Authority.</p> <p>The sale of phones at subsidized prices is surely a marketing strategy employed by concessionaires and the subsequent upgrade is a retention strategy. Both are in the control of the concessionaire. This issue has nothing to do with the cost of porting.</p> <p>The Authority is of the view that having no fee for porting a number will encourage utilization of the NP service.</p>

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Section 6	Digicel		<p>cost causation principle. Hence the recipient concessionaire should pay the donor concessionaire the incremental costs arising from the calls relating to ported numbers.</p> <p>Nothing under the Telecommunications Act permits the Authority to implement any policy or plan and mandate that the costs of same be absorbed entirely by concessionaires.</p> <p>Even such action was permissible under the regulatory framework, it would simply result in fewer resources being available for promotions and subsidies on</p>	<p>Please explain “shared costs”.</p> <p>There is no statement in the Act that prevents the Authority from doing so.</p> <p>This is a marketing issue for each concessionaire.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
<p><i>These costs must adhere with the guidelines that the Authority may establish.</i></p> <p>3. <i>The consumption costs for operating number portability shall be borne by all concessionaires. These costs shall adhere with any guidelines that the Authority may establish</i></p> <p>Section 6</p>	<p>TSTT</p>	<p>International benchmark on Mobile Number Portability (MNP) costs</p> <p>A few countries have published ex – ante cost benefit analysis about the introduction of MNP, which contain detailed calculations about monetary values of benefits that would produce MNP and their associated costs. These reports are before MNP has been introduced and the exercises consist on basically forecasting benefits and costs of MNP that would bring about during the first 5 to 10 years of its functioning. Each analysis is based on a set of assumption regarding implementation costs, mobile penetration, demand for porting activity, etc.</p> <p>Early analysis such as the one carried out in the UK or Hong-Kong showed that the cost per mobile subscriber was around USD 23 (measured as the present value of total costs for the first 10 year of MNP divided by the average subscriber base forecasted for the decade). Both of these countries implemented “onward routing”. Surprisingly in a more recent study done for the USA, in which All Call Query (ACQ) was implemented, Lenard-Mast (2003) also reached a similar cost</p>	<p>If providers are not allowed to charge users for porting then method 2 will be the next best alternative as this would lower the burden on telecom operators and will not increase the cost of NP for users too.</p>	<p>cost to implement Number Portability may be lower than those countries quoted. Costs to implement NP are also heavily dependent on the technological status of existing networks and OSSs.</p>

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Section 6	TSTT	<p>per subscriber (USD 23). More recent ex – ante studies for introduction of MNP using ACQ method for MNP in developing countries show that cost per mobile subscriber is lower: between USD 12 and 13 per subscriber in Chile and Ecuador respectively.</p> <p>Assuming an average population of mobile phones of 1.8 million in T&T for the next 10 years, and using the average costs per subscriber of implementing MNP of USD 23 and 13 per subscriber, the total costs for MNP in the country would amount between USD 41 and 23 million.</p> <p>Table 1. International comparison of studies on MNP costs</p>		

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Section 6	TSTT	<i>Country (year of cost benefit analysis)</i>	<i>Total costs (USD Million) [Note 1]</i>	<i>Average mobile subscribers during the first 10 years (million) [Note 2]</i>	<i>Costs by mobile subscriber (USD) [Note 3]</i>		
		U K (1997)* ⁷	368	16.3	22.6		
		Hong-Kong (1997)* ⁸	92	4.0	23.1		
		USA(2003)* ⁹	4,735	208.7	22.7		
		Chile (2007) ¹⁰	156-305	17.5	9-18		
		Ecuador (2007) ¹¹	107-155	10.2	10-15		
		⁷ OFTEL. 1997. <i>Economic Evaluation of Number Portability in the UK Mobile Telephony Market</i> . July. It can be downloaded from http://www.ofcom.org.uk/static/archive/oftel/publications/1995_98/numbering/ovtitle.htm					

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
Section 6	TSTT	<p>⁸NERA. 1998. <i>Feasibility study and Cost Benefit Analysis of Number Portability for Mobile Services in Hong Kong. Report prepared for OFTA. May.</i></p> <p>⁹Lenard, Thomas and Brent Mast. <i>Taxes and Regulation: The Effects of Mandates on Wireless Phone Numbers. Progress and Freedom Foundation, Octubre 2003.</i></p> <p>¹⁰Zagreb Consultores. 2007. <i>Estudio Relativo a los Costos y Beneficios de la Implementación de las Alternativas tecnológicas de la Portabilidad de la Numeración del Servicio Público de Telefonía Móvil en Chile. Report prepared for Subsecretaría de Telecomunicaciones. August.</i></p> <p>¹¹ NERA. 2007. <i>Viabilidad de la Portabilidad Numérica entre Operadores Móviles STMC y SMA. Confidential report prepared for the Secretaría Nacional de Telecomunicaciones de Ecuador. January.</i></p> <p>Note 1. Present value of costs for the first 10 years of operations of MNP. Original Costs for the UK and Hong-Kong have been updated using the accumulated inflation from when MNP was implemented until 2005.</p> <p>Note 2. These are total mobile subscribers, as the average number of subscribers for the first 10 years after MNP is introduced. They are not ported numbers.</p> <p>Note 3. Equal to total costs / total subscribers.</p>		

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		*Taken from NERA (2005): <i>Análisis Económico y Regulatorio de la Portabilidad Numérica en Telefonía Móvil</i> . Report prepared for Telefonica Moviles Peru.		
6.2. Statement of Purpose on Costs	CCTL	CCTL is in general agreement with the statements of purpose on costs proposed by TATT. However in establishing the guidelines for costs, we believe that these guidelines should be informed by the views of the parties involved.	We recommend that TATT takes account of the views of the operators in establishing the guidelines for these costs	The Authority welcomes suggestions on guidelines for costs. It should be noted that only DIRECT costs (for the implementation of NP) shall be considered for cost recovery.
6.3. Cost per User	CCTL	To be consistent with the objective of implementing service provider number portability, we believe that the basis of recovering cost should not discourage competition. At the same time, we recognize that that the costs for establishing, maintaining and administering number portability have to be recovered. While our preference is for no charge to be levied on customers for porting their telephone number, CCTL believes that this decision should be left to the discretion of the operator who bears this cost.	The decision on whether customers should be charged for porting telephone numbers should be left to the discretion of the operator bearing this cost.	The Authority disagrees. The Authority's view is that while it can be a competitive issue whether or not there is a charge to port, the charge, if initiated, must not act as a disincentive to port. This can be used as a customer retention strategy which certainly does not provide the customer with a choice.

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<p>6.3 Statement of Purpose on costs to user</p> <p><i>The Authority proposes that no charge shall be levied on users when porting their mobile and fixed telephone numbers.</i></p>	<p>TSTT</p>	<p>The Authority applies no analysis explaining why it has reached this position that no charges shall be levied upon porting customers. A requirement to offer NP at an amount which does not allow for a full recovery of the cost incurred would be an undue burden on providers.</p> <p>TSTT considers the Authority's proposal to be inappropriate and not in accordance with the general principle of cost causation.</p> <p>The Authority has proposed that no charge shall be levied on users when porting their mobile and fixed telephone numbers. There will be, however, costs associated with users porting a telephone number to another service provider. Both the donor carrier and the receiving carrier will incur costs to process the switch, as well as the costs that the provider of the clearinghouse and centralized database will incur. The Authority is silent on how those costs are to be recovered. These costs are apart from the establishment costs to create a centralized database and populate it with the proper</p>	<p>The Authority should follow general cost causation principles and allow operators to charge a standard fee sufficient enough to allow operators to capture a positive rate of return to further invest in the sector.</p> <p>The Authority should establish a charge to be levied every time a customer switches to a new operator of which the recipient operator pays.</p>	<p>The Authority disagrees. See comment above on cost recovery and the revised section 6 of the 2nd round consultative document.</p> <p>The Authority does not agree that the customer pays every time he ports his number. The recipient operator should pay the cost of porting to the donor. The recipient operator shall recover these costs from the customer in a manner so as not to deter customers from porting.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
6.3	TSTT	<p>information regarding the selected carrier of each subscriber. The centralized database will be used eventually in all calls to telephone numbers in Trinidad and Tobago, and thus all subscribers will utilize that database and benefit from it.</p> <p>The additional costs that are incurred when a customer switches from one carrier to another, however, directly benefit the switching subscriber and are caused by his decision to switch. The Authority should establish a charge to be levied every time a customer switches to a new operator. In other markets, these charges are frequently paid by the receiving carrier, in other words, the carrier that has been selected to receive the customer's business from this point onwards. This has been the practice in the United States, for example.</p> <p>The Authority's proposal that no charge be levied on users means that costs caused by individual users' decisions to the switching subscriber and are caused by his decision to switch. The Authority should establish a charge to be levied every time a customer switches to a new operator. In other markets, these charges are frequently paid by the receiving carrier, in other words, the carrier that has been selected to receive the</p>		

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6.3	TSTT	<p>customer's business from this point onwards. This has been the practice in the United States, for example.</p> <p>The Authority's proposal that no charge be levied on users means that costs caused by individual users' decisions to change operators will not be borne by (1) the causer of those costs (the user that decided to switch), nor by (2) those that will benefit from the switch (the user and the receiving carrier).</p> <p>A good economic principle for cost recovery is that cost should be borne out of those who cause them. A subscriber whose decision to port causes costs to be incurred should pay for the costs. This cost causality principle would assure an efficient balance of demand and supply for porting. If the subscriber does not pay at all for NP then we would be creating an artificial (inefficient) excess demand for NP.</p> <p>How much a porting customer pays for the porting service varies depending on the country. In the case of mobile NP, in some countries final customers pay no charge to port numbers due to regulatory imposition. This is the case in many European countries as well as Mexico, which has adopted</p>	<p>Operators should be allowed to charge the additional cost from users apart from the porting charges.</p>	<p>For the purpose of clarity, the Authority has said that operators shall be able to recover the capital cost of implementing NP in their networks and mechanisms to do so have been indicated in the consultative document. See Section 6 of the 2nd round consultative document.</p> <p>Success of Number Portability depends on the cost of porting and the time to port. The Authority is of</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
6.3	TSTT	<p>mobile NP since July 2008.</p> <p>But there are other countries in which a consumer pays a fee to port his number. These are the cases of France, Spain and the Dominican Republic and Brazil amongst others. Another interesting case is the USA. US mobile carriers have imposed monthly surcharges on all their mobile customers to recover the costs of mobile NP. Some providers even started collecting fees before mobile NP was introduced in December 2003. Different carriers charged different amounts to their customers, but each carrier charged the same amount to all its customers. It is difficult to obtain accurate information on the charge that mobile operators have charged to consumers to finance MNP. Calculations on how much each mobile network charges its mobile subscribers show that it is on average USD 0.53 per month or USD 6.36 per year¹²</p> <p>¹² <i>This is an estimate done by Park (2008) based on information collected by the Center for Public Integrity. See Park, M “the Economic Impact of Wireless Number Portability>” Mimeo Stanford University, June 2008</i></p>		<p>the view that for NP to be successful there shall be no direct cost to the customer for porting and the time to port a number shall be the shortest practicable with the technology that is available.</p> <p>The Authority shall make a final determination of the operators’ cost to implement NP in their networks when the operators provide such information. The recovery of such costs can then be determined.</p>

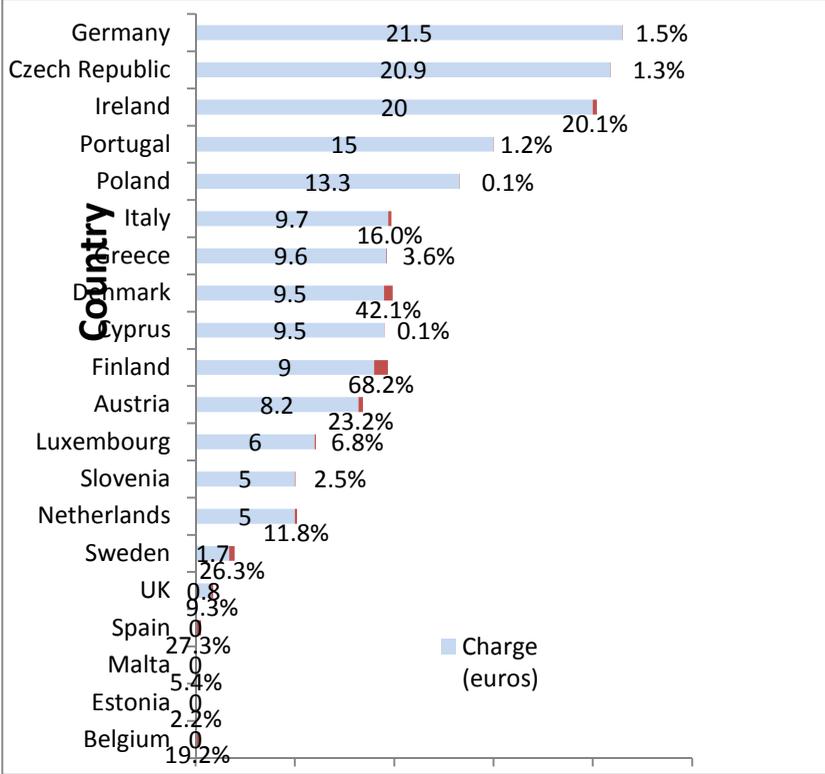
Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
<p>6.4. Cost Recovery</p> <p>Common Establishment Costs</p>	<p>CCTL</p>	<p>CCTL understands TATT' to be saying that costs which it has been classified as "Per ported number costs" and "Additional signaling costs" in Section 6.2.1, can be determined by the Authority using the Authority's Top-Down Long Run Average Incremental Cost (TD-LRAIC) Model. All other costs would be considered non- regulated, to be recovered by the market based or negotiated charges. CCTL is requesting that TATT confirm our understanding or clarify its position.</p> <p>Outside of indicating that some element of the charging mechanism would be regulated and other elements non-regulated, TATT has not proposed a specific charging mechanism. CCTL is requesting that TATT considers, and outlines a specific charging mechanism.</p> <p>In this regard, CCTL's proposes that TATT considers the approach used in the Dominican Republic, where a small regulatory fee is levied on all active fixed and mobile lines, as a possible approach. The underlying principle is that establishment costs incurred to meet a regulatory requirement</p>	<p>A specific cost recovery mechanism should be determined as a part of this process.</p> <p>A minimal regulatory fee could be levied on all active fixed and mobiles lines to cover the initial cost of establishing service provided number portability, specifically costs related to the database and clearing house systems.</p>	<p>The Authority prefers that a detailed cost recovery mechanism be a separate activity and only cost recovery principles have been outlined in the document. It should be noted that only when costs for various implementations of the ACQ methodology are collected by the concessionaires that any meaningful economical analysis can be made and decisions taken with regard to various costs to be applied to stakeholders, including customers. Hence it may be necessary to set up a committee comprising concessionaires and the Authority to look at the issue. The issue of costs can only be decided after the implementation of NP service,</p>

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<p>6.4</p> <p>Operator Specific Establishment Costs & Ongoing Maintenance Costs</p> <p>Administration Costs</p>	<p>CCTL</p>	<p>and to ensure effective competition, should be recovered through broad based charges. This fee could be used to recover common establishment costs such as those related to the establishment of the centralized database. CCTL believes this is a competitively neutral approach which ensures that all operators are treated in a similar way. In terms of implementation, the initial expenditure would be borne by the operators, who would subsequently bill their customers the one time regulatory fee.</p> <p>Operator specific establishment costs, ongoing administrative, network and database related costs could be recovered through other broad based charges by the respective operator.</p> <p>Consumption costs related to the administration of porting a number, which results from a customer's decision to make use of the service is best recovered by some type of cost based per instance or per port charge. This is the economically efficient way to go. To ensure the development of competition, this fee</p>	<p>Operator specific setup and ongoing administration costs should be recovered through broad based cost based charges.</p> <p>Administration costs related to the porting of a number may be passed on to the customer making the request in the form of a one time charge.</p>	<p>Please note that Section 6 of the 2nd round consultative document has been revised.</p> <p>Noted. However, during the Authority's visit to the Dominican Republic, it was noted that even though the operators were allowed to charge a one-time regulatory fee to customers for NP, it was not generally implemented by the operators for competitive and other reasons.</p> <p>The Authority is of the view that a one-time fee may act as a deterrent to customers who wish to port as it may be too high for them to pay as a one-time payment. A customer</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
		<p>should be kept to a minimum. It should be left up to service providers to determine if they wish to pass this one time charge on to their customers.</p>		<p>should not be deterred from porting because he cannot pay the one-time fee to do so.</p>
<p>6.4 Statement of Purpose on cost recovery:</p> <p><i>1. Concessionaires shall be allowed to recover the relevant costs incurred from the implementation of service provider number portability.</i></p> <p><i>2. Concessionaires shall recover those establishment and consumption costs that can be determined using the Authority's LRAIC model through approved regulated charges.</i></p>	<p>TSTT</p>	<p>TSTT agrees that operators should be allowed to recover costs incurred to render the number portability service. However TSTT doubts that the cost model that the Authority is developing to measure costs of services would be appropriate to costing number portability. TSTT believes that the estimation of costs of providing number portability should be a separate exercise from the TD-LRAIC that the Authority is undertaking basically because number portability is an service that currently does not exist in the country and our understanding of the TD-LRAIC model is that it is based on historical costs updated at current costs.</p> <p>Once the NP's costs are identified and estimated, there is a need to set up a set of cost recovery principles. In other jurisdictions cost recovery principles are as follows.¹³</p> <p>¹³ See Nera 1998</p> <ul style="list-style-type: none"> • Relevant costs: defined as those costs which are directly incurred as a result of the provision of 	<p>TSTT believes that the estimation of costs of providing number portability should be a separate exercise from the TD-LRAIC.</p> <p>Cost recovery should be established around these conditions.</p>	<p>Please see Section 6 of the 2nd round consultative document which has been revised.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
<p>3. <i>Concessionaires shall recover those establishment and consumption costs that cannot be determined by the Authority's model through market and negotiating conditions where applicable.</i></p> <p>4. <i>The Authority would seek to review non-regulated charges to ascertain the presence of anti-competitive practices by concessionaires</i></p>	<p>TSTT</p>	<p>Operator Number Portability (ONP)</p> <ul style="list-style-type: none"> • Cost causality: this principle required that a customer whose decision to port causes costs to be incurred should pay for the costs; • Cost minimization: this required that all those who have the ability to affect the size of the costs should face the incentive to minimize them; • Effective competition: which requires that one operator should not have the ability to raise its competitors' costs or to weaken their ability to compete; and • Distribution of benefits: this principle recognizes that customers who port their numbers are not the only beneficiaries of number portability and hence that other beneficiaries might pay for some of the costs. <p><u>Inter-operator charges.</u> Usually the donor network charges a fee to the recipient network each time a user ports a number. The following table shows the porting charges and the accumulated mobile porting activity (accumulated number of ported numbers / total number of subscribers) for several European countries as of October 2007. There is a huge dispersion of inter-operator charge levels in our sample of countries: from zero up to 23 Euros per ported number¹⁴ as follows.</p> <p>¹⁴ <i>Commission of European Communities, 2008 13th Progress</i></p>		<p>The Authority's view is that inter-operator charges for NP, if any, are to cover the cost of performing the activities associated with the porting of numbers and not to make a profit. Once operators supply the Authority their direct costs for porting a number a determination can be made as to whether there will be any inter-operator charges.</p>

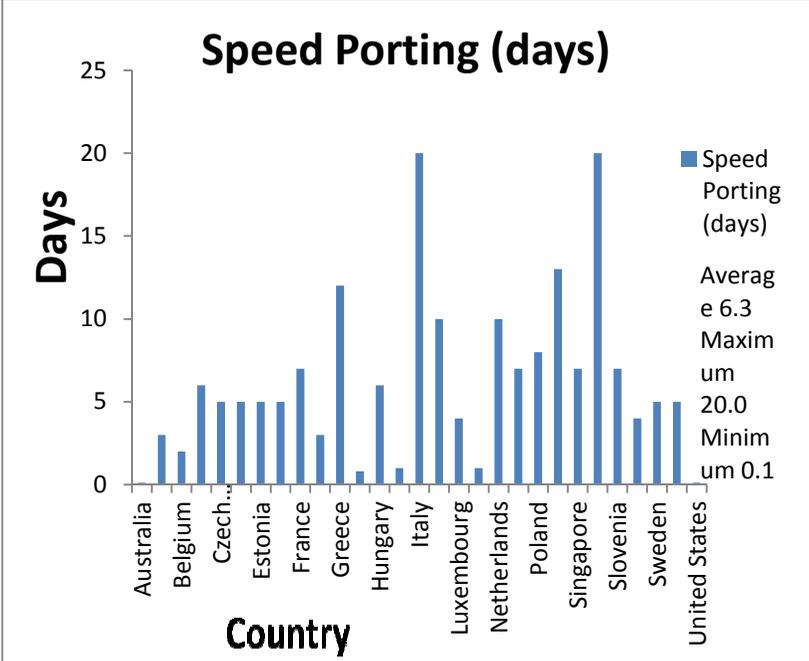
Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
6.4	TSTT	<i>Report on the Single European Electronic Communications Market 2007, Vol2 p. 19-21</i>		The Authority notes that generally where the cost of porting is high, the porting of numbers tends to be low. However in the example provided countries with populations near to T&T where there is no cost to porting a number show low percentage of ports. The Authority's document indicated that the key factors to the success of porting are not only dependant on the cost to port but also the time to port and the ease of the process. The factors contributing to the low percentage of ports in these instances need to be explored further.

Document Sub-Section	Submission Made By: Stakeholder Category ²³	Comments Received	Recommendations Made	TATT's Decisions																																																															
6.4	TSTT	<p>Figure 2. Inter-operator charges for Mobile NP and accumulated ported activity as of October 2007</p>  <table border="1"> <thead> <tr> <th>Country</th> <th>Charge (euros)</th> <th>Percentage</th> </tr> </thead> <tbody> <tr><td>Germany</td><td>21.5</td><td>1.5%</td></tr> <tr><td>Czech Republic</td><td>20.9</td><td>1.3%</td></tr> <tr><td>Ireland</td><td>20</td><td>20.1%</td></tr> <tr><td>Portugal</td><td>15</td><td>1.2%</td></tr> <tr><td>Poland</td><td>13.3</td><td>0.1%</td></tr> <tr><td>Italy</td><td>9.7</td><td>16.0%</td></tr> <tr><td>Greece</td><td>9.6</td><td>3.6%</td></tr> <tr><td>Denmark</td><td>9.5</td><td>42.1%</td></tr> <tr><td>Cyprus</td><td>9.5</td><td>0.1%</td></tr> <tr><td>Finland</td><td>9</td><td>68.2%</td></tr> <tr><td>Austria</td><td>8.2</td><td>23.2%</td></tr> <tr><td>Luxembourg</td><td>6</td><td>6.8%</td></tr> <tr><td>Slovenia</td><td>5</td><td>2.5%</td></tr> <tr><td>Netherlands</td><td>5</td><td>11.8%</td></tr> <tr><td>Sweden</td><td>1.7</td><td>26.3%</td></tr> <tr><td>UK</td><td>0.8</td><td>9.3%</td></tr> <tr><td>Spain</td><td>0</td><td>27.3%</td></tr> <tr><td>Malta</td><td>0</td><td>5.4%</td></tr> <tr><td>Estonia</td><td>0</td><td>2.2%</td></tr> <tr><td>Belgium</td><td>0</td><td>19.2%</td></tr> </tbody> </table> <p>The correlation between porting prices and percentage of porting subscribers is clear with two notable exceptions,</p>	Country	Charge (euros)	Percentage	Germany	21.5	1.5%	Czech Republic	20.9	1.3%	Ireland	20	20.1%	Portugal	15	1.2%	Poland	13.3	0.1%	Italy	9.7	16.0%	Greece	9.6	3.6%	Denmark	9.5	42.1%	Cyprus	9.5	0.1%	Finland	9	68.2%	Austria	8.2	23.2%	Luxembourg	6	6.8%	Slovenia	5	2.5%	Netherlands	5	11.8%	Sweden	1.7	26.3%	UK	0.8	9.3%	Spain	0	27.3%	Malta	0	5.4%	Estonia	0	2.2%	Belgium	0	19.2%		
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6.4	TSTT	Estonia and Malta. It cannot be ignored that these two countries have population sizes closest to that of Trinidad and Tobago. The issue of cost recovery/economic efficiency is more acute in microstates. With the exception of the two countries mentioned, other microstates like Trinidad and Tobago must resist economic inefficiency in attempting to generate competition, particularly as competition itself will be limited given the limited size of the market. As such the ability to reasonably recover costs is critical in assessing the reasonableness in offering this service.		
Section 7				
7.2 Time to Port	CCTL	CCTL shares the Authority's view that convenience in the process of getting a number ported, and the timeframe in which the porting of the number is to be achieved are critical success factors. While we want the timeframe for porting to be as expeditious as possible, we believe that a timeframe of within twenty four hours is unrealistic for fixed number portability. A review of the timeframe for porting (even based on the examples provided by TATT), indicated that in	The timeframe for porting should increase to at least five (5) days. The concessionaires may have to devise a mechanism for the settling of bills that unexpectedly fall into arrears	The Authority is of the view that five days is too long for a customer to wait to have his number ported. This will certainly act as a disincentive to customers wishing to port their telephone number. It should be noted that the UK is mandating 2 hours and the US one

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Section 7.2	CCTL	<p>jurisdictions where number portability is already implemented the average timeframe is about five days.</p> <p>CCTL recommends that at the outset an interval with an upper limit of a period of five days be set to complete a porting request. In addition to setting a more realistic timeframe, it gives the market the opportunity to revisit with a view to reducing after service provider number portability has been implemented and there is more information to guide the decision.</p>	<p>after having been ported, particularly with respect to roaming charges which not only may be delayed but may also be quite sizeable.</p>	<p>business day for mobile number portability.</p>
Section 7.2	Digicel	<p>The time to port stated is unrealistic given the checks and processes that would need to be undertaken.</p> <p>There may be delays in billing roaming charges that arise from the roaming partner sending information on a tardy basis. Once there is roaming to be billed, either operator may be unable to state that the arrears showing in any five (5) day period is the final amount owed to the service provider.</p>	<p>If NP becomes a reality in Trinidad and Tobago then the Authority should establish a time to port based on the capacity of the network and modify if necessary as time goes on.</p>	<p>The Authority agrees that concessionaires should put procedures in place to deal with roaming charges and any other charges which become due after porting has taken place. Such procedures need to be approved by the Authority prior to implementation.</p>

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<p>7.2 Statement of Purpose on time to port</p> <p><i>The Authority proposes that concessionaires implement a solution that supports a time to port fixed line and mobile numbers of within 24hours.</i></p>	<p>TSTT</p>	<p>TSTT submits that the proposed porting time of 24 hours, is too short. Most developed countries with mature NP processes have reduced their porting times gradually over a period of years.</p> <p>As of October 2007 information from the European Commission and other regulators indicate an average porting of 6.3 days in respect of mobile NP as follows</p>		<p>The Authority notes that the European Commission report does not state whether it is dealing with fixed line, mobile or both.</p> <p>The Authority submits that to wait for 6 days to port a number is too long.</p>

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	TSTT	<p>Figure 3 Speed of Mobile Porting in days, as of October 2007</p>  <table border="1"> <caption>Speed Porting (days) by Country</caption> <thead> <tr> <th>Country</th> <th>Speed Porting (days)</th> </tr> </thead> <tbody> <tr><td>Australia</td><td>3.0</td></tr> <tr><td>Belgium</td><td>2.0</td></tr> <tr><td>Czech Republic</td><td>6.0</td></tr> <tr><td>Estonia</td><td>5.0</td></tr> <tr><td>France</td><td>5.0</td></tr> <tr><td>Greece</td><td>7.0</td></tr> <tr><td>Hungary</td><td>3.0</td></tr> <tr><td>Italy</td><td>20.0</td></tr> <tr><td>Luxembourg</td><td>1.0</td></tr> <tr><td>Netherlands</td><td>10.0</td></tr> <tr><td>Poland</td><td>8.0</td></tr> <tr><td>Singapore</td><td>13.0</td></tr> <tr><td>Slovenia</td><td>7.0</td></tr> <tr><td>Sweden</td><td>4.0</td></tr> <tr><td>United States</td><td>0.1</td></tr> </tbody> </table> <p>Source: Commission of the European Communities. Progress Report on the Single European Electronic Communications Market, 2008. And Regulators from Singapore, USA, Australia and Hong Kong</p>	Country	Speed Porting (days)	Australia	3.0	Belgium	2.0	Czech Republic	6.0	Estonia	5.0	France	5.0	Greece	7.0	Hungary	3.0	Italy	20.0	Luxembourg	1.0	Netherlands	10.0	Poland	8.0	Singapore	13.0	Slovenia	7.0	Sweden	4.0	United States	0.1		
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<p><i>Statement of purpose on availability of SMS for ported mobile telephones</i></p> <p><i>The concessionaires shall be required to provide SMS service to all ported mobile telephones</i></p>	<p>TSTT</p>	<p>Implementing SMS number portability in a country like Trinidad and Tobago with multiple technologies such as GSM and CDMA will create a number of technological challenges for operators. Pure SS7-based signaling relay function (SRF) is not an option since it can only be deployed in GSM networks. While the technology exists to circumvent the problem, it is not cheap and would have to be obtained and installed first. This is another cost to be faced by operators as a direct result of the introduction of mobile number portability, impacting even further upon the issue of cost recovery.</p>	<p>The Authority should give more specific guidance on the process for unlocking of phones and what specific arrangements or guidelines will have to be put in place between concessionaires.</p> <p>The Authority must also indicate how the providers would be expected to deal with repairs of phones for numbers that are ported as well as upgrades of phones and related discounts. The recipient network as the current concessionaire used by the customer should be responsible for repairs but may not have an arrangement with that phone manufacturer.</p>	<p>The Authority is not aware that CDMA is used to provide domestic mobile phone services in T&T.</p> <p>The unlocking of phones should be done by the concessionaire who locked the phone. The concessionaire needs to have a procedure to unlock phones at a customer's request. This condition is stipulated in the sections C20 and C21 of the operators' concession.</p> <p>Other issues mentioned for example repairs, are to be worked out by the concessionaires themselves.</p>

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Section 7.4	Digicel	Unlocking of phones has the potential to increase the porting time given that the competing concessionaires will have to perform checks on the outstanding balances owed to the other prior to porting a number. Arrangements will then have to be made between the providers for the unlocking of the phones, as providers should not have to divulge unlocking codes to each other. All of the above may make the proposed time to port of within 24 hours impractical.		The Authority is of the view that the concessionaires themselves are in the best position to develop procedures for determining credit checks and roaming charges which comes in after the port has been effected. These procedures must have the approval of the Authority prior to their implementation. Whichever concessionaire sold the phone to the customer will be responsible for its repairs as warranties must be honoured. Upgrades to phones are a marketing issue for which concessionaires are responsible.
7.5. Off-net Alert	CCTL	CCTL sees this as a possible way forward to address some of the billing concerns end customers may have in a service	The Authority should clearly explain how customers would	Noted.

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		<p>provider number portability environment. As such, we will examine this option as we look at the required network changes.</p>	<p>be able to determine the price of calls from these alerts under NP.</p>	
<p>7.5 Statement of Purpose on tariff transparency</p> <p><i>1. The Authority proposes that concessionaires must provide a method whereby users shall be alerted when the number dialled has been ported and a different tariff shall be applied to the call.</i></p> <p><i>2. The originating network shall be required to provide the “off net” alert.</i></p>	<p>TSTT</p>	<p>Users find it desirable to be able to predict the price of calls, and porting numbers should not undermine this capability. Mobile number portability may, however, potentially reduce tariff transparency for mobile users due to the price difference that commonly exists between on-net and off-net calls from mobile networks. This is because in a mobile number portability environment, users lose the capacity to distinguish between on-net and off-net calls on the basis of the prefix of the number. As Ovum (2000)¹⁵ acknowledges in its cost-benefit-analysis of MNP in Ireland, “the first three digits of the called number no longer indicates the network operator of the called subscriber.</p> <p>Full tariff transparency is therefore lost and callers may end up paying a lot more than expected for certain calls.”</p> <p>¹⁵ <i>Ovum (2000), Mobile Numbering and Number Portability in Ireland, A Report to the ODTR, Ovum: London</i></p>	<p>The working committee tasked with the responsibility to develop the procedures to port numbers should be given very clear terms of reference and rigid timelines to complete the exercise.</p> <p>A request for porting should be made to the provider to which the customer is moving. Customers must settle all outstanding bills with existing provider before the port is done.</p>	<p>The purpose of the ‘off-net’ alert is not for the customers to determine the actual price of the call. It is simply to alert the customer that they are making an ‘off-net’ call. Actual charges for calls can be determined by making an account balance enquiry after making such ‘off-net’ calls.</p> <p>The customer knows what the cost of “off net” calls are currently and the price of an “off net” call in a NP environment should be no different. Customers on hearing the off net alert while making a call to a</p>

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	TSTT	<p>The Authority lists three (3) methods used in other jurisdictions:</p> <ul style="list-style-type: none"> • An alert tone • An announcement • User access to database of ported numbers <p>However, while consumers are informed by these and other methods that they are placing an off-net call, these methods do not inform the consumer of the price of the call, which is affected by more than just porting of mobile numbers. Pricing arrangements, such as pre-paid and bundled tariff packages (e.g. where certain amount of call minutes are free) are likely to contribute to a customer's uncertainty regarding the price of a ported call.</p>		<p>number which was previously “on net” may well enquire of the called party which network they are on. They could then decide that for future calls they will use a phone on that network to avoid interconnection charges or make the call as usual.</p> <p>These are current concerns to customers even without NP and concessionaires have not put anything in place to inform the customer of the cost of a call when making off net calls.</p>
7.6. Procedures for Porting a Telephone Number	CCTL	<p>In general CCTL agrees with the approach of convening a concessionaire's committee to draft the procedures for implementing number portability. However there has to be a very clear terms of reference and rigid timelines for completion.</p> <p>One the question of which service provider the customer</p>		<p>The Authority is in full agreement with the comments made.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
	CCTL	approaches to effect porting, CCTL agrees that this should be the provider to which the customer is moving. Customers must also settle all outstanding bills with existing operator before porting their number.		
7.6 Procedure for porting a telephone number	TSTT	<p>6) Delays</p> <p>TSTT suggests that there are additional valid reasons for delaying a request to port as follows:</p> <ul style="list-style-type: none"> • the request to port contains errors; • missing information pertinent to the request to port; and • The authorization information is incorrect, e.g. the account number and number to be ported do not match. <p>TSTT agrees with the Authority with the items listed that may contribute to a delay to port all of which should be settled before a user is allowed to port. The Authority should recognize, however, in doing so it is acknowledging any implementation of NP will not eliminate the cost facing the subscriber. In fact, TSTT notes if the cost in these items are significant a situation may present itself where customers have to pay more in order to port when compared to a non NP environment.</p>	Include the following as valid reasons for delaying a request to port in section 7.6 of the draft consultative document.	These reasons for delay should be minimized by the concessionaires themselves and such procedures should be submitted to the Authority for its approval.

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
7.6	TSTT	<p>TSTT notes a time period for customers to port back to the original provider is not outlined in the document. Without such a time line proposed a ‘nuisance’ of porting could be created where customers constantly abuse the initiative to port back and forth.</p> <p>8) Minimal Disruption</p> <p>In section 7.6 Procedure for porting a telephone number item 8) notes in the porting process that customers requesting to be ported will have service from two concessionaires for a short while. TSTT is concerned by this proposal on the basis of billing, complaints of service.</p> <p>Firstly, clarity of billing is important to avoid causing customer confusion. In the interim with two providers offering services critical questions arises; for instance, which provider charges the customer for using its services? An example of this is, if a customer uses the SMS service which provider should be allowed to charge that customer for using this</p>	<p>To avoid “nuisance porting” there should be a period of time before customer can port back to original network.</p> <p>The Authority in the second round consultation should address this concern.</p>	<p>The Authority agrees and a statement on the time frame of six months between ports shall be included in the Implementation document.</p> <p>The procedures developed by the concessionaires should address these concerns. In the Dominican Republic, this issue was addressed differently by different operators.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
7.6	TSTT	<p>service? Moreover, which provider is responsible for sending the SMS?</p> <p>Secondly, in the porting process if the customer experiences drop calls or disruptions in service, which provider should that customer make out their complaints too?</p>		

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
Appendix 1				
<p>Number portability implementation in Europe</p>	<p>TSTT</p>	<p>Firstly, TSTT notes the Authority's recognition that the method of implementing number portability has not been consistent among the countries of Europe given their network different technologies. Given that recognition we are alarmed that the Authority could offer proposals with respect to timeframes, the model of NP to be implemented and assessment of costs facing providers without first understanding the network technology of the operators in the industry? There is a clear contradiction and we offer the opinion that there needs to be an evaluation of the capacity of the network before proposing timeframes and models to be undertaken. If this evaluation is done implicit and explicit costs will be realized.</p> <p>Secondly, Appendix 1 references largely from the European Conference of Postal and Telecommunications Administration (CEPT) countries. TSTT notes these countries differ significantly in size of population, resources and market</p>		<p>Noted. However, your comments fail to take note that in T&T, both mobile operators utilize GSM technology. In Europe, mobile platforms varied from country to country. Given international experiences and the fact that it is easier to implement NP in (newer) mobile networks, the technical considerations for the implementation of NP are not problematic.</p> <p>With regard to fixed networks, again there was a significant variation in the technology utilized across Europe. Currently, the two main fixed line operators in T&T utilize different technological</p>

Document Sub-Section	Submission Made By: Stakeholder Category²⁸	Comments Received	Recommendations Made	TATT's Decisions
<p>Number portability implementation in Europe</p>	<p>TSTT</p>	<p>structure from Trinidad and Tobago. TSTT notes that the success in NP is hinged on the size of population; and so careful consideration should be applied to the size of the population of Trinidad and Tobago in the Authority's deliberations.</p> <p>Also the Authority posits the shorter the porting time the more successful the NP initiative will be (see page 30, Draft Consultation). However, the adoption of MNP has more often than not, failed to achieve high porting rates let alone economic success, contrary to the expectations of many. This was true of Ireland, Finland, Malta, UK and The Netherlands (Iqbal, 2007)¹⁶ The contradiction here being Malta and Ireland both which shows a time to port within hours yet it is concluded as an economic failure according to Iqbal's document. Why has Malta failed to achieve what would have been anticipated with NP being implemented? One strong</p>		<p>platforms. Hence the Authority's longer timeframes for the implementation of NP for the fixed line networks.</p> <p>Iqbal also quoted (Lago, 2007) that the factors for success in MNP are: <i>low porting times, low or even no charges allocated to subscribers for porting their numbers, promotion of the service by regulators and subscriber awareness of the service(Page 7).</i>²⁸</p> <p>He also makes the point that "while most of the literature attaches the success of MNP with high porting/churn rates, his paper argues otherwise. The MNP service</p>

²⁸ Iqbal T. Mobile Number Portability in South Asia

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
<p>Number portability implementation in Europe</p>	<p>TSTT</p>	<p>reason is that the size of the population of Malta was small.</p> <p>¹⁶ <i>Iqbal T. Mobile Number Portability in South Asia</i></p> <p>The size of population is a critical factor as this will ultimately determine how viable any implementation of NP will be. As such, implementing this facility in countries with small populations and even smaller mobile markets proves to be economically infeasible, because the costs outweigh the benefits. This is clearly the case of MNP in Malta, where there has been no impact on competition and prices even after the introduction of the service. The island nation has a population of only about 4 hundred thousand; a clear indicator that the mobile market size and demand for porting would be too low to be economically viable. However, given that all of European Union had regulations to adopt the service, Malta had little choice but to comply.</p> <p>In such countries, it makes more sense for operators and regulators to agree to facilitate number changes when requested by subscribers. Operators could offer to send out free SMS to all the subscriber's contacts, or maintain the old</p>		<p><i>can still be considered a success, even when these rates are low, if the threat of porting leads to improved competition among operators, and hence, lower tariffs and better services". "The purpose of regulation is to facilitate a level playing field and foster competition so that end-users are able to acquire the most optimal levels of quality at competitive prices (Melody, 1999; Samarajiva 2002). As such, it could be said that if there has been a substantive effect on tariffs and QoS post-implementation of MNP, leading to satisfied customers it may be considered that the implementation of MNP is successful"</i>²⁸ . The Authority notes that Iqbal's</p>

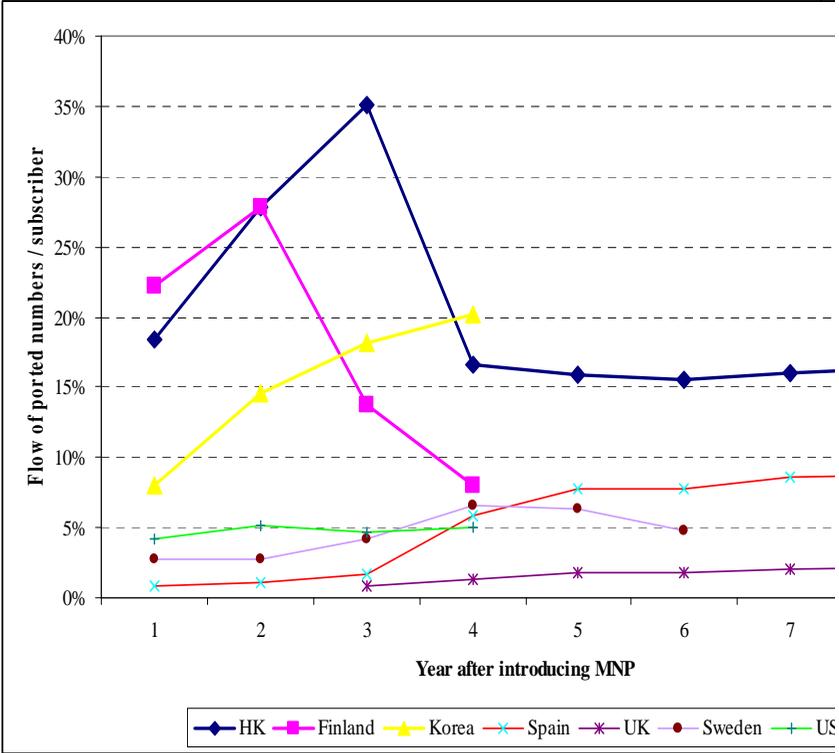
Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
<p>Number portability implementation in Europe</p>	<p>TSTT</p>	<p>number in parallel for a given time period. The regulators must also make more efforts to increase competition to ensure that subscribers in these small states are provided with high QoS and tariffs (Horrocks, 2007a)¹⁷</p> <p><i>¹⁷Horrocks, J. (2007a, August). Strategic role of MNP. Workshop on Implementing Mobile Number Portability, Islamabad, Pakistan.</i></p> <p>TSTT notes the analysis carried out by John Horrocks, an MNP expert, in his work indicated the minimum threshold for MNP to be successful in terms of population is approximately 10 million people (Horrocks, 2007a).</p> <p>Trinidad and Tobago currently has a population of 1.3 million which is approximately 87% less than what the minimum threshold. It brings to question will an introduction of NP in Trinidad and Tobago be successful where operators will be allowed to recover a positive rate on the investment?</p> <p>It cannot be denied the implementation of NP comes at a cost,</p>		<p>assertions are in support of its reasons for introducing number portability i.e. lower tariffs and better quality.</p> <p>In fact Malta disproved the statements by Horrocks 2007 (a) and Iqbal,T. in “Measuring the success of MNP Pg 10 when they concluded that MNP was not a success below a population size of10M. Malta has a population of about 400 thousand inhabitants. http://www.timesofmalta.com/articles/view/20090327/local/malta-praised-for-one-day-switching-of-telecom-providers.250508</p> <p>The European Commission</p>

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<p>Number portability implementation in Europe</p>	<p>TSTT</p>	<p>a cost that may be over-proportionate to the benefits to be derived in smaller economies. The Authority should carefully consider the threshold in which costs will overshadow any likely benefits. If Trinidad and Tobago is found to be below such threshold size thereby not able to build a viable business case, TSTT cautions the Authority should move away from any likely introduction of NP at this time.</p>		<p>announced and corroborated in the article entitled "Malta, Ireland with best record for mobile number portability" which appeared on the Times of Malta 8th September 2008. The Commission argues that the time to port is a key facilitator of consumer choice and effective competition. The article also stated that number portability was introduced to protect the consumer. http://www.timesofmalta.com/articles/view/20080908/local/malta-ireland-with-best-record-for-mobile-number-portability.</p> <p>The Authority does not agree that the success of NP is hinged on the size of the population. What does TSTT deem to be success?</p>

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<p>Number portability implementation in Europe</p>	<p>TSTT</p>			<p>Economic Viability? The Authority has already stated in principle that concessionaires will be allowed to recoup their capital investment in implementing NP and that the costs will be 'spread out' among all subscribers who have access to the service.</p> <p>The whole purpose of NP is to allow subscribers to change concessionaires without changing numbers Forcing customers to change numbers on changing concessionaire is an impediment to competition.</p>

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Appendix 2				
Competitive Impact in the Market	TSTT	<p>The Authority seems to argue in its Appendix 2 that the competitive impact on the market from MNP concentrates around two indicators: (a) cumulative number of ported numbers in comparison to total mobile subscribers: MNP would produce a high demand of portability and, (b) a higher churn rate: MNP would produce a higher churn rate. However, there is not always a direct relation between MNP and the indicators mentioned by the Authority.</p> <p><i>Cumulative porting demand.</i> More revealing than the cumulative porting demand is to look at the change of total ported numbers in a given year as a proportion of total subscribers in the same year. It is a metric similar to churn rate that is widely used elsewhere, but in this case churned customers are net ported customers during a given year.</p> <p>The following figure measures porting activity for some countries that regularly release information on ported numbers. The porting activity for each country in the figure is measured</p>		Noted

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Competitive Impact in the Market	TSTT	<p>as the change of total ported numbers in a given year as a proportion of total subscribers in the same year. The evolution of flow porting activity has been different among countries.</p> <ul style="list-style-type: none"> ▪ For instance, in Hong-Kong the total number of ported numbers in the first year of introduction of MNP was equivalent to 18% of total mobile subscribers. This proportion increased dramatically in the next two years. Thus in the third year, net customers that ported numbers during that period were equivalent to 35% of total mobile customer base. After then there has been a convergence to a lower figure: 15% of the total customer base ports numbers every year. ▪ Finland is another country that has experienced a peak of flow porting activity in early years of introducing MNP, but after that flow porting activity has reduced to less than 10% per year. Korea has also shown a substantial growing of flow porting activity since 2004 when MNP was introduced. ▪ In other countries flow porting activity has experience less dramatic increases through time. For instance, in the US only 5% of the total subscriber base ports numbers on an annual basis. Spain and Sweden have shown slow growth of net porting activity in early periods, increasing steadily afterwards, but at levels lower than 10%. UK is the lowest flow porting activity country over time, with a figure of less than 3%. 		Noted

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Competitive Impact in the Market	TSTT	<p>Figure i Evolution of the flow of ported numbers / subscriber base in selected countries</p>  <p>Source: Regulators of the countries</p> <p><i>Churn rates.</i> Currently churn rates in Trinidad and Tobago are around 20% a year, meaning that 1 out of 5 mobile subscribers change providers each year. It seems that for the Authority the</p>		Noted

Document Sub-Section	Submission Made By: Stakeholder Category²³	Comments Received	Recommendations Made	TATT's Decisions
Competitive Impact in the Market	TSTT	<p>introduction of MNP would bring about higher churn rates in the country and therefore consumers will benefit from it. However, higher or lower churn rates say little about consumer welfare. The effects that MNP could bring about on churn rates could illustrate an increase or decrease on those rates.</p> <p>The following Figure presents the cases of Finland, USA and France in terms of the evolution of annual churn rates before and after the introduction of MNP. In the case of Finland is clear that after the initial surge in the churn rate followed after the introduction of MNP, its level returned to the pre MNP era. In contrast, in the cases of the USA and France the introduction of MNP has reduced (not increased) the churn rates. Were consumers better off in Finland or USA and France? Clearly, the direction of change of churn rates tells us nothing about consumer welfare in these countries since we have said nothing in the observation about the change on consumer prices and their associated consumer surplus as follows.</p> <p>Figure ii. Annual Churn Rates before and after MNP (%) case</p>		Noted

Document Sub-Section	Submission Made By: Stakeholder Category ²³	Comments Received	Recommendations Made	TATT's Decisions																																																												
Competitive Impact in the Market	TSTT	<p>of Finland, USA and France</p> <p>Finland, Annual Churn Rates before and after MNP (%)</p> <table border="1"> <caption>Finland, Annual Churn Rates before and after MNP (%)</caption> <thead> <tr><th>Year</th><th>Churn Rate (%)</th></tr> </thead> <tbody> <tr><td>99</td><td>15</td></tr> <tr><td>00</td><td>12</td></tr> <tr><td>01</td><td>13</td></tr> <tr><td>02</td><td>18</td></tr> <tr><td>03</td><td>25</td></tr> <tr><td>04</td><td>50</td></tr> <tr><td>05</td><td>38</td></tr> <tr><td>06</td><td>18</td></tr> <tr><td>07</td><td>16</td></tr> </tbody> </table> <p>USA, Annual Churn Rates before and after MNP (%)</p> <table border="1"> <caption>USA, Annual Churn Rates before and after MNP (%)</caption> <thead> <tr><th>Year</th><th>Churn Rate (%)</th></tr> </thead> <tbody> <tr><td>99</td><td>34</td></tr> <tr><td>00</td><td>38</td></tr> <tr><td>01</td><td>36</td></tr> <tr><td>02</td><td>38</td></tr> <tr><td>03</td><td>30</td></tr> <tr><td>04</td><td>34</td></tr> <tr><td>05</td><td>26</td></tr> <tr><td>06</td><td>26</td></tr> <tr><td>07</td><td>24</td></tr> </tbody> </table> <p>France, Annual Churn Rates before and after MNP (%)</p> <table border="1"> <caption>France, Annual Churn Rates before and after MNP (%)</caption> <thead> <tr><th>Year</th><th>Churn Rate (%)</th></tr> </thead> <tbody> <tr><td>99</td><td>32</td></tr> <tr><td>00</td><td>24</td></tr> <tr><td>01</td><td>27</td></tr> <tr><td>02</td><td>28</td></tr> <tr><td>03</td><td>26</td></tr> <tr><td>04</td><td>23</td></tr> <tr><td>05</td><td>25</td></tr> <tr><td>06</td><td>24</td></tr> <tr><td>07</td><td>24</td></tr> </tbody> </table> <p>Source: Merrill Lynch, Global Wireless Matrix.</p>	Year	Churn Rate (%)	99	15	00	12	01	13	02	18	03	25	04	50	05	38	06	18	07	16	Year	Churn Rate (%)	99	34	00	38	01	36	02	38	03	30	04	34	05	26	06	26	07	24	Year	Churn Rate (%)	99	32	00	24	01	27	02	28	03	26	04	23	05	25	06	24	07	24		Noted
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Competitive Impact in the Market	TSTT	<p>From the figure above, the rate of churn for each country appears to be trending to or below their initial rate of churn after MNP was introduced.</p> <p>TSTT finds it inappropriate to incur significant costs to modify its network to facilitate NP only to have its customers migrate to an alternative provider. Moreover, TSTT finds this particularly challenging to invest significantly to implement NP and the necessary demand not present to recover cost.</p>		Noted. See previous comment on cost recovery.
Appendix 3				
	CCTL	<p>CCTL does not believe that the information contained in this appendix is reflective of the situation in Trinidad and Tobago. As such we call for this appendix to be withdrawn. It would be more helpful to the process if TATT provides up to date information on the network (including supporting systems) readiness for number portability in this market. Therefore in</p>		Noted This is general information from other jurisdictions which had to change-out OSSs to implement NP. The Authority recognizes that the status in Trinidad and Tobago needs to be determined from

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		the absence of supporting evidence and/or specific examples in the Trinidad and Tobago context CCTL insists that this statement and appendix be removed.		concessionaires and the appendix was not intended to describe the current status in Trinidad and Tobago. Appendix 3 will therefore not be withdrawn.
Conclusion				
	TSTT	<p>TSTT reiterates any regulatory intervention that has the potential to significantly impact the telecommunications sector must be carefully considered and certain basic studies undertaken in order to determine if the proposed policy objective is apt.</p> <p>The introduction of NP will require at a minimum a transparent methodology of its derivation. The Authority's methodology should therefore demonstrate that there is market failure and a regulatory intervention is needed at this stage. Moreover the Authority should demonstrate all alternatives were thoroughly investigated to correct such market failure</p>		<p>Noted. The Authority has decided to implement NP.</p> <p>Since in principle the Authority has decided that concessionaires will be allowed to recoup the capital costs of implementation, it is unnecessary to conduct a cost benefit analysis, especially given the fact that such an analysis necessarily involves</p>

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	TSTT	<p>measuring the pros and cons of each alternative indicating why NP may be the most parsimonious policy.</p> <p>We recognize that the Telecommunications Act, 2001 gave TATT a discretion with respect to the introduction of NP. The rationale there was to give the opportunity to determine the suitability of this measure for the sector, at a given time or at all. We believe that TATT's introduction of NP at this time is hugely misconceived as there is a lack of empirical evidence in support of this decision. Given the financial implications for many providers, any decision to incur such expenditure must be reasonable and should be shown to have been taken in a fair and transparent manner. This cannot be demonstrated at this time.</p> <p>As a result of this, TSTT strongly recommends that the Authority undertake a cost-benefit analysis for varying reasons, - to determine: (i) the economic feasibility of introducing NP to the country (ii) the desirability of NP to the sector (iii) realistic time frames; and (iv) an appropriate cost recovery method. Overall TSTT notes, NP service cannot be looked at in isolation from the other consultations that are</p>		<p>assumptions that may not be realized in practice. Simply put, what is necessary is for concessionaires to provide the Authority with the true direct costs of implementation of NP so that a proper system of charges can be developed by the Authority to enable concessionaires to recoup their investment whilst allowing customers a more competitive environment.</p>

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	TSTT	<p>currently before the sector; specifically Local Loop Unbundling (LLU), Numbering and most recently the determination on Indirect Access (IA). The Authority must be mindful each of these consultations has an impact on the industry and costs associated with them are to be borne by providers for the most part. Thus, costs may indeed be far greater than that which is anticipated when one takes the entire range of Regulatory requirements into consideration.</p> <p>Moreover, within this response TSTT noted the interaction of NP and the recent numbering consultation as well as the manner in which the markets are defined. These instances offer illustrations of the complexities of the outcomes that can arise as different regulatory interventions interweave and so timing will be of paramount importance not to risk jeopardizing the sectors survival.</p> <p>Finally, for many jurisdictions that implemented Number Portability the population base is large, by large, it is usually meant the population is in excess of 10 million. The reason for this is because the cost to implement NP is usually high and</p>		<p>Please provide clarification on how LLU and Indirect Access are affected by the implementation of NP.</p> <p>If there are significant interactions, the Authority will take these factors into account in the timing of the introduction of NP.</p> <p>Noted</p>

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	TSTT	<p>there must be significant customer demand for operators to recover this costs otherwise it will be economically infeasible. It remains to be seen whether the necessary cost benefit test will be passed for a territory with a population the size of Trinidad and Tobago, and if so is that NP initiative economically efficient? The only exception is Malta which had little choice but to comply with European regulations. When a small country like Trinidad and Tobago seeks to introduce NP the case for cost control is even stronger. For one thing, it would be reasonable to assume the cost to implement NP in smaller territories may exceed international norms, since these costs would be related to larger population bases.</p>		

ANNEX 2: Decisions on Recommendations from Second Round Consultation

The following summarizes the comments and recommendations received from stakeholders on the second draft of this document (dated March 31, 2011), and the decisions made by TATT as incorporated in this revised document (dated September 2012).

Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions
Introduction				
	Columbus	<p>Columbus Communications Trinidad Limited (CCTL) commends the Authority on its initiative to move forward with plans for the implementation of number portability in Trinidad and Tobago. The implementation of service provider number portability in the fixed and mobile markets will serve to deepen competition and improve market efficiency. The end result will be increased economic activity that serves to benefit operators and consumers.</p> <p>We welcome the opportunity to contribute to the process and look</p>		Noted.

²⁹ Regional regulatory or Governmental agencies, Existing service and/ or network provider and affiliates, Potential service and/ or network providers and affiliates, Service/ Network Provider Associations/ Clubs/ Groups, General Public

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Introduction	TTCS	<p>forward to working with the industry to implement an effective and efficient regime.</p> <p>The TTCS welcomes the Draft Implementation Plan for Number Portability as:</p> <ol style="list-style-type: none"> 1. Service providers (concessionaires) would offer better customer service, better services and infrastructure as a unsatisfied customer can more easily take their existing phone number to an alternative service provider. 2. Since you don't have to call every single person in your contacts when you move to a new provider, this means that you have relatively minor communication issues which positively impact the person and the business. 3. For Businesses, this means keeping your phone number permanently while changing providers (concessionaires) thus making phone numbers more of a marketing tool 	<p>Users should know when calling a phone number whether such a number is ported (on a different network).</p> <p>Thus, we strongly support a form of announcement be used to alert the user of an "off net" call as outlined in Section 7.5. The Number Portability System should be able to allow persons receiving a call and with a PBX to indicate if the number is ported (i.e. on a different network) or not. This is needed to ensure that call accounting reconciliation is accurate.</p>	<p>Noted. The "off net" alert is for the party originating the call and not the party receiving the call. The calling party can thus modify his calling patterns to take advantage of intra - concessionaire rates.</p> <p>The Authority does not know of any system that sends a recognizable message to a PBX receiving a call indicating that a number has been ported. It should also be noted that there is no cost to receiving a call from a ported or non ported number. The Authority does not currently know of a solution for the call accounting package reconciliation</p>

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Introduction	TTCS	<p>4. Consumers now have more power to choose their provider of choice without the hassle of losing friends, family, customers, etc</p> <p>The TTCS notes a significant disadvantage of number portability depending on its implementation:</p> <p>How can users know how much a phone call will cost?</p> <p>A user, either on the originating network (when dialling a number) or the recipient network (when seeing a caller id of the incoming call) cannot easily identify which network/provider the number belongs to.</p> <p>This is significant because:</p> <p>(a) Calls/SMS/MMS, etc within the same provider are typically less expensive than calls between providers.</p> <p>If the caller (person making the call) knows which network/ provider the callee (person being called) is on, the caller may choose to call using a phone on the same network/ provider as the callee.</p>	<p>If the costs of a phone call within and between different network providers was fixed</p>	<p>issue for ported numbers.</p> <p>A public database of ported numbers may be developed and accessed via a toll free number or the internet such that subscribers of any network may check whether a number has been ported before making a call. In this way, the subscriber can pre-determine how long he will spend on the call.</p> <p>The Authority will welcome any solutions from the TTCS on this matter. A possible solution for PABXs may be the manual input of ported numbers in the call rating engine (if this is possible) as ported numbers are discovered by parties originating calls.</p> <p>It should be noted that the current interconnection rate is due for review. This rate determines the final cost of</p>

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Introduction	TTCS	<p>Many mobile phone users either typically have a phone per mobile provider or use dual sim phones for this reason. If the number becomes portable then it would become very difficult for the caller to apply the above strategy of using a phone with the same provider as the callee.</p> <p>This in effect means the caller may have to pay more for their calls since the caller will be unaware of the costs being incurred until the caller gets the phone bill, which are typically not itemised.</p> <p>If the calling rates would be flat rates within and between concessionaires then no solution is required since cost is the same.</p> <p>(b) The same problem as (a) above can be extended to businesses who has implemented Least Cost Routing (LCR).</p> <p>LCR basically is the ability for a PBX (Private Branch Exchange or internal telephone network) to select the appropriate trunk line (connected to a particular provider) for a caller that would in effect be the lowest cost.</p>	then this would greatly simplify costs to consumers and would allow proper billing/reconciliation by companies using PBXs	calls between concessionaires and hence the rate charged to customers for inter -concessionaire calls. At this time the Authority does not set retail rates for fixed and mobile services and has allowed competition to determine such.

Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions
Introduction	TTCS	<p>E.g. If a user calls a TSTT number then the PBX would select a TSTT trunk line to make the call, based on the number being dialed.</p> <p>(c) An extended problem of (b) is Call Accounting or Call Reconciliation. Most PBXs have some form of call accounting to appropriately charge relevant departments within an organization for the calls they have made.</p> <p>Some call accounting packages would therefore become unreliable since most if not all Call Accounting packages are based on the number being called</p>		
Section 1				
1.1 Rationale	TSTT	<p>The Authority's rationale for introducing number portability is weakened by its very response to TSTT at p.69 of the DoRs.</p> <p>The Authority states: <i>"The HHI index as well as the mobile penetration rate both indicate that there are existing market inefficiencies and NP will assist in making the market more competitive."</i></p>		<p>Competition theory suggests that the effects of competition are twofold. Competition redistributes market share as well as causes the market to expand. The Authority notes that the HHI for the mobile market has approximately reached its statistical</p>

Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions
1.1 Rationale	TSTT	<p>According to the Authority the high mobile penetration in T&T is the inefficient result of a majority of persons possessing multiple subscriptions (p. 51).</p> <p><i>“There are a number of reasons why persons choose to have two mobile phones instead of one, including: 1. It is more economical to call on-net than it is to call off-net; 2. It is inconvenient and potentially costly to change one’s telephone number, which is required to switch provider in the current environment. The implementation of number portability seeks to address the latter issue. It is therefore not surprising that in countries where number portability has been implemented, the penetration rates are lower than in countries where it hasn’t been implemented.” (p.51-52)</i></p> <p>We present empirical evidence on the contrary.</p> <p>Market Concentration. In a recent study, Analysys Mason (2011) has found that number portability is not statistically significant in explaining the market concentration index. In other words there is no statistical causality between number portability and changes to</p>		<p>minimum. This has been observed over the past three years where HHI has been roughly 5000 which may imply that competition in the mobile market has not led to significant redistribution of market share over the last three years. However, the Authority notes that the market has experienced growth as competition has lead to an increase in mobile subscriptions, thereby causing the penetration rate to expand beyond commonly accepted saturation levels.</p> <p>Furthermore, historical trends reveal that competitive strategies in the mobile market mainly focus on the on-net market making on-net calls more economical thereby artificially locking customers to their providers.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions
1.1 Rationale	TSTT	<p>the concentration index HHI. One of the Analysys regression equations is the HHI index on the mobile NP, asymmetry in mobile termination charges, GDP per capita and number of mobile operators. It used a panel of 19 countries with data spanning from 2000-10.³⁰</p> <p>² <i>The variable mobile NP is statistically insignificant at the 10% probability level. Even if one disregards the statistical importance on NP, Analysys found that the impact would be at most -2%, i.e. in those countries with MNP, we should expect a reduction of the HHI of just 2% maximum. See Rohlfs J and G. Johnson. "Competitiveness in the Colombian Mobile Sector: Measures in the Wholesale Market". Report of Analysys Mason prepared for Colombia MovilTigo, 24 February 2011. It can be downloaded from CRC's web site at http://www.crcom.gov.co/images/stories/crtdocuments/ActividadRegulatoria/AnalisisCompetenciaMercadoMovil/Comentarios_250111/Tigo3.pdf</i></p> <p>More recent data for countries that have adopted mobile NP (MNP) also seems to suggest the same. At most HHI will be reduced 2% with the introduction of MNP. In Latin America MNP started very recently. The following table shows the HHI in four Latin America countries before and after the introduction of mobile NP, including Dominican Republic. In three of them the HHI was reduced between</p>		<p>Number portability should mitigate these lock-in effects and stimulate competition in the off-net market.</p> <p>It must be noted that the empirical evidence presented was done for more mature markets with larger geography and population size and may not necessarily be applicable to our local market.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions																				
1.1 Rationale	TSTT	<p>-1.5% and -1.8% after a year from the date when MNP was introduced. In contrast, in Mexico, the HHI increased by 1.4% after MNP was introduced.</p> <p>Table 1. Evolution of the Mobile HHI Index in Latin America with and without MNP</p> <table border="1" data-bbox="768 711 1588 1065"> <thead> <tr> <th></th> <th>Date of Introduction of MNP</th> <th>Before MNP introduced</th> <th>After</th> </tr> </thead> <tbody> <tr> <td>Brazil</td> <td>Aug-08</td> <td>2,491</td> <td>2,4</td> </tr> <tr> <td>Mexico</td> <td>Jul-08</td> <td>5,567</td> <td>5,6</td> </tr> <tr> <td>Dominican Republic</td> <td>Sep-09</td> <td>4,122</td> <td>4,0</td> </tr> <tr> <td>Peru</td> <td>Jan-10</td> <td>4,733</td> <td>4,6</td> </tr> </tbody> </table> <p>Source: Web pages of regulators</p> <p>According to TATT, the HHI for mobile market in Trinidad and Tobago is 5000 (see TATT's latest Quarterly Market Report as of July 2010). This level of HHI corresponds to a situation in which the two mobile operators have 50% market share each, so that the HHI cannot be lowered, only increased if the equal market share situation is changed or more operators enters the market.</p>		Date of Introduction of MNP	Before MNP introduced	After	Brazil	Aug-08	2,491	2,4	Mexico	Jul-08	5,567	5,6	Dominican Republic	Sep-09	4,122	4,0	Peru	Jan-10	4,733	4,6		
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1.1 Rationale	TSTT	<p>The HHI for fixed services according to TATT is 9,115. Therefore if number portability had a negative effect on the HHI, this would be of maximum -2% or -180 points in the HHI.</p> <p><i>Mobile penetration.</i> The Authority argues, without any evidence, that Number Portability would reduce mobile penetration. As noted before the Authority states that “It is therefore not surprising that in countries where number portability has been implemented, the penetration rates are lower than in countries where it hasn’t been implemented.” (p.52)</p> <p>However, the evidence does not support TATT’s assertion. For instance, if we analyze the sample of countries used by Lyons (2006)³¹ on the effects on MNP, we come up with the opposite observation, i.e. that countries that have adopted MNP observed higher penetration rates than other countries. (³¹Lyons, Sean. (2006).”Measuring the Benefits of Mobile Number Portability.”Mimeo)</p>		<p>The current level of competition is resulting in more take up as evidenced by the increased penetration beyond the saturation point of 100%. This may be considered a market failure because competition would stimulate some movement in market share over time as customers switch providers based on price and quality of service.</p> <p>As indicated above, this has not been observed as the HHI in the mobile market has centred around 5000 over the past three years.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions
1.1 Rationale	TSTT	<p>The Table below shows the penetration rates of Lyons' 39 countries. As of June 2004, when Lyons performed its statistical analysis, there were 20 countries that at that time have already adopted MNP (denoted by 1 in column MNP in the Table below) and 19 countries that have not (0 under column MNP).</p> <p>The Table below shows that on average, a country with MNP exhibited 35% more mobile penetration than a country without MNP. If we account for differences in say GDP per capita income, for example we would need to use regression analysis. When we do that, we observe that mobile penetration is still higher in countries that adopted MNP, but at a lower rate : 15% instead of 35%.³²</p> <p>(³² We have estimated a regression equation for the 39 countries showed in</p>		<p>Experience has shown that the penetration increases if it was low (<100%) prior to NP and still increases if the penetration was above 100% prior to NP. This is because of high uptake, particularly in prepaid, but also dual SIM ownership and a high number of inactive accounts not having been removed from operator databases.</p> <p><i>(http://www.marketresearch.com/product/display.asp?productid=2836854.)</i></p> <p><i>It is noted in markets such as Finland that data SIMs are very popular so much so that mobile data traffic increased 740% in 2008 versus 2007. While data was not generated from mobile telephone devices only, the</i></p>

Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions																										
1.1 Rationale	TSTT	<p>the Table as follows: $pen = 0.152 MNP + (9.58 \times 10^{-5})y + 0.42$. Where “pen” is penetration, “MNP” is a dichotomy variable that takes 1 if a country has introduced MNP and 0 otherwise; and “y” is income per capita. The coefficient of MNP is statistically significant at the 9.5% level, and the coefficient of income at the 1.5% level.)</p> <p>Table 2. Penetration levels for countries with and without MNP as of June 2004</p> <table border="1" data-bbox="774 883 1344 1377"> <thead> <tr> <th rowspan="2">Countries</th> <th colspan="2">Mobile Penetration in</th> </tr> <tr> <th>2004</th> <th>MNP</th> </tr> </thead> <tbody> <tr> <td>Argentina</td> <td>35.2%</td> <td>0</td> </tr> <tr> <td>Australia</td> <td>81.8%</td> <td>1</td> </tr> <tr> <td>Austria</td> <td>97.6%</td> <td>0</td> </tr> <tr> <td>Belgium</td> <td>88.1%</td> <td>1</td> </tr> <tr> <td>Brazil</td> <td>35.7%</td> <td>0</td> </tr> <tr> <td>Canada</td> <td>47.0%</td> <td>0</td> </tr> <tr> <td>Chile</td> <td>57.4%</td> <td>0</td> </tr> </tbody> </table>	Countries	Mobile Penetration in		2004	MNP	Argentina	35.2%	0	Australia	81.8%	1	Austria	97.6%	0	Belgium	88.1%	1	Brazil	35.7%	0	Canada	47.0%	0	Chile	57.4%	0		<p><i>SIMs were counted in determining mobile penetration. Hence mobile penetration will increase despite NP. (www.idean.com)</i></p>
Countries	Mobile Penetration in																													
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Argentina	35.2%	0																												
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1.1 Rationale	TSTT	Colombia	24.5%	0		
		Denmark	95.6%	1		
		Egypt	10.1%	0		
		Finland	95.4%	1		
		France	73.5%	1		
		Germany	86.6%	1		
		Greece	84.4%	1		
		Hong Kong	119.9%	1		
		Hungary	86.4%	1		
		India	4.7%	0		
		Ireland	94.1%	1		
		Israel	109.9%	0		
		Italy	107.7%	1		
		Japan	71.8%	0		
		Malaysia	58.0%	0		
		Mexico	36.9%	0		
		Netherlands	91.1%	1		
		New Zealand	74.5%	0		
		Norway	98.4%	1		
		Poland	60.4%	0		

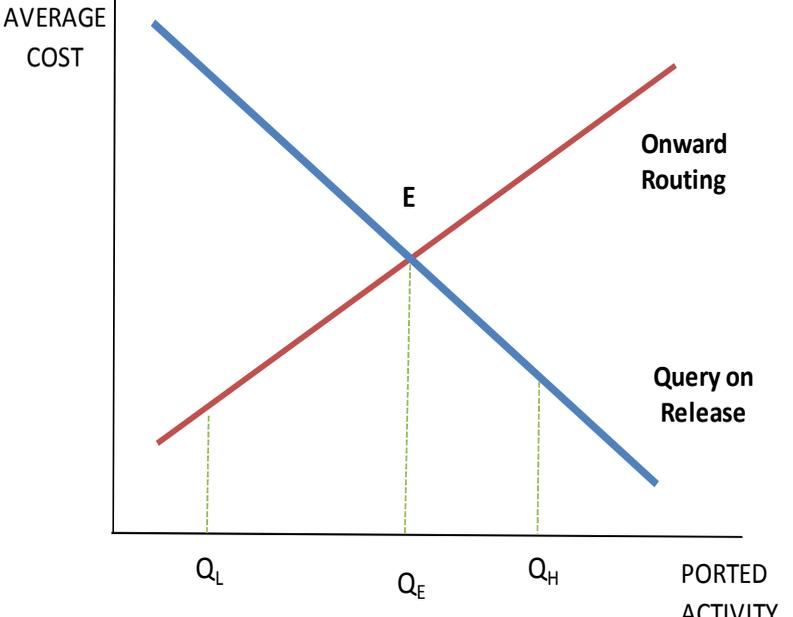
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1.1 Rationale	TSTT	<table border="1"> <tr><td>Portugal</td><td>100.8%</td><td>1</td></tr> <tr><td>Russia</td><td>51.2%</td><td>0</td></tr> <tr><td>South Africa</td><td>43.9%</td><td>0</td></tr> <tr><td>Spain</td><td>90.9%</td><td>1</td></tr> <tr><td>Sweden</td><td>97.4%</td><td>1</td></tr> <tr><td>Switzerland</td><td>84.9%</td><td>1</td></tr> <tr><td>Taiwan</td><td>100.3%</td><td>0</td></tr> <tr><td>Thailand</td><td>41.9%</td><td>0</td></tr> <tr><td>Turkey</td><td>49.4%</td><td>0</td></tr> <tr><td>United Kingdom</td><td>99.6%</td><td>1</td></tr> <tr><td>United States</td><td>61.6%</td><td>1</td></tr> <tr><td>Venezuela</td><td>32.1%</td><td>1</td></tr> </table> <p>Source: Lyons(2006) and ITU</p> <p>Mobile subscribers in T&T amount to 1.86 million, which represents 1.4 mobile phones per inhabitant or 140% of penetration. But in contrast to what TATT argues, the lack of number portability is not causing the mobile penetration to reach that high level in the country, but rather it is the differential between On/Off net tariffs, which has</p>	Portugal	100.8%	1	Russia	51.2%	0	South Africa	43.9%	0	Spain	90.9%	1	Sweden	97.4%	1	Switzerland	84.9%	1	Taiwan	100.3%	0	Thailand	41.9%	0	Turkey	49.4%	0	United Kingdom	99.6%	1	United States	61.6%	1	Venezuela	32.1%	1		The differential between the on/off net tariffs shows a market failure. The lack of competition in the “off net”
Portugal	100.8%	1																																						
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1.1 Rationale	TSTT	<p>nothing to do with number portability.</p> <p><u>A final point to note is that number portability may not necessarily benefit new entrants. In three markets where portability has worked well, Hong Kong, South Korea and Spain, portability benefited the incumbents who were able to increase market share compared to new entrants.</u></p> <p>In Mexico, after MNP was introduced, the largest operator (“Telcel”) gained market share instead of losing it. As of November 2010 (40 months after MNP was introduced) Telcel accepted 480,000 porting subscribers as compared to 403,000 subscribers who ported out to competitors.</p> <p>Despite previously relying on the provisions of the Telecommunications Act in support of the introduction of Number Portability, the Authority has attempted to provide a rationale for its introduction. TSTT believes that such an attempt has undermined the legislative argument for the introduction of NP. Furthermore the</p>		<p>market causes the high penetration rate currently manifested. NP would stimulate competition in the on/off net markets thereby driving prices down.</p> <p>The Authority thinks that this is irrelevant. It has been shown that new entrants also benefit from number portability e.g. Malta.</p> <p>From your statement it seems then that the introduction of MNP will not be disadvantageous to TSTT.</p> <p>There is a legislative requirement and there is a competitive rationale. The Authority does not know why TSTT</p>

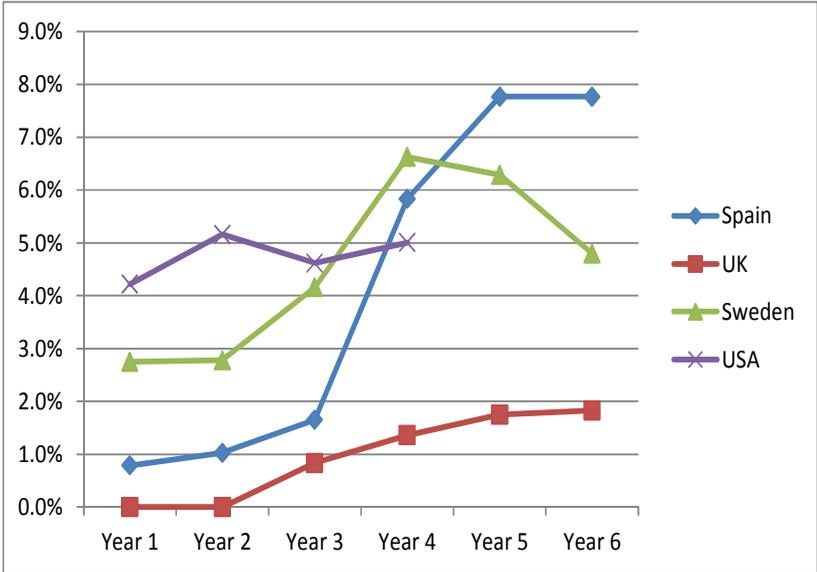
Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions
1.1 Rationale	TSTT	<p>rationale has now been shown to be flawed. In the circumstances TSTT is of the view that the introduction of Number Portability has absolutely no basis, in law or as a result of sound economic principles.</p>		<p>sees these two arguments as being contradictory.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions
<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago;”</p>	<p>TSTT</p>	<p>In addition to its overall failure to conduct a cost benefit analysis on the introduction of Number Portability in Trinidad and Tobago, TATT has also failed to undertake the necessary probative analysis to determine “the most efficient approach for implementation of number portability”, and in the absence of that we submit that the Authority’s recommendation for an All Call Query (ACQ) solution is therefore most likely flawed.</p> <p>Studies from different countries indicate that if expected porting activity is low then the most efficient method is Onward Routing (OR) and, if the expected porting activity is high, Query on Release (QoR) is the most efficient method.</p> <p>The average cost of OR increases with ported activity, while the average cost of QoR decreases. The following graph from Buelher et al depicts the average cost utilizing both OR and QoR methods. When the expected ported activity is low (say Q_L), then OR is the appropriate method since it entails a lower average cost than QoR. OR will continue to be the best cost efficient method up to the point where the ported activity reaches Q_E, where the average costs of both</p>		<p>The Authority notes that TSTT has stated that the Authority has failed to conduct a C/B analysis prior to the implementation of Number Portability. Yet when the Authority requested (on December 20, 2010) that TSTT provide costs from its OSS change-out supplier to have their system ready for NP, TSTT’s response (January 11, 2011) was to insist that the Authority withdraw its request. In effect, TSTT refused to supply said costs which are necessary to conduct a C/B analysis. The Authority considers that such behavior is indicative of the intention of TSTT - to delay the implementation of NP.</p>

Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions
<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago;”</p>	<p>TSTT</p>	<p>methods intersect each other. At that specific point either method could be used. But if expected ported activity is higher than that level of activity (say Q_H), the lowest cost is achieved by implementing QoR.</p>		<p>This study does not consider cost versus porting activity for ACQ as an implementation option. Hence its conclusions are not applicable to the Authority's recommendation. The Authority stands by its recommendation on the technical option chosen for the implementation of NP. Please see additional information on this matter in section 1.2 TSTT below.</p>

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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago;”</p>	<p>TSTT</p>	 <p>Source: Buelher et al (2006)</p>		<p>The Authority never stated that porting levels will be high - see Section 5.1 TSTT on 1st DOR.</p>

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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago;”</p>	<p>TSTT</p>	<p><u>Flow Porting activity – MNP</u></p> <p>Despite the Authority anticipating that relatively high porting levels, this has not been the Latin American experience to date, as far as MNP is concerned.</p> <p>One year into MNP, the general levels of portability are demonstrably low. In the Table below it can be seen that flow porting activity was as low as 1.1% in the Dominican Republic, 0.7% in Mexico and 0.4% in Peru. The porting numbers for Mexico, which was the first country to introduce MNP, do not present an encouraging forecast.</p> <p>Table 3. Net MNP activity as % Subscribers</p> <table border="1" data-bbox="755 1060 1344 1295"> <thead> <tr> <th></th> <th>Year 1</th> <th>Year 2</th> <th>Year 3</th> </tr> </thead> <tbody> <tr> <td>Dominica</td> <td></td> <td></td> <td></td> </tr> <tr> <td>n Republic</td> <td>1.1%</td> <td></td> <td></td> </tr> <tr> <td>Mexico</td> <td>0.7%</td> <td>1.2%</td> <td>0.6%</td> </tr> <tr> <td>Peru</td> <td>0.4%</td> <td></td> <td></td> </tr> </tbody> </table> <p>Source: National Regulatory Agencies</p>		Year 1	Year 2	Year 3	Dominica				n Republic	1.1%			Mexico	0.7%	1.2%	0.6%	Peru	0.4%				<p>Porting rates are affected by cost to port as well as time to port. There are other conditions which affect porting rates such as minimum time of contract as in the case of Finland– <i>(Horrocks, 2007c)</i></p>
	Year 1	Year 2	Year 3																					
Dominica																								
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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago;”</p>	<p>TSTT</p>	<p>The majority of Europe, Asia and the United States have had greater flow porting activity but at levels that are still less than 8%. The UK has the lowest flow porting activity country over time, with a figure of less than 3%.</p> <p>Figure: Evolution of the flow of ported numbers / subscriber base in selected countries</p>  <table border="1"> <caption>Estimated data for Figure: Evolution of the flow of ported numbers / subscriber base in selected countries</caption> <thead> <tr> <th>Year</th> <th>Spain (%)</th> <th>UK (%)</th> <th>Sweden (%)</th> <th>USA (%)</th> </tr> </thead> <tbody> <tr> <td>Year 1</td> <td>0.8</td> <td>0.0</td> <td>2.8</td> <td>4.2</td> </tr> <tr> <td>Year 2</td> <td>1.0</td> <td>0.0</td> <td>2.8</td> <td>5.2</td> </tr> <tr> <td>Year 3</td> <td>1.6</td> <td>0.8</td> <td>4.2</td> <td>4.6</td> </tr> <tr> <td>Year 4</td> <td>5.8</td> <td>1.4</td> <td>6.6</td> <td>5.0</td> </tr> <tr> <td>Year 5</td> <td>7.8</td> <td>1.8</td> <td>6.2</td> <td>-</td> </tr> <tr> <td>Year 6</td> <td>7.8</td> <td>1.9</td> <td>4.8</td> <td>-</td> </tr> </tbody> </table> <p>Source: Regulators of the countries</p>	Year	Spain (%)	UK (%)	Sweden (%)	USA (%)	Year 1	0.8	0.0	2.8	4.2	Year 2	1.0	0.0	2.8	5.2	Year 3	1.6	0.8	4.2	4.6	Year 4	5.8	1.4	6.6	5.0	Year 5	7.8	1.8	6.2	-	Year 6	7.8	1.9	4.8	-		<p>Although customer behavior is notoriously difficult to predict, the manner in which number portability has been implemented has significant impact on customer behavior. As such Finland which had no porting charges</p>
Year	Spain (%)	UK (%)	Sweden (%)	USA (%)																																			
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Year 6	7.8	1.9	4.8	-																																			

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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago;”</p>	<p>TSTT</p>	<p>In deciding what NP solution is adequate, most regulators have undertaken an ex-ante analysis to determine the most efficient implementation of number portability. One of those drivers, as indicated previously is anticipated porting activity.</p> <p>The Authority’s statement, at page 89 of the DORs that “it is difficult at this time to predict the level of porting that may occur in the market” is unacceptable though hardly surprising given its refusal to conduct any form of analysis.</p> <p>In Bahrain, a country with a population of 791,000 (World Bank, 2009), close enough to Trinidad and Tobago’s population of 1.3 million (World Bank, 2009) to warrant comparison, a cost benefit analysis was undertaken by Hibbard Consulting and the following issues were identified in the Executive Summary, as follows:</p> <p><i>“This report provides the first national cost-benefit analysis of technical options for the introduction of mobile number portability (MNP) in Bahrain. It concludes that the main technical options</i></p>		<p>and 5w/day time to port, the porting rate was (20%) in 2005, two years after it was introduced and the porting rate is still in the double digits 8 years later. The reason why porting rates dropped from 40% to 10% in Finland was because operators imposed minimum contract periods.(<i>Horrocks 2007c</i>)</p> <p>Customer behavior is difficult to predict in advance even when market studies show that it is viable. See comment below.</p> <p>It is surprising that TSTT finds the Authority’s statement “unacceptable” as <i>Lyons, Sean Measuring the Benefits of Mobile Number Portability Pg. 5</i></p>

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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago;”</p>	<p>TSTT</p>	<p><i>(Onward Routing and All Call Query) employed in markets with MNP are too costly for Bahrain. Also, they will be overtaken by technological changes which will change how we think about numbering and customer switching. This report recommends an alternative option to facilitate switching between carriers (Temporary Diversion) that should meet regulatory objectives and is more efficient and quicker to implement than the traditional technical options. The implementation of MNP is a complex and significant undertaking as it over-turns a fundamental assumption in the way networks are built – that number blocks are associated with a particular service provider. Implementing MNP involves large up-front fixed costs; and with an Onward Routing solution there are also large on-going costs. These costs are incurred by all operators.</i></p> <p><i>The appropriate way to test whether there is “sufficient demand” for mobile number portability is cost benefit analysis – surveys of demand are unreliable, as observed overseas. On our analysis, the implementation of traditional technical options for mobile number portability in a small market like Bahrain is not efficient – costs outweigh benefits. Overseas experience of MNP is mixed. It is not clear whether the percent of mobile customers who use mobile</i></p>		<p>states that “the usage of NP in the UK in the first two years was far lower than the rate predicted in <i>ex ante</i> assessments.” Surely this indicates the difficulty in predicting the level of porting in spite of the numerous analytical tools available to NERA.</p> <p>The Authority has considered the report done by Hibbard Consulting and has noted the following:</p> <ol style="list-style-type: none"> 1. The report was published four years ago (February 2008). “The cost of the ACQ solutions available at that time would not be the same as today”. <i>InterConnect Communications (ICC)</i> 2. The Regulator had to do a cost benefit analysis as ‘Section 40 of the (Bahrain) Telecoms Law requires the TRA to mandate number portability only “when the

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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago;”</p>	<p>TSTT</p>	<p><i>number portability in any year (the port rate) will be in single digits (like the UK and Australia) or in double digits (like Hong Kong and Finland). This report models both scenarios and the conclusion does not change – only Temporary Diversion proves-in on the cost-benefit analysis.</i></p> <p><i>There are several reasons to expect that demand for mobile number portability in Bahrain might be lower than used in either scenario in this report. First, there is the poor take-up of fixed carrier pre-selection in Bahrain. Second, modern mobile phones make updating contact lists very easy; and calling circles are often small. Third, the use of two SIM cards is already very high by international standards and with mobile penetration well over 100 percent, it will increase. This multiple use is not due to the lack of portability but to take advantage of different pricing schemes. And, new phones make using multiple SIM cards easier. Fourth, competition is likely to be fiercer because the market is mature and customers may not see enough reason to switch despite a porting option. And, while voice and SMS services can be ported, there are new services available today on mobile phones that cannot be ported (e.g. MMS, email). In this environment and given the cost-benefit analysis of technical</i></p>		<p>Regulator is satisfied that sufficient demand exists for such a service”. There exists no such provision in T&T’s regulatory framework.</p> <p>3. The Temporary Diversion solution recommended (for mobile phones) places the full burden of switching costs on the consumer who wishes to change service provider. In this solution, the consumer retains his existing number and account whilst engaging the services of another service provider. The consumer then has to retain two accounts (and two numbers) for an extended period of time, in which one account is solely used to advise callers of his new telephone number.</p> <p>4. The solution is not service provider number portability. This methodology does not port numbers onto new service providers. In effect, this solution wastes numbering resources. The consumer is forced to have</p>

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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago</p>	<p>TSTT</p>	<p><i>options, the most efficient and quickest way to facilitate customer switching in Bahrain is Temporary Diversion.”</i></p> <p>Despite the Authority’s inflexibility with regard to the requirement of a cost benefit analysis to determine the viability of number portability for Trinidad and Tobago, if as the Authority maintains, its objective is to achieve the most efficient implementation mechanism for number portability, we respectfully submit that a cost benefit analysis of that objective has become necessary. It is clear that porting rates throughout the world are consistently low and current indicators in Trinidad and Tobago do not auger well for a high porting rate. The similarities with the Bahraini market are self -evident, but the market is not so similar that the Authority should seek to rely on the analysis of that market. We call upon the Authority therefore to undertake due diligence in this regard. The global popularity of a particular NP mechanism (ACQ) should not even be voiced as a criterion by which our Regulator has come to a decision.</p> <p>Should the Authority maintain its position that a cost benefit analysis for ANY REASON is unnecessary, we respectfully submit that the Authority has insufficient information to make any type of</p>		<p>two numbers for an extended period of time.</p> <p>5. The consumer will incur two charges from two different service providers for an extended period of time. Such a scenario is untenable for any single line business user, much less so for a multiline multi-location PBX user. Simply stated, the TD solution is unsuitable for the fixed line network.</p> <p>6. The TD solution, whilst cheaper to implement than ACQ (they may simply expand voicemail systems if there is insufficient capacity), does not encourage service providers to improve their services (reduce prices, add more minutes to bundles, improve QOS and coverage) to customers. NP does. Christopher Smithers in his paper - Considering number portability in the Caribbean, October 2010 notes that: <i>the main positive effects of NP include</i></p>

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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago</p>	<p>TSTT</p>	<p>recommendation in this regard and should instead consider FCC’s approach to a technical solution. The FCC opted to specify the performance measures to be met by respective providers in choosing a number portability solution whereby the preferred solution would -</p> <ol style="list-style-type: none"> 1. support existing network services, features and capabilities 2. efficiently use numbering resources 3. not require end users to change the telecommunications numbers 4. not result in unreasonable degradation in service quality or network reliability when implemented 5. not result in unreasonable degradation in service quality or network reliability when customers switch carriers 6. not result in a carrier having a proprietary interest 7. be able to accommodate location and service portability in the future 9. have no significant adverse impact outside the areas where number portability was deployed. 		<ol style="list-style-type: none"> 1. <i>Lower prices through heightened competition</i> 2. <i>Better quality of services</i> 3. <i>An increase in additional services and/or features including better customer retention; and</i> 4. <i>Prevention of market stagnation because it increases pressure for service providers to continue offering competitive and compelling services. Intelecon Research and Consultancy Ltd.</i> <p>Hence for the reasons stated above, the Authority rejects the Temporary Diversion methodology.</p> <p>The cost of the Authority’s proposed ACQ solution would be spread over all consumers, since the service would be available to all (whether or not it is used) and not just those who</p>

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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago</p>	<p>TSTT</p>			<p>switch service providers. Hence a key hurdle – high switching costs for consumers who wish to port, would be overcome by spreading the costs over all consumers as they all benefit.</p> <p>The explanation and rationale for the Authority’s decision on the technical NP solution selected is clearly articulated in the document. The Authority stands by its decision on the matter. Additionally, the Authority is not aware of any jurisdiction implementing the older versions of NP within recent timeframes, as evidenced by recent implementations in Latin America, India and Thailand. ACQ was the methodology chosen.</p> <p>It is further noted that Bahrain has</p>

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<p>1.2 Objectives - “1. To determine and propose the most efficient approach for the implementation of Number Portability in Trinidad and Tobago</p>	<p>TSTT</p>			<p>opted to implement ACQ as evidenced by their documents published January 2010. (ttp://www.tra.org.bh/en/pdf/NP1109_CD BSPEC_v04_CLEAN.PDF). The ACQ method recommended by the Authority does satisfy the performance metrics of the FCC.</p>

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1.3 Regulatory framework	Digicel	<p>Extensive submissions were made by the concessionaires regarding the necessity and value of undertaking a cost benefit analysis before implementing number portability. The Authority's response to this proposition was dismissive and it was repeatedly stated in its comments to concessionaires that it believed that it had an obligation under the Telecommunications Act to do so.</p> <p>Digicel maintains that the Authority is not given a blind mandate to implement Number Portability regardless of whether or not it is for the greater good of consumers and the industry as a whole.</p> <p>It is submitted that the Authority is given a discretion under the Telecommunications Act as to when to implement number portability, and in order to make this decision, the proper analysis must be conducted.</p> <p>This is particularly so in light of the Authority's obligation under Section 18(1) of the Telecommunications Act to ensure the orderly and systematic development of telecommunications throughout</p>	<p>Given the far reaching implications of any decision to implement number portability, it is imperative that the Authority share with the operators a detailed analysis which clearly justifies why it believes that number portability must be implemented at this time.</p>	<p>The Authority notes that number portability is now a consumer right under EU law and all EU member states are mandated to implement NP, C/B analysis notwithstanding. Research has shown that <i>“Virtually all costs-benefit analyses have concluded that the overall effect of MNP on welfare is likely to be positive.” S. Buehler et al / Telecommunications Policy 30 (2006) Pg 385-399</i></p> <p>Nevertheless, having noted the submissions made by concessionaires, the Authority agrees to give some consideration as to the impact of NP on operators and the general demand by consumers for this service. Please</p>

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1.2 Regulatory framework	Digicel	Trinidad and Tobago		<p>see extensive comment on the matter in Section 3.4.3 (TSTT) below. .</p> <p>The market in Trinidad and Tobago has been liberalized for about seven years. The HHI for the mobile market in Trinidad and Tobago is ~5000 (see TATT's latest Quarterly Market Report as of Q3 2011). The fixed market operates with a dominant service provider and other small operators (several wire-less and one fixed cable provider). The new entrants in the fixed line market are struggling to gain market share from the dominant incumbent. Hence the Authority considers that this is an opportune time to introduce NP (to deepen competition) as consumers are more willing to switch operators once</p>

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1.2 Regulatory framework	Digicel			they can keep their telephone number. The Act is silent as to whether or not the results of a cost benefit analysis should determine the introduction of NP in the market.
Section 3				
3.4.1 Location Number Portability	Columbus	CCTL would like to correct a statement on location number portability. TATT asserts that customers who wish to change location (outside the rate area) are currently required to change their number. This is the case with TSTT fixed line customers. However Flow customers can change location to any part of our service area, without changing their telephone number.		Noted.
3.4.1 Location Portability (Page 10)	TTCS	“In the absence of a ‘unified’ rate structure unpredictable billing patterns may act as a disincentive to users to port their telephone number. Until a single national rate for fixed line service is introduced, the Authority expects that there will be suppressed demand for location portability outside of the rate area at this time.” While a Single National Rate (cost per minute) would simplify cost	The Authority should consider a fixed cost PER call, instead of a Single National Rate (cost per minute) within a domestic fixed line concessionaire’s network.	Noted. However as stated previously the Authority does not currently set retail rates. Rates are determined by the competitive market.

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3.4.1 Location Portability (Page 10)	TTCS	<p>calculations, the effect would be to raise the cost of phone calls for users and businesses alike. For example, a food delivery service calling a customer for directions within the area would usually pay a single charge for a call that can take several minutes. A Single National Rate would mean a call that used to be 23 cents will be a dollar or more. The cost of doing business for companies (a conference call between companies within a area) instead of 23 cents per caller would be much higher with a per minute rate. Since the cost of doing business will increase, companies will have no choice but to pass the increased costs of doing business to their customers and the general public.</p> <p>Given that the cost of a phone call within the incumbent's exchange was a fixed cost PER CALL, given the size of Trinidad and Tobago, that the cost of a fixed line phone call should be a fixed cost PER call</p>		
3.4.2 Service Number Portability (Page 11)	TTCS	<p>"The Authority does not wish to deter the technological development of a concessionaire's network and as such makes no policy decision on this issue. The Authority will revisit this issue at a later date as the market matures."</p> <p>Service Providers typically use service upgrades as a means to raise</p>	The Authority should be vigilant and review any fee increases with respect to service upgrades performed by service providers.	Agreed.

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		the fees for using the service.		
3.4.3 Penetration and Growth rates for fixed and mobile	Digicel	<p>The Authority continues to cite an overwhelming desire to increase competition on the telecommunications sector as the main reason for implement mobile number portability. However, given this rationale, it is puzzling why a decision was made to implement mobile number portability before fixed number portability. In fact, this is very uncommon in other parts of the world where historically, fixed number portability is implemented first. Particularly in the newly liberalised markets of the Caribbean where the incumbent fixed line operators retain a position of dominance, there is more benefit to consumers by implementing fixed number portability first. Also, the Authority speaks of benefit to corporate customers who have to change letterheads and other stationery when changing providers, However, it is common knowledge that companies, business and government entities use fixed lines as their primary means of contact for customers and the public.</p> <p>Digicel once more submits the only justification the Authority has offered for implementing mobile number portability first is that is appears to be “easier”. This is highly unacceptable.</p>	The Authority needs to provide detailed analysis and justification for its decision to implement fixed number portability before mobile number portability.	<p>The Authority disagrees. It should be noted that the Authority has indicated in its consultation document that mobile number portability will be implemented before fixed line number portability. It has clearly explained the rationale for implementing mobile service provider number portability in the first instance.</p> <p>The time frame between the implementation of mobile and fixed line number portability is of the order of months in our proposed schedule and the Authority sees no need to provide a detailed analysis for its decision.</p> <p>In the US, number portability was developed and implemented in the</p>

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3.4.3 Penetration and Growth rates for fixed and mobile	Digicel			fixed line network first as that network was the main means of communication at that time.
3.4.3 Time frames for Implementation	Digicel	<p>Digicel commends the Authority for recognizing that the initial time frames for implementation were not practical. However, we submit that the newly proposed time frames are still far too ambitious especially given the fact that there is now considerable work to be done by the operators in terms of establishing the framework for implementation.</p> <p>We believe that bench marking against other countries is not a useful exercise as a realistic time frame can only be identified when the operational and technical requirements have been clearly identified. There are several external factors which are outside the control of operators which will affect the time frame for implementation, such as where the services of external vendors are not provided in a timely manner.</p>	Digicel recommends that no directive be issued regarding time frames for implementation at this time and that the matter be deferred to the end of stage 3.	<p>The Authority disagrees. The time frames were provided as a guideline given the experiences of other jurisdictions in implementing NP. For example, Dominican Republic with ten million customers and seven operators completed implementation of NP in twelve months. This included entire switch change-outs (in one instance), upgrades to OSSs and hardware upgrades to existing switches. The Authority therefore considers that its suggested timeframes are generous.</p> <p>In any event, review of timeframes shall be permitted at the various stages in the project to ensure</p>

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<p>3.4.3 Statement of Purpose on Service Provider Number Portability:</p> <p>The Authority requires that</p> <p>1. Service provider number portability be implemented by the domestic <i>mobile</i> telecommunications concessionaires in Trinidad and Tobago within twenty months of the final publication of this document.</p> <p>2. All concessionaires of fixed line networks upgrade or change-out their OSSs to have activated the capability of service provider number portability according to the Telecommunications(Interconne</p>	<p>TSTT</p>	<p><u>Cost Benefit Analysis on Number Portability</u></p> <p>TSTT insists on the need to undertake a cost benefit analysis of number portability for T&T. Other countries have done such analysis. For instance in 2010 the regulator in Jamaica commissioned such analysis.</p> <p>The basic principle to do it is that any regulatory intervention that has the potential to significantly impact the telecommunications sector must be carefully considered and certain basic studies undertaken in order to determine if the proposed policy objective is apt. An adequate policy intervention is justified if the benefits of such proposed action outweigh its costs (including regulatory costs).</p> <p>Cost–benefit analyses are typically used to evaluate the desirability of a given intervention. It is an analysis of the cost effectiveness of different alternatives in order to see whether the benefits outweigh the costs. The aim is to gauge the efficiency of the intervention relative to the status quo. TSTT submits that given the high costs to</p>	<p>TSTT suggest the Authority follow the three (3) step approach aligning with regulatory best practice.</p> <p>4) Identify market failure; 5) Evaluate alternatives to remedy the failure; 6) Propose most economically viable alternative.</p>	<p>practicality.</p> <p>The Authority is confused by the recommendations made as there is no correlation with the comment received in this section i.e. the recommendation does not match the comment made.</p> <p>The three (3) step approach recommended is a reactive one. Different regulatory issues sometimes require a reactive or proactive intervention.</p> <p>Internationally, NP has been driven by Regulators, (not operators) for the further development of the industry. In fact, operator resistance to the implementation of NP is the norm. Regulatory intervention has always been required. This is an example of a</p>

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<p>ction) Regulations, 2006 Clause 9 within twenty four months after the final publication of this document. Hence <i>fixed</i> line to fixed line service provider number portability is to be made available twenty four months after final publication of this document.</p>	<p>TSTT</p>	<p>be incurred with respect to the proposed NP service the need for a cost benefit analysis is essential if only to ensure that the overall benefits to be derived will outweigh the costs to be borne by the operators and in that regard, cost recovery by the operators must be a realistic expectation.</p> <p>The same cost benefit analysis would determine the appropriate method for implementing number portability as we have noted previously. The answer to which method is the most cost efficient would depend primarily on the expected ported activity. Given that the Authority, by its own admission, accepts that policy is not cast in stone and has even demonstrated an intention to change certain aspects of the established policy, the Authority can no longer hold to the position that introduction of number portability is a <i>fait accompli</i>, because the legislation/policy demands it. As we have said repeatedly, policies can be changed, and it is the role of a responsible regulator to determine if changes are required based upon many considerations. The Authority can no longer hide behind the “it’s the policy” argument for the sake of expediency. A cost benefit analysis is necessary and must be done.</p>		<p>proactive approach.</p> <p>In reference to the comment received, the Authority does not agree that every regulatory intervention should be preceded by a C/B analysis. As stated previously, some jurisdictions implemented NP simply based on a requirement of law (for example some EU countries). At this point in time, the Authority is not minded to conduct a C/B analysis.</p> <p>It is noteworthy, in a research paper by <i>S. Buehler et al</i>, that “<i>Virtually all costs-benefit analyses have concluded that the overall effect of MNP on welfare is likely to be positive.</i>” / <i>Telecommunications Policy 30 (2006) Pg 385-399</i></p>

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3.4.3	TSTT	<p>Finally, we note, with interest the comments of the Authority, as follows:</p> <p><i>“The high mobile penetration rates reflects the proliferation of mobile telephones arising from the availability of mobile network and services in areas where the fixed line network is unavailable and from the personal and /or individual nature of mobile devices. This may therefore account for the high growth in mobile service”.</i></p> <p>(page12)</p>		<p>The Jamaican legislation specifically mandates the Regulator to conduct such cost analyses prior to Regulatory intervention. However, it should be noted that such a requirement is not specifically stated in our Regulatory framework.</p> <p>The Authority rejects the assertion ‘that cost recovery of the operators must be a realistic expectation’. The Authority agrees however, that the overall benefits to be derived by the telecommunications sector, including consumers, should outweigh the costs to operators. The Authority notes that a C/B analysis for NP includes assumptions on qualitative issues (intangibles) that are difficult to quantify e.g. consumer behaviour as</p>

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3.4.3	TSTT			<p>well as the effect of deepening competition, and the resultant cost savings to consumers. As such, the positive outcome of a C/B analysis as suggested by TSTT cannot be used as the sole basis on which to make a decision on the implementation of NP in Trinidad and Tobago.</p> <p>TSTT also appears to be oblivious to the Authority's intention to allow concessionaires to recover applicable and approved capital costs as determined eligible by the Authority. Hence, concessionaires will absorb recurrent costs for the provision of NP services. These recurrent costs are low when compared to the capital cost of implementation.</p> <p>TSTT's future recommendations for</p>

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3.4.3	TSTT			<p>recovery of applicable and approved capital costs would be of value to the Authority.</p> <p>Nevertheless the Authority, <i>in this instance</i>, agrees to assess the general demand for the service by consumers, <i>even though it is not specifically required by legislation to do so</i>.</p> <p>The Authority rejects the assertion that <i>'the same cost benefit analysis would determine the method of deploying number portability'</i>. A cost benefit analysis cannot be the sole criteria for determining the best technical solution for the implementation of NP. The Authority stands by its reasoning stated in the document with regard to the technical</p>

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3.4.3	TSTT			<p>option chosen for the implementation of number portability. In this regard, please see additional information on this issue in section 1.2 (TSTT) of the DOR.</p> <p>The Authority considers that the comment <i>“Given that the Authority, by its own admission, accepts that policy is not cast in stone and has even demonstrated an intention to change certain aspects of the established policy, the Authority can no longer hold to the position that introduction of number portability is a fait accompli, because the legislation/ policy demands it”</i> is misconstrued. The Authority simply stated that it will seek to amend the current Regulations should the market dictate such a need. This is not the</p>

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3.4.3	TSTT			same as what TSTT has stated. This document is an implementation plan, not a policy. This section has been slightly re-worded.
3.4.3 Service Provider Number Portability (Similar Networks)	CCTL	<p>The legal framework now provides for number portability between similar networks, this is fixed to fixed and mobile to mobile. The Interconnection Regulations 2006 states,</p> <p>“...to configure its network to facilitate number portability between similar networks as and when directed by the Authority”. As such focus should be placed on this aspect at this time.</p>		Agreed.
3.4.3 Service Provider Number Portability Phasing Implementation of Fixed and Mobile Number Portability	CCTL	<p>TATT has proposed a phased approach to the implementation of number portability, commencing with mobile number portability within twenty (20) months after the final publication of the implementation plan and fixed number portability 24 months twenty four (24) months after the implementation of the plan.</p> <p>The main reasons put forward for this phased approach are the Authority's views that (1) typically the Operational Support Systems (OSS) and billing systems of traditional fixed line networks are not as flexible as mobile systems and (2) that mobile number portability will bring more choice to consumers in Trinidad and Tobago.</p>	<p>The implementation timeframe for both fixed and mobile number portability should be informed by specific assessment of the readiness of the network infrastructure in this market, and not on generalizations.</p> <p>Since a committee is to be set up to define the technical and administrative specifications plus</p>	<p>The Authority's proposed implementation time frames were informed by information gleaned from other jurisdictions. If it is deemed possible and agreed to by the concessionaires that fixed number portability can be implemented before mobile number portability then the Authority will not object. However in the Authority's opinion, this will not</p>

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<p>3.4.3 Service Provider Number Portability Phasing Implementation of Fixed and Mobile Number Portability</p>	<p>CCTL</p>	<p>With respect to the OSS and billing systems, TATT has not demonstrated that it has done any assessment on the OSS and billing systems in this market to support the position that OSS and billing systems currently in use by fixed line operators are less flexible than those in use on the mobile side of the business. We believe that such conclusions should come after an assessment of the facts, rather than mere suppositions.</p> <p>The Authority also states that it believes that mobile number portability would bring more choice to users in the market. TATT has provided no rationale for this statement. In fact the statement is inconsistent with positions TATT has taken in other proceedings.</p> <p>As we noted in the first round of consultation, in determining that TSTT is dominant in the retail domestic fixed telephony market, TATT states "... effective competition will be possible only if customers are able to switch providers without incurring significant monetary and other costs." This was a direct reference to Service Provider Number Portability in the fixed retail voice market, as a regulatory tool to deepen and ensure sustained competition. In other analyses for example the Quarterly Market Update Q3 2010, published by</p>	<p>the more detailed implementation plan, and the proposal is for the fixed and mobile networks to be readied at the same time, we recommend that the implementation dates be informed by the work of the committee.</p>	<p>be the case. In any event the difference in the timeframes for the implementation is too short to be significant.</p>

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<p>3.4.3 Service Provider Number Portability Phasing Implementation of Fixed and Mobile Number Portability</p>	<p>CCTL</p>	<p>TATT on its web site on April 20, 2011, the Herfindahl- Hirschman Index (HHI), which measures the levels of market concentration was given as 8971 for the fixed voice service and 5003 for mobile voice service. So TATT's has consistently found that the mobile market is much more competitive than the fixed market.</p> <p>Further, since TATT has proposed that the fixed network be readied at the same time as the mobile networks, it therefore begs the question as to why mobile should be implemented in advance of the fixed.</p> <p>The experience in markets that have implemented fixed and mobile number portability supports both being done at the same time. Dominican Republic launched both fixed and mobile Service Provider Number Portability at the same time. This same trend is observed in other Latin American markets such as Brazil, Chile, Columbia and Mexico. Undoubtedly there are efficiencies to be gained from this approach.</p>		<p>Noted.</p>

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Section 4				
4. Implementation of Service Provider Number Portability	CCTL	<p>CCTL notes the points made by TATT in this section. However since TATT has not made any specific proposals on these issues, we take this to mean that the committee will come up with all the relevant technical, and administrative specifications.</p> <p>Below we provide recommendations on the role TATT should play in the process to come up with the specifications and the implementation plan.</p>		Noted.
4.1 - "Methods of Implementation" (Page 14)	TTCS	<p>"There are basically two methods of implementing service provider number portability, either of which can be used for the porting of both mobile and fixed line numbers: a) bilateral, b) centralized /clearing house"</p> <p>The Centralised/clearing house is the favourable approach to the methods of implementation of the Service Provider Number Portability. We note that there must be redundancy built into this which included redundant hardware as well as a hot backup site to</p>	The Authority should ensure that the method of implementation chosen should be reliable and resilient as possible, with appropriate levels of hardware redundancy as well as a hot backup site to ensure uptime of the service.	Agreed. Industry standards for reliability will be followed. But it should be noted that there is a cost for redundancy. The Authority also envisages that mirror databases will be established by the operators, thus reducing their operational costs. This also increases reliability.

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4.1 - "Methods of Implementation" (Page 14)	TTCS	cater for a well-defined SLA as to the uptime of this service.	The Authority should evaluate a scenario such as a natural disaster which would be a significant event that would affect service providers and how service could be restored in the shortest possible time.	
4.2 "Implementation Schemes" (Page 14)	TTCS	<p>"a) Onward Routing – OR, b) Query on Release- QoR, c) Call drop back, d) All Call Query- ACQ"</p> <p>The All Call Query – ACQ Scheme is welcomed for both Fixed Line and Mobilecalls. Proper Security Systems must be implemented for the NPDB (Number Portability Database)</p>	<p>The All Call Query - ACQ implementation scheme the querying and routing of fixed and mobile calls is preferred ; The Authority should review the NPDB and/or the party maintaining the NPDB to ensure the confidentiality of data held by the NPDB or the entity maintaining the NPDB is maintained.</p>	Noted. However the Authority has pointed out in its first consultation that the information in the database is not of a sensitive nature.

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Section 4.3 "Popular method for Implementation of Number Portability" (Page 20)	TTCS	<p>A question arises with respect to businesses who have Call Accounting Systems and the need to reconcile their accounts.</p> <p>How did businesses in countries such as the Dominican Republic and Singapore reconcile their Call Accounting Systems with the issue that a portable number may have a different rate from a non-portable number?</p>	The cost of a call to a ported number should be the same as the cost to a non-ported number.	See comment in response to TTCS in section titled Introduction...
Section 5				
5.0 Implementation plan	Digicel	<p>Digicel commends the Authority for allowing the concessionaries the opportunity to play a significant role in determining the specifics of implementation.</p> <p>However, such an approach requires that careful attention is paid to developing proper terms of reference for each stage, so that each party is clear on what is expected of it. The time frame for arriving at satisfactory terms of reference must not be underestimated, and must also be factored into this discussion.</p>	The Authority needs to reconsider the time frames for deliverables at the end of each stage	<p>See comment in section 3.4.3 in response to Digicel.</p> <p>The timeframes indicated in the document are generous and realistic and should not be exceeded. If there are exceptional circumstances, timeframes may be adjusted by the committee with the agreement of the Authority.</p>

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5.0 Implementation plan	Digicel	<p>As stated above, the time frames set out for each phase are far too ambitious. The Authority needs to take into account that participation in this committee will require a significant amount of resources from concessionaries, and the time frames for deliverables must be reasonable so as not to place any unnecessary constraints on the day to day operations of the concessionaires.</p> <p>The Authority also makes certain vague statements in this section which need to be substantiated/explained such as “[the Authority] shall advise the operators of the costs that shall be permitted and which shall be denied for cost recovery”.</p>	<p>The Authority needs to provide a detailed explanation of its methodology for determining which costs are recoverable, and give concessionaires the opportunity to comment on same.</p>	<p>The Authority disagrees that a detailed methodology for determining which costs are recoverable is necessary at this stage. In principle, approved costs that are solely attributable to the implementation of NP are allowed to be recovered. The Authority shall be utilizing the services of an experienced independent consultant for this activity.</p>
Section 5 “Proposed Implementation	TTCS	“3. The administrative procedures necessary for inter-operator working to support a porting time of no more than two working days	The Authority should consider penalties to be imposed on	Noted. At present, the Authority does not have power to levy fines on

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<p>Plan for Number Portability n Trinidad and Tobago” (Page 21)</p> <p>5.0 Proposed Implementation Plan</p>	<p>TTCS</p>	<p>for fixed line and mobile services. These procedures shall not be burdensome on the customers so as to deter them from porting” This Service Level Agreement (SLA) requirement is welcomed by the TTCS.</p>	<p>service providers if this SLA requirement is not met.</p>	<p>operators for non-compliance with these requirements. However, the Authority has proposed amendments to the Telecommunications Act to extend its powers in this respect. Until such time as the Act is so amended, the Authority’s powers of enforcement are limited to those prescribed in section 65 of the Act i.e. to files criminal charges against the operator who, on summary conviction, would be liable to pay a fine to the court and/or to serve a term of imprisonment (officers of the corporate entity).</p>
<p>5.0 Proposed Implementation Plan</p>	<p>CCTL</p>	<p>CCTL agrees with the general approach of the formation of an industry working committee to develop the detailed technical specifications, operational plans and implementation plan for number portability. In terms of the membership of the committee we believe that this should be open to the network operators (i.e. donor</p>	<p>Committee membership should be open to network operators that will be involved in porting numbers.</p>	<p>Agreed.</p>

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5.0 Proposed Implementation Plan	CCTL	<p>and recipient network operators) to and from whose network numbers will be ported. We believe that this will allow for the number portability issues to be more efficiently worked out. Not that there will not be challenges in this arrangement. There will be challenges as the different operators will have diverse positions. However, we believe that opening up the committee to every concessionaire, even if they will not be donor or recipient network operator, will make coming to decisions less efficient.</p> <p>Instead of the proposed committee structure (four discrete committees) with responsibility for different functional aspects of number portability) we would suggest one umbrella committee with two working groups, one to focus on fixed number portability and the other to focus on mobile number portability. The Committee and Working Group should engage the necessary functional expertise as and when required.</p> <p>In conjunction with a subject expert (consultant to be employed by TATT as discussed later) the role of the umbrella committee would be to decide on broad principles and issues that cut across the work</p>	<p>We recommend that one umbrella committee with one working group for fixed number portability and another for mobile number portability.</p> <p>TATT should engage and pay a consultant to support the efforts</p>	<p>The Authority's recommendation was based on experiences of other jurisdictions and information gleaned from conferences. However if the operators wish to move forward with implementation with a slightly different committee structure, the Authority will not object if the work progresses in a satisfactory manner as per schedule.</p>

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5.0 Proposed Implementation Plan	CCTL	<p>streams of the two working groups. The working rules of this committee should include provisions to ensure that the pace of the progress of the separate work groups is not unduly dictated by the work progress of the umbrella committee. For example a set timeframe should be allowed for the umbrella committee to make a decision on specific issues.</p> <p>Failure to do so within the specified time would mean that a work group could come to a decision, with support from the industry expert. This decision would then become binding on the full committee.</p> <p>In terms of TATT's role in the committee it is stated that “The Authority reserves the right to attend meetings of these committees.” We view this approach as too hands off. While we support the Authority signaling confidence in the operators getting together to work in the best interest of the development of the industry, and believe that this is congruent with the best interests of the industry as a whole, CCTL believes that the process to develop and implement the plan would benefit from a more direct involvement from TATT.</p>	of the committee in coming up with the technical and operational specifications, as well as the implementation plan for service provider number portability.	Noted. A consultant may be engaged by TATT for its own purposes. The document does indicate that

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5.0 Proposed Implementation Plan	CCTL	<p>Since this is to benefit the development of the entire market, CCTL would recommend that TATT should engage a consultant with experience with number portability in telecommunications markets to support the efforts of the committee. This is in line with the Authority's expressed position of engaging its own consultant to evaluate the technical and administrative specifications plus the establishment costs for each concessionaire. The compensation to the consultant should be related to the completion of the technical specification for the implementation of local number portability. In this way the compensation of the consultant would be aligned to the desired outcome of the project.</p> <p>We believe that, to ensure an effective and efficient plan for implementing number portability in this market, one has to cater to the specific market conditions and realities. For example, two of the key providers are insisting on a cost benefit analysis. If this issue is not appropriately managed, this could impede the process going forward. It is our considered view that an independent consultant / subject expert, provided by TATT, would be an effective way of supporting the committee in dealing with some of these issues that require specialized expertise to address these critical issues. Such a</p>		<p>concessionaires may hire consultants to assist them in making their networks NP ready. See Section 5 of the final document.</p> <p>The Authority is not responsible for paying the consultants hired by the concessionaires to do work within their own networks.</p>

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5.0 Proposed Implementation Plan	CCTL	<p>resource would also serve to facilitate knowledge transfer to this market.</p> <p>To facilitate the working of this approach TATT in conjunction with the operators should seek to define the working rules of the umbrella committee and working groups. CCTL would propose for example that decisions should be made on the basis of majority rule as opposed to consensus.</p> <p>In terms of the terms of reference of the committee, CCTL notes that on page 21 of the consultation document TATT has proposed six (6) items for the working committee to address. While these would be a minimum set of items, there should be flexibility to address any other issue that may come arise that is necessary to the effective implementation of number portability.</p>	<p>The working committee should use the recommendations from TATT as a starting point for their deliberations.</p>	<p>The Authority does not object to this suggestion. In any event, the Authority has a responsibility to oversee the entire process to ensure transparency and that the consumer interest is best served.</p> <p>Agreed.</p>

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5.Staged Implementation	CCTL	It is our considered view that the five staged implementation approach suggested by TATT could prove inefficient for several reasons. These issues are addressed in the following sections. We believe that the Authority may have opted for this approach as a way of providing some oversight to the process while balancing the need for operators to have the latitude and flexibility to develop and implement the plan. Below we provide our views and recommendations on way forward.		
5.1 Planning Phase - Stage 1	CCTL	CCTL has no issues with the outputs that have been identified for stage 1 of the process. However, we believe that there should be some flexibility for the committee to amend and re-prioritize once the process has started. This would allow for the process to be more informed by the relevant information that the Authority will likely not have available to it at this time. It would also allow scope to deal with concerns operators may have at this time. CCTL proposes that the Authority's list of issues be treated as an initial list, to be confirmed by the committee. CCTL believes it is more important to set a tight timeframe for the	CCTL recommends that the list of outputs provided by TATT in this consultation document be treated as an initial list to be confirmed by the committee. In terms of managing the outcome, CCTL recommends that the Authority sets very definitive	Agreed. This section has been revised in the final document and an overall implementation timeframe has been

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5.1 Planning Phase - Stage 1	CCTL	<p>planning and implementation phases of number portability. This should include specific timelines for the availability of the various outputs. Again it is our considered view that adopting the approach we have proposed (i.e. the Authority supplying a consultant to work with the committee) would be a way of managing the outputs and timelines. The added benefit of this approach is that a portion of the cost would come from fees the concessionaires are already paying. It would also serve to reduce the establishment costs that concessionaires will be required to find, plus mitigate some of the concerns around establishment cost to individual concessionaires.</p>	<p>implementation timelines. Any deviation from these timelines should be based on the recommendation from the full committee.</p>	<p>indicated. The consultant hired by the Authority will work within this timeframe to have NP implemented. Concessionaires are expected to abide by the stated timeframe.</p>
5.2 Planning Phase - Stage 2	CCTL	<p>As currently proposed by the outputs at the first phase of Stage 2 is the Authority's review of the proposals from Stage 1. Based on CCTL's proposed approach, this distinct phase would not be necessary, as TATT would have visibility of the work of the committee through the involvement of the consultant. TATT should also have in house representatives at committee and working group meetings.</p> <p>Using this approach TATT would not need a separate consultant to review the work of the committee. This would also serve to save the market of consultancy costs. Going this route the current Stage 2</p>	<p>Based on our proposed approach, Stage 2 would be eliminated.</p>	<p>The Authority has revised this section of the document. The Authority thanks CCTL for the suggestion.</p>

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		would become redundant.		
5.3 Planning Phase - Stage 3	CCTL	<p>Instead of definitive stages, CCTL would propose review points. This could take the form of a committee and or working group meeting with TATT personnel present. This would serve as an opportunity to confirm decisions taken to that point.</p> <p>Since the consultant would be engaged by TATT, it would already have visibility of the issues and be in a position to influence the decisions.</p> <p>The first review point could be just before preparation of the Request for Proposal (RFP) based on the technical specifications. After this review point the RFP would be done and issued.</p> <p>The committee would then manage the process of evaluating the responses to the RFP and selecting the suppliers.</p> <p>In principle we agree that the fixed networks should be readied at the same time as the mobile networks. However, based on the approach of separate working groups for fixed and mobile work streams, the progress of one team should not be curtailed by the pace of the work in the other team.</p>	In place of rigid stages we propose review points where key decisions can be confirmed with all the key participants involved.	<p>See comment above 5.2</p> <p>Noted. However these details will have to be worked out by the committees when formed. It is too</p>

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5.3 Planning Phase - Stage 3	CCTL	<p>As proposed earlier the, working rules should include specific provisions to ensure that the progress of one working group is not curtailed by the progress or lack of progress in the other group.</p> <p>In terms of the achievements and outputs TATT has outlined for Stage 3 of their process, this should be considered initial check list to be considered and refined by the committee.</p>		early to resolve these possible issues at this consultative stage.
5.4 Planning Phase - Stage 4	CCTL	<p>Given that fixed and mobile networks are being readied at the same time, CCTL would recommend that any decision to phase the actual service availability date of fixed line number portability should be an outcome of the work of the committee.</p> <p>There is no need to prejudge the outcome. As outlined in our response to the first consultation document, there are several arguments that can be made as to why fixed number portability would have less complicated issues than mobile number portability. These include issues relating to SIM cards and prepaid contracts. We also maintain that TATT has not provided any objective analysis for the basis of its position that in the specific context of this market, mobile OSS and more flexible than fixed OSS.</p>	TATT should provide objective analysis to support its position that in the specific context of this market, mobile OSS are more flexible than fixed OSS. Any recommendation to phase the implementation timeframe of fixed number portability should be informed by the work of the committee.	Noted. Please note comment in section 3.4.3 CCTL's comments.

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5.5 Project Implementation Schedule / Appendix 7	CCTL	<p>We agree that the working committee should determine the details of the project plan. However we propose that TATT sets a timeframe within the technical specifications for both fixed and mobile number portability should be completed. Any deviation from this timeline would come from the individual work Groups (this is the fixed or mobile group).</p> <p>Once the framework for fixed and or mobile number portability has been established there should be a set timeframe, say twenty four months, within which parties should comply with the framework. There should be stated penalties for operators that do not comply with the number portability implementation as specified. Parties should be incentivized to comply with the implementation requirements within the specified timeframe of the implementation schedule. Where operators do not seek to comply within the specified timeframe there should be some form of penalty. Tardy operators should be allowed recovery of a reduced portion to none of their portion of the common establishment costs depending on the timeliness of their compliance.</p>	<p>The Authority should set a specific timeframe for the implementation of fixed and mobile number portability. Any deviations from this timeline should be supported by a recommendation from the committee.</p>	<p>Noted. The Authority has revised this section. This issue has been dealt with previously.</p> <p>The intention is that the deliverables of the working committees would be guided by the overall timeframe to implement NP launch. At present, the Authority does not have the power to impose administrative penalties on operators. With regards to enforcement, the Authority is limited by section 65 of the Act.</p>

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Cost of consultant	CCTL	<p>CCTL agrees that the cost of consultancy should be seen as part of common cost. In fact we have proposed that TATT should engage a consultant to work with the committee.</p> <p>This would avoid cost duplications where the Authority would appoint a consultant to review technical and administrative specifications, while the service providers would have separate consultants.</p> <p>The reality is that the porting technology and services are fairly well defined, as number portability exists in many markets. The negotiating between operators that will take a great deal of time. CCTL believes its proposed approach will bring key specialized expertise to the committee and serve to make the process more efficient.</p>	<p>TATT should engage and pay a consultant to work with the committee to define the technical and administrative details of fixed and mobile number portability, as well as detailing and operationalising the implementation plan.</p>	<p>Noted. The Authority will be hiring (and paying) a consultant to drive the implementation of NP within certain identified and specific parameters. Since the Authority is paying for the consultant, this cost cannot be seen as part of the common capital costs of implementation that are recoverable by the concessionaires. This consultant will work with the concessionaires' committees.</p>

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Section 6				
Cost Considerations	Digicel	<p>Digicel concurs with the statements submitted by TSTT in their response to the first draft of this document. It is unclear why the possibility of subsidies from the government as suggested by TSTT has been dismissively discarded by the Authority.</p> <p>Digicel submits that no final position should be reached on the issue of the burden of costs until the technical and operational specifics of implementation are finalized by the working committee.</p>	Digicel recommends that no directive be issued regarding costs at this time. The issue should be dealt with in detail in stages 2 and 3	Noted. However, the Authority disagrees. The <u>principle</u> of capital cost recovery is separate and apart for the actual methodology utilized to recover said capital costs. The Authority has left the methodology for recovery of said costs open to suggestions by concessionaires but specifically rejects any government subsidies.
6.1.1 Shared Establishment Costs	CCTL	We agree with the general principle that common establishment costs should be apportioned based on voice telephony revenue share, essentially market share. TATT's proposal is that this should be based on the share for each market sector (fixed and mobile). We fully expect that this would be an issue for discussion by the committee, and that there will be in all likelihood other approaches for consideration.	In general agreement with the proposed approach of using revenue share to apportion shared establishment costs.	Noted.

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<p>6.1.1 Statement of Purpose on shared costs</p> <p>The Authority proposes that common capital costs to establish the number portability system be divided in terms of percentage of telephony revenues amongst the concessionaires for each market sector (fixed and mobile), as supported by the most recent audited financial statements for the concessionaires involved. Should the working committee of concessionaires propose an alternative method, the Authority shall consider this proposal.</p>	<p>TSTT</p>	<p>TSTT does not agree with the Authority's proposal of dividing common capital costs according to operators' revenues. Allocating costs based on gross or adjusted revenues or profits has significant implementation problems. It would foster creative accounting to minimize or defer whatever measure is used.</p> <p>One principle on cost attribution is that those who benefit the most from the NP (small operators) should pay a higher proportion of common costs.</p> <p>Alternatively, if Authority states that operators are going to be able to recover NP costs, there is no need that the costs to be incurred and recouped based on revenue shares. The fair way would be that common capital costs be divided at least equally among operators.</p> <p>TSTT suggests that whatever cost allocation method is chosen, to be "competitively neutral" it must avoid making one provider pay for another provider's inefficiency. The Illinois PUC noted that "national poking or averaging of regional industry costs (or state-specific industry costs for states that create state-specific databases) may reduce incentives to incur costs in the most economically</p>	<p>Those who benefit from Number Portability should pay a higher proportion of common costs OR common capital costs be divided at least equally among operators</p>	<p>The Authority disagrees. How does one determine who will benefit at this stage? This suggestion is impractical.</p> <p>In the US, the largest operators paid for the shared common capital costs based on revenues whilst the smaller operators (< 1% market share) paid a small fixed fee. In effect the larger operators paid for the entire number portability system.</p> <p>The suggestion that cost be incurred and recouped equally amongst operators ignores the fact that the larger operators will have the revenue streams to pay for the NP system. To share incurred capital costs amongst smaller and larger operators equally ignores the real risk of driving smaller operators out of the market.</p>

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	TSTT	efficient manner and may lead to undesirable regional cross subsidizations” (ICC comments of 14 August 1996 in FCC CC Docket 95-116 p 5).		
6.1.2 Individual Concessionaire’s Establishment Costs	CCTL	We agree that service providers should detail the network and other system changes and associated costs for the implementation of number portability. CCTL has proposed above that TATT engages a consultant to work with the committee in determining the specifications and implementation plan for number portability. Using this approach, there would be no need to engage a separate consultant to advise on allowable establishment costs.	If TATT adopts the approach of engaging a consultant to work with the committee, this same consultant could advise on allowable costs.	This comment has already been dealt with in section 5 CCTL. See above.
6.1.3 Cost Recovery for Individual Concessionaire’s Establishment Costs	CCTL	CCTL believes that the cost recovery methodology should come from the work of the committee. The proposal from the committee could then be approved by TATT.	We recommend that the recovery mechanism for establishment costs come from the work of the committee for approval by TATT.	Noted. The document does state that the committee can submit a proposed cost recovery methodology to the Authority. However, this does not preclude the Authority from proposing its own cost recovery solution. The Authority insists on maintaining oversight on this matter.

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<p>6.1.3 Statement of Purpose on establishment costs Establishment costs that have been approved by the Authority shall be recoverable. The Authority shall propose a cost recovery mechanism for individual concessionaire establishment costs. Concessionaires shall be allowed to propose their own mechanisms for cost recovery which is subject to the Authority's approval.</p>	<p>TSTT</p>	<p>The Authority states (page 26 refers) that, <i>it "shall engage the services of a consultant to audit the submitted costs with a view of determining the relevant costs which are specific to the implementation of number portability. The costs, determined as relevant to the establishment of number portability are the only costs which shall be permitted for cost recovery. The Authority shall detail the costs permitted and disallowed via a report"</i>.</p> <p>We believe that permitted costs should be determined at this time, during the consultation phase – this discourse should take place now. Providers must be given all reasonable opportunity to determine how best to provision their networks for NP, and a significant determinant will be cost considerations. If the Authority's schedule for the implementation of NP is to be maintained, all issues that could possibly derail that timetable need to be sorted out prior to commencement of the schedule.</p>	<p>Permitted costs should be determined in the course of the consultation process so that providers are given all reasonable opportunity to determine how their networks are to be provisioned</p>	<p>It is not practical to do so during the consultative stage.</p>
<p>6.2 Consumption Costs</p>	<p>CCTL</p>	<p>Consumptions costs are incurred in porting a number include the administration cost for porting a number and database usage. Some of these costs will be operator specific (e.g. processing port requests, changes to effect the port) and others will be shared (e.g. use of</p>	<p>The committee should be tasked with recovery mechanisms for consumption costs.</p>	<p>Noted. However, the document clearly states the principle of what is recoverable and what is not. The Authority is not permitting all</p>

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6.2 Consumption Costs	CCTL	<p>shared facility such as data base). TATT is proposing that operator specific or in-house costs should be borne by the operator, and cost for use of centralized data base from the recipient service provider.</p> <p>It is not clear whether TATT intends for provisions to be made for all costs to be recovered. We are therefore seeking clarification on this. CCTL believes that provisions should be made for all costs to be recovered.</p>		consumption porting costs to be recoverable. The Authority does not disagree with the working committee making a proposal for recovery of porting costs once it follows the principles enunciated in the document.
Section 6.3 "Cost to port" (Page 27)	TTCS	<p>"The Authority proposes that no charge shall be levied on users when porting their mobile and fixed line telephone numbers."</p> <p>The TTCS supports this proposal from TATT</p>		Noted.
6.3 Cost to Port	CCTL	<p>TATT is maintaining that no charge should be levied on users when porting their fixed or mobile numbers. CCTL believes that TATT's position is well intentioned as it may see a charge to port as a disincentive for customers to port their numbers. We understand this perspective. However we do believe that the principle of cost causation should be observed. As such operators should be allowed</p>	<p>We recommend that a proposal on this comes from the committee, and that provisions are made for all costs to be recovered. Service providers should have the flexibility to decide if they want to pass on the cost of porting a number to a customer, or to</p>	<p>The Authority has surveyed a number of countries namely, Ecuador, Mexico, Peru, and Canada. Although there are charges incurred between the concessionaires and the database operator, there are no charges to the consumers for porting if it does not exceed twice per year (in some cases).</p>

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6.3 Cost to Port	CCTL	<p>to recover legitimate costs that they incur to provide the service.</p> <p>Actually there are a range of options. In Latin American countries where the latest wave towards number portability has occurred, most if not all the countries have a customer charge. The economic realities of these countries are more reflective of the situation in this country, when compared to European and North American economies where number portability was implemented earlier.</p> <p>Our preference is for a charge to be allowed, and operators should have the discretion to determine, if they want to pass on this charge to the consumer.</p> <p>In our view a balanced approach is the best way forward. In the interest of moving the process forward, we propose that this decision is left for the committee to finalize.</p>	absorb the costs to facilitate customers to port to their services.	<p>So the Authority's position with consumer charges for porting is in keeping with what has occurred in recent implementations of number portability in Latin America.</p> <p>Hence the Authority stands by its position in the document (no consumer charge for porting) and disagrees with the comment received.</p> <p>Noted. Please see above.</p>
6.3 Cost to Port	Digicel	Digicel submits that the Authority has failed to substantiate its position that there be no fee to port for customers.	The Authority should allow the donor network to charge a fee to the porting customer in	Noted. The Authority disagrees. Please see comment to CCTL 6.3 above.

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6.3 Cost to Port	Digicel	<p>Further, Digicel concurs with the comments submitted by TSTT on this issue in their response to the first draft of this document and submits that the Authority has not satisfactorily addressed these comments.</p> <p>While it is recognized that the Authority will have to safeguard against inflated fees in order to discourage users from switching to a competitor's network, it should be noted that a fee would actually act as a disincentive to frequent and unnecessary switching of networks, which may have a de-stabalising effect on the mobile market.</p> <p>It should be noted that a fee is levied on users in Austria, Italy, the Netherlands, Portugal, Slovenia and the United Kingdom and this has not been detrimental to the relative success of the implementation of number portability.</p>	<p>order to recover its costs.</p> <p>The amount of this fee should be determined when the technical aspects of implementation have been finalized by the operators' working group.</p>	

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<p>6.3 Statement of Purpose on cost to port</p> <p>The Authority proposes that no charge shall be levied on users when porting their mobile and fixed line telephone numbers.</p> <p>September, 2012</p>	<p>TSTT</p>	<p>The decision to charge end consumers should remain with the operators. It is the very competition amongst providers that will dictate whether operators decide to charge for porting or not.</p> <p>The Authority applies no analysis explaining why it has reached the position that no charges shall be levied upon porting customers. A requirement to offer NP at an amount which does not allow for a full recovery of the cost incurred would be an undue burden on providers.</p> <p>TSTT considers the Authority's proposal to be inappropriate and not in accordance with the general principle of cost causation. Regulation 15 of the Interconnection Regulations requires a concessionaire to <i>"set interconnection rates based on costs determined in accordance with such costing methodologies, models or formulae as the Authority may, from time to time, prescribe"</i>.</p> <p>Given that number portability for all intents and purposes is treated by the Authority as an interconnection service (Regulation 9 of the Interconnection Regulations refers), the requirement for cost based pricing must be applied equally to number portability as it is to Interconnection.</p> <p>The Authority insists that no charge shall be levied on users when porting their mobile and fixed telephone numbers. There will be, however, costs associated with users porting a telephone number to another service provider. Both the donor carrier and the receiving</p>	<p>The Authority should follow general cost causation principles and allow operators to charge a standard fee sufficient enough to allow operators to capture a positive rate of return to further invest in the sector.</p>	<p>Noted. The Authority disagrees. Please see comment on CCTL 6.3 above.</p> <p>The Authority does not agree that NP is a service that provides a positive rate of return to operators. In fact, in the EU, it is now being considered as a consumer right.</p> <p>TATT 2/12/4</p>

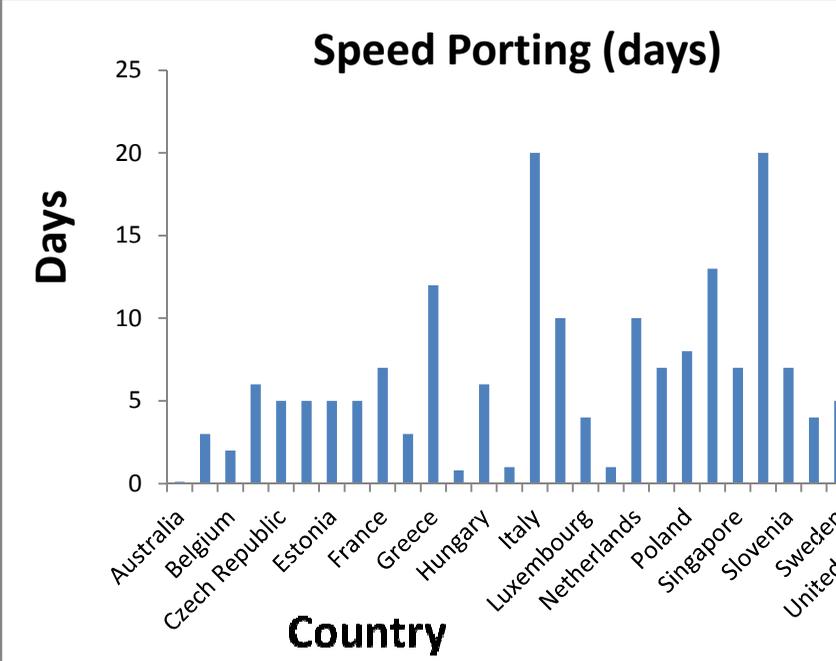
Document Sub-Section	Submission Made By: Stakeholder Category²⁹	Comments Received	Recommendations Made	TATT's Decisions
Section 7				
7 Critical Success Factors: Publicity	Digicel	Digicel recognizes the need to have a proper education campaign on the implementation of number portability, but is unclear why the concessionaires need to bear the costs of same.	The Authority should bear all costs and other responsibilities regarding the advertising of implementation of number portability given that it is as “public service advertising”.	The Authority proposes to conduct its own advertising with regard to the launch of this service. Concessionaires should bear their own advertising costs. <i>‘NP needs to be advertised adequately’ Considering NP in the Caribbean Page 10 (Intelecon Research and Consultancy Ltd Oct 2010)</i>
7.1.1 Time to Port	Digicel	Digicel commends the Authority for recognizing that the initial directive for a porting time of 24 hours was unrealistic. However, Digicel submits that the proposed porting time of two days is still not viable. By relegating the specifics of implementation to a concessionaire	Digicel recommends that no directive be issued regarding time to port at this time. This matter should be deferred to the end of stage 3.	The Authority did not state 24 hours, but two working days to port. It has issued specific guidelines that it considers generous and practical when compared to recent implementations of number

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7.1.1 Time to Port	Digicel	<p>based committee, the Authority is conceding that it is not best poised to make certain decisions since it is unclear about the operational requirements for concessionaires.</p> <p>Against this backdrop, it is unclear why the Authority feels it is competent to issue a directive about the time to port.</p>		<p>portability around the world. The Authority has noted the experiences of NP post implementations and as such, has learned what are the critical success factors for effective implementation. Several studies support this. The Authority does not consider it prudent to implement NP with <i>times to port</i> which have been shown to negatively impact the service in other jurisdictions. To do so is tantamount to courting failure.</p> <p>Hence the Authority's guidelines.</p> <p><i>"Long porting times deter people from porting, but times of up to five days do not deter (although there is no good reason why the porting process should take more than a day for mobile services)". Considering NP in the Caribbean Page 10</i></p>

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7.1.1 Time to Port	Digicel			<p><i>Intelecon Research & Consultancy Ltd Oct 2010)</i></p> <p>However, if it can be shown by the concessionaires that these time frames are too demanding to implement initially, the Authority will not be averse to a longer timeframe, not exceeding 5 working days with a view to reducing the timeframe in the medium term (2 years). The document has been modified accordingly.</p> <p>The Authority reserves the right to make the final determination on this matter.</p>
7.1.1 Time to Port	CCTL	The Authority is proposing a timeframe of two days to port. Table 1 in Appendix 1 of the consultation document “Draft Implementation Plan on Number Portability for Trinidad and Tobago” a review of the European markets where number has been operational for several years reveals that, the modal average for time to port is five	We recommend that a target of five days be set initially, to be finalized by the work of the committee.	<p>See comment above to Digicel.</p> <p><i>Lyons, Sean Measuring the benefits of Mobile Number Portability</i></p> <p>Pg. 1 <i>We find that MNP reduces</i></p>

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7.1.1 Time to Port	CCTL	<p>days. A review of available information for Latin American markets where number portability has been implemented suggests a range of two to thirteen days. Even where two days is suggested, it is as a minimum period e.g. 2 to 13 days.</p> <p>CCTL therefore does not believe the Authority's proposal is informed by evidence from markets where number portability is already established. TATT has also not provided any objective basis for its decision, but simply states that say five or six days is too long. CCTL understands the need to ensure that customer' requests for porting to be addressed as expeditiously as possible. However, what is finally decided should be informed by analysis of available information.</p> <p>Since there will be an industry committee working out the details of number portability, CCTL proposes that this is left for the committee to decide. This will allow for a more informed decision to be made, based on information it would have available to it.</p>		<p><i>average prices and encourages churn (a proxy for switching) when the switching process is rapid (e.g. less than five days) but not when it is slower.</i></p> <p><i>Pg 2 says in 38 countries where the porting time has been five days or less, Mobile Number Portability was associated with increased customer switching and lower prices. Where there were less stringent porting time standards no significant churn or revenue effects were experienced.</i></p>
<p>7.1.1 Statement of Purpose on time to port</p> <p>The Authority proposes that concessionaires implement a</p>	TSTT	TSTT must ask why the same consideration as given by other regulators to their providers cannot be accorded to providers within the Trinidad and Tobago market. The Authority has amply demonstrated with examples that providers were permitted longer		<p>Noted. Please see comment to Digicel above 7.1.1.</p> <p>The Authority notes the decrease in the porting times around the world</p>

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<p>solution that supports a time to port fixed line and mobile numbers of within <u>two working days</u> initially.</p> <p>7.1.1 Statement of Purpose on time to port</p> <p>The Authority proposes that concessionaires implement a solution that supports a time to port fixed line and mobile numbers of within <u>two working days initially</u></p>	<p>TSTT</p>	<p>porting times in the initial stages of NP and over time these time frames are being decreased. We ask for nothing more than the same consideration. Amongst Latin American countries, the porting process takes between 4 to 9 days (5 days in Brazil, 4 days in Ecuador, 7-9 days in Peru.) Most developed countries with mature NP (USA and UK for example) have seen porting times of between 4 and 5 days being reduced (over a time frame of approximately 2 years) to between 1 and 2 days in the both porting markets. We ask for no more than similar consideration to be granted to providers in this market so that providers are given the same opportunity for getting it right.</p> <p>As of October 2007 information from the European Commission and other regulators indicate an average porting of 6.3 days in respect of mobile NP as follows.</p>		<p>where NP has been implemented. We do recognize that legacy networks were deployed in many instances when NP was introduced. We are fortunate in T&T to have NGN technology and more modern OSSs being deployed, hence shorter porting times are possible.</p> <p><i>Lyons, Sean Measuring the benefits of Mobile Number Portability</i></p> <p><i>Pg. 1 We find that MNP reduces average prices and encourages churn (a proxy for switching) when the switching process is rapid (e.g. less than five days) but not when it is slower.</i></p> <p><i>Lyons, Sean Measuring the Benefits of Mobile Number Portability (Pg.6) says Ovum suggests two days as the practical upper limit.</i></p>

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<p>7.1.1 Statement of Purpose on time to port</p> <p>The Authority proposes that concessionaires implement a solution that supports a time to port fixed line and mobile numbers of within <u>two working days initially</u></p>	<p>TSTT</p>	<p>Figure 3 Speed of Mobile Porting in days, as of October 2007</p>  <p>Source: Commission of the European Communities. Progress Report on the Single European Electronic Communications Market, 2008. And Regulators from Singapore, USA, Australia and Hong Kong</p>		<p>The Authority has more up to date data on porting times from other jurisdictions.</p>

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7.1.2 Initiating a Request to Port	CCTL	CCTL agrees that a request to port a number should be made to the recipient network operator.		Noted. The Authority has noted in recent implementations of NP that the initial request to port was made via SMS to an independent third party. The Authority is not adverse to this mode of implementation and the document has been modified accordingly.
7.2 Denial to Port	Digicel	<p>The Authority states that a customer should not be denied porting once they have cleared their most recent bill (which Digicel interprets to mean charges incurred in the last billing cycle only).</p> <p>This statement demonstrates the Authority's failure to understand operational realities and the intricacies of consumer behavior in Trinidad and Tobago.</p> <p>Bad debt continues to be a significant issue for telecommunications providers in this country. Customers are known to employ various creative means of avoiding postpaid charges such as trying to set up multiple accounts using different forms of identification or by having family members do so on their behalf. Petty civil debts are</p>	Digicel recommends that customers be required to settle all balances owed to the donor network before he/she can be allowed to port.	<p>Noted.</p> <p>The Authority recognizes that 90% of the mobile market is pre-paid and as such the issue of bad debt for that market segment does not arise.</p> <p>Whilst the Authority recognizes the need for concessionaires to control bad debt, the proposal from Digicel effectively means that post paid customers will not be allowed to port until such time as e.g. <i>possible</i></p>

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7.2 Denial to Port	Digicel	<p>very difficult to recover. Debt collectors do not enjoy acceptable levels of success due to a variety of factors such as the inability to locate customers, and very often the cost of initiating legal action to recover a debt outweighs the value of the debt itself.</p> <p>One of the key motivators for customers to pay bills is the desire to have uninterrupted service. By giving customers the opportunity to port by clearing only the charges incurred during the last billing cycle before they can port, the Authority is creating an opportunity for customers to exploit telecommunications providers by abusing the service in the months prior, (or even by roaming in the last billing cycle as there is often a delay before these charges are sent from roaming partners) then porting in order to maintain access to service. This coupled with the mandate to allow one free port every six months will encourage an undesirable pattern of behavior among customers.</p> <p>It should be noted that in the following countries (where the credit rating procedures and legal framework are more robust and effective), a user will be refused porting for any outstanding debt</p>		<p>roaming charges are settled. This will result in an inordinate long timeframe before porting is allowed. Digicel will have full control via their billing processes as to when a post paid customer is permitted to port. This situation is open to abuse by the concessionaires and is, in the Authority's opinion, totally unacceptable.</p> <p>The Authority has modified this section of the final document but does not have a solution to the problem articulated by Digicel. The working committee may consider methods of ensuring that outstanding bills are paid while not unduly delaying the process of a customer porting.</p>

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		<p>associated with the user's account: Austria, Croatia, France, Hungary, Iceland and Ireland.</p>		
<p>Statement of Purpose on denial or delay of porting for outstanding balances</p> <p>The Authority proposes that concessionaires shall not deny or delay implementation of the porting process for outstanding balances on the requested number to be ported, provided that customers have cleared their bills from the last (most recent) billing cycle at the time the porting request was made.</p>	<p>TSTT</p>	<p>TSTT's position is that the donor network should have the right to deny portability to a subscriber that has outstanding balances with it. This should be especially enforced in the cases of postpaid subscribers since there is an existing contract between the subscriber and its provider.</p> <p>There are countries that have adopted this policy including Dominican Republic. In that country if a subscriber has outstanding balances with its donor provider, this provider would deny portability: "For the user to exercise the right to portability shall, previously, comply with all lawful contractual obligations assumed with their service provider, especially those relating to payment of applicable income and services consumed."³⁴ Other countries with similar policies are Mexico and Peru. (⁶ResoluciónIndotel No. 156-06)</p> <p>TSTT would also recommend that a provider should be able to access the credit history of a potential porting subscriber as it should</p>	<p>Providers be permitted to consider a subscribers credit history and permit the denial of porting requests at both ends of the porting continuum.</p>	<p>Noted.</p> <p>The Authority does not wish to interfere with concessionaires' decisions as to accepting/rejecting customers with questionable credit ratings or history. What the Authority is concerned about is the unreasonable denial of porting, specifically with regard to post paid mobile/fixed customers for fictitious reasons. (Pre-paid customers' credit history is irrelevant).</p> <p>Please note comment above to Digicel 7.2.</p>

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	TSTT	<p>be the right of a subscriber to either accept or deny a porting request. Furthermore, we would recommend where a subscriber is refused access to the alternative network, the donor network is under no obligation to take back that subscriber – based upon the subscriber's credit history.</p>		
7.2 Denial to Port	CCTL	<p>The Authority proposes that a request for porting should not be denied or delayed in circumstances where the requesting party has outstanding balances with his existing provider. The reason given is that service providers can use normal bill collection avenues, including bad debt collection facilities available to companies operating in Trinidad and Tobago.</p> <p>This approach would only serve to encourage those intending to avoid paying debts they have incurred, to have the added option of simply moving from one another service provider. Further, any business has the right to assess the credit worthiness of a potential customer and to take this into consideration is deciding whether or not to do business with that customer.</p> <p>In fact the position that the Authority has expressed in this section of the document is at variance with its comments on page 118 of the consultation document, where TATT agrees with CCTL's position</p>	<p>Where a potential customer requests that a number be ported, the recipient operator should have the right to deny the request if it can be established based on previous credit history that the potential customer poses a credit risk.</p>	<p>Noted. Please see comment to TSTT 7.2 above.</p>

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7.2 Denial to Port	CCTL	on the issues around procedures for porting, which includes a customer settling outstanding bills with their existing provider before porting their number.		
Section 7.3 "SMS Service" (Page 29)	TTCS	"The concessionaires shall be required to provide SMS service to all ported mobile telephones". The concessionaire should ensure that the SMS works across all concessionaires. i.e. an SMS can be successfully sent from Provider A to Provider B.		
Section 7.4 "Unlocking of mobile handsets"	TTCS	"The Authority proposes that concessionaires shall remove, at no cost to the user, their lock code on mobile telephone handsets at the request of the user provided the contract term has expired. Where the contract term has not expired, section C20b of the concessionaires' document shall apply." The TTCS welcomes this statement of purpose.		Noted.
Section 7.5 "Off net" alert (Page 31)	TTCS	This is welcomed especially for businesses with call accounting systems that need to distinguish an "On net" call from an "Off net" call. If Call Accounting Systems cannot distinguish this then there will be challenges with respect to reconciling accounts.		Noted. See comment above on TTCS Introduction

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7.5 Off Net Alert	CCTL	CCTL agrees that the originating network should provide some type of off net alert to alert customers that the number they are calling has been ported to another network, and that a separate tariff will be applied to that call.		Noted.
7.6 Abuse of Porting Facility	CCTL	<p>TATT recognizes that where there is no charge to port a number, there is the potential for abuse of the service to port numbers. We reiterate here that service providers should have the option to recover the administrative cost of porting a number through a per port charge. The service should also have the flexibility of not passing on this fee to the potential customer.</p> <p>The procedures for porting should also include some mechanism to prevent abuse of porting facilities.</p>	The committee should be tasked with finalizing the position on this issue.	<p>Noted.</p> <p>The Authority has no objections if concessionaires agree to waive charges between each other for the administrative fee for porting.</p> <p>Agreed. The working committee should resolve this issue.</p>
Section 7.6 "Abuse of porting facility" (Page 31)	TTCS	While this is a potential form of abuse, the TTCS is of the view that it is important for users to be able to switch to an alternate provider (even back to the original provider) if they are unhappy with the service provider (be it quality of service, costs, etc). Having to wait up to six months to be able to switch to a alternate provider is too long and we recommend a shorter period of say three months	For users to have a choice of service providers, users should be allowed to port a telephone number at no cost once in every three month period.	The Authority disagrees. The Authority's position is that any porting that takes place in excess of the recommended period, a porting fee can be charged. This charge may be developed by the working committee.

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Appendices				
Appendix 1 “Number Portability Implementation in Europe” (Page 32)	TTCS		After implementation in Trinidad and Tobago, similar statistics should be collected by the Authority and should be published for the public to determine trends	Agreed.
Appendix 3	CCTL	Appendix 3 adds no information to the process. It is simply a comment made based on generalization, and should be excluded from the document.	Appendix 3 should be excluded from the document.	The Authority has left this reference in the final document. It has been experienced other jurisdictions. The Authority thanks CCTL for the observation.
Appendix 6: Implementation Timeline	Philip Vilain	I feel the implementation plan, summarized in Appendix 7, is too slow. If I am reading that chart right it seems that it is laid out as a 2 year process, and further, it seems that the process does not begin till April 2012.	I imagine we can do it in less than 2 years if we put our minds to it - perhaps a target of 12 months to implement would be better	Experience in other jurisdictions has shown that ~eighteen months is the norm which accounts for upgrades/change-outs of hardware and software.

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] Appendix 6: Implementation Timeline	Philip Vilain	<p>It's not clear what takes place from mid 2011 to Q2 2012 and I am wondering if the start date can be moved forward to say Jan 1, 2012, and I am wondering if it can be done in less that 2 years.</p> <p>I note on page 39, Appendix 6 - Quote: " 5. Mexico quickly rolled out number portability for 98 million mobile and fixed line subscribers in less than 4 months in 2008" end quote</p>		The Authority has other initiatives pending hence the timeframes suggested. This section has been revised in the final document.
Appendix 7 – Projected Implementation Schedule	CCTL	<p>Number Portability” reference is made to the final publication of the final plan. However, the timing of this publication is not mentioned. Further, Section 5 (The Proposed Implementation Plan for Number Portability in Trinidad and Tobago), the Authority proposes the formation of the working committee to define the technical and operating procedures plus the implementation plan for number portability.</p> <p>This approach would suggest that the publication of the final plan would be a product of the work of the committee, as opposed to a plan TATT would give to the committee to work with. We are therefore requesting clarification on this point.</p> <p>The process and timing of the convening of the committee is also not clear. TATT simply states in the consultation document that it</p>	<p>TATT should engage a consultant to work with the committee. Once the consultant is in place, TATT could then invite the relevant operators to name their members for the committee. The committee could then begin to work.</p> <p>A timeframe for the specification of the framework and the full implementation of both fixed and mobile number portability should be set by the Authority. Any deviations from this date should be informed by recommendation</p>	Agreed. Appendix 7 has been removed in the final document. As previously stated, the working committees will have to abide by the overall timeframe of 18 months specified by the Authority for NP service launch once the consultant starts working with the established committees.

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Appendix 7 – Projected Implementation Schedule	CCTL	<p>proposes that concessionaires form working committees to address the different aspects of number portability.</p> <p>Our considered view is that this leaves a lot of ambiguity / gaps in terms of how the process moves forward. We are therefore requesting that TATT clarifies the intention.</p> <p>Given that the committee would be responsible for coming up with detailed technical and administrative specification and other implementation details, it seems reasonable to expect that the final implementation plan would be an output of the work of the committee as mentioned above.</p> <p>The Projected Implementation Schedule (Appendix 7), suggests that (based on TATT's proposal), Stage 1 activities would be completed by Quarter 3 of 2012. We can only assume that between now and then the committee would be convened and begin to work towards the specified outputs.</p> <p>In terms of initiating the process, and consistent with our proposal, we would urge TATT to engage a consultant to work with the committee. Once the consultant is in place, TATT could then invite the relevant operators to name their members for the committee. The</p>	from the individual working groups.	

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	CCTL	committee could then begin to work as per plan we have outlined in our proposal.		