

**Report No. 19
from the UMTS Forum**

**BENEFITS AND DRAWBACKS OF INTRODUCING A
DEDICATED TOP LEVEL DOMAIN WITHIN THE
UMTS ENVIRONMENT**

Evaluation Study

This report has been produced by the UMTS Forum, an association of telecommunications operators, manufacturers and regulatory authorities. The UMTS Forum comprises IT and media industries interested in broadband mobile multimedia that are active both in Europe and other parts of the world and who share the vision of UMTS (Universal Mobile Telecommunications System).

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The views expressed in this Report are purely those found and expressed during the work of creating this document. At the request of the Forum, no detailed recommendations are formulated in this report since it was felt that it is for the Forum's members to clarify individually their positions on possible follow-up, using the findings of this study as a basis.

All possible care has been taken to assure that the information in this report is accurate. However, no warranty of any kind can be given with regard to this material. The UMTS Forum is not liable for any errors contained in the report or for incidental consequential damages in connection with the use of the material.

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1 Executive Summary

The UMTS Forum has already held some initial discussions concerning the relevance of a Mobile-specific Top Level Domain (M-TLD). However, opinions were divergent and it has been recognised that the basis for a sound decision regarding a new TLD is missing. In this context, a study has been commissioned to explore the topic in more detail and provide a solid basis for discussion and decision-making.

The study - based on interviews and discussions with major interest holders in a M-TLD plus analysis by Theron - has led to the following theses:

1. Most players within the IT industry have not yet investigated and understood the relevance (if any) of a M-TLD. Some key players are in favour of a M-TLD or at least find interest in the concept assuming that underlying issues can be resolved.
2. The majority of Mobile Network Operators (MNOs) are reluctant to favour the concept of a M-TLD because the benefits have not yet been sufficiently identified.
3. Those MNOs that have a more positive attitude mainly see the benefits in marketing-related topics. They position a M-TLD as a key/additional vehicle to develop the emerging mobile broadband communication market.
4. User awareness of mobile broadband communication and services is very limited. The potential relevance of a M-TLD is not understood by the end-user. A M-TLD could help providers in educating the consumers about mobile broadband communications.
5. Any new M-TLD must provide sufficient differentiation from other market players, whilst allowing competition between the various 3G players.
6. Any application of a new M-TLD, for example like the “closed shop” scenario, must not violate relevant competition laws.
7. The investment in a new M-TLD is only justified if this TLD offers additional value to its users, which cannot be substituted easily by other players or does become obsolete with changing technology, e.g. introduction of 3G or 4G.
8. Examples of advantages of a M-TLD include guaranteed Quality of Service (QoS), easy roaming and the provision of location-based services. The UMTS Forum members themselves (and other relevant groups, e.g. the GSM Association) must verify the advantages, i.e. product attributes to be used as a basis for building a TLD.

9. A new M-TLD should be open to all market players who guarantee an agreed specific additional value to applicants of this TLD. A code of conduct could be introduced as a suitable instrument for safeguarding this promise to the customers (consistency of code of conduct with competition law has been assumed but not yet been verified).
10. Any ISP or other market participant who accepts the code of conduct and the service characteristics behind this code can offer/use the M-TLD, irrespective of whether they are a MNO or not.
11. Application and implementation of a M-TLD would require some financial resources (less than 3m €). However, broad support from players from within the MNO-community and the Internet and vendor world would be required (timing has to be considered)
12. It is assumed in this study that ICANN retains control over the TLD name allocation process and TLDs continue to be the prime method of searching and navigating the Internet.

As requested by the UMTS Forum, the following report does not propose a solution nor recommend a specific approach to deal with the TLD topic. The report gives tutorial information on TLDs, provides insight into the arguments brought forward by market participants, and tries neutrally but critically to review all the statements made. UMTS Forum members have to decide on the basis of the analyses provided which steps to take next.

2 Study background

2.1 Basic situation

Domain names are an important element within the Internet world. Currently a number of restricted and unrestricted TLD names are available (see section 3). Well-known examples are .com, which is unrestricted and .gov, which is restricted to public administration/government. TLD assignment and administration is under the control of ICANN. As the number of available TLDs is commonly regarded as too low to allow for the creation of an adequate number of attractive (i.e. clear, recognisable, unique, memorable) domain names, ICANN assigned seven new TLD names in November 2000. It is likely that ICANN will assign additional TLDs in response to qualified demand in the future.

With access to the Internet via mobile networks potentially being one of the main revenue drivers of future UMTS networks, the question whether or not to use mobile-specific domain names has become an important discussion point in the industry.

For example, within the traditional Internet in recent years, one specific TLD has become so strong in terms of market recognition, that an entire industry has been named according to that TLD: the dotcom industry.

This example indicates that, in addition to its technical function to facilitate the search for URLs (translation of IP-addresses into meaningful domain names), TLDs have become an important marketing instrument for any type of commercial and non-commercial organisation as well as individuals. TLDs give some indication as to what type of organisation owns a domain name.

2.2 Goals of the study

The UMTS Forum has already held some initial discussions concerning the relevance of a M-TLD. However, opinions were divergent and it has been recognised that the basis for a sound decision regarding a new TLD is missing. In this context, a study has been commissioned to explore the topic in more detail and provide a solid basis for discussion and decision-making.

Following the request of the UMTS Forum, Theron added some tutorials about TLDs in general to provide all UMTS Forum members with the same knowledge base. This forms the beginning of this report.

The project goal is to provide the basis for a decision by the UMTS Forum whether to start a future initiative to pursue the application for new TLD names. This requires achieving two major sub-goals:

1. To describe strategic options around mobile-specific TLD names and assess the opportunities and risks with a focus on the marketing impact, whilst also looking at the technological implications, legal/regulatory requirements and internal organisation.
2. To develop reasonable alternative scenarios for introducing a M-TLD and to highlight the implications for these implementation scenarios. This should help the UMTS Forum to assess the efforts necessary and thus provide another criterion for deciding whether to go ahead or not with an application for a mobile specific TLD.

2.3 Approach to the study

To reach the goals described above, a four-step approach was chosen: this is shown in Chart 2.3.

The study involved four main work phases

STUDY APPROACH

	Preparation	Interview Phase	Validation	Presentation
Process	<ul style="list-style-type: none"> • Desk research • Interviews with UMTS opinion holders (hypothesis gathering) • Expert interviews (issue verification) 	<ul style="list-style-type: none"> • Structured interviews <ul style="list-style-type: none"> • Residential users¹⁾ • Business users¹⁾ • ISPs • Content providers • ASPs • Registries, registrars • ICANN 	<ul style="list-style-type: none"> • Structured feedback discussions with marketing, strategy, technical departments of network operators 	<ul style="list-style-type: none"> • Finalisation of Report • Presentation of study results & conclusions
Outcome	<ul style="list-style-type: none"> • Decision criteria • Options • Hypothesis • Process requirements 	<ul style="list-style-type: none"> • Market view (to be discussed with/ challenged by UMTS providers) 	<ul style="list-style-type: none"> • Verified study report • Implications for implementation scenarios 	<ul style="list-style-type: none"> • Conclusions • UMTS Forum presentation • Next steps

¹⁾ Fixnet Internet and Mobile users

Chart 2.3: Study approach

In the interview phase, 46 semi-structured interviews (face-to-face and by telephone) were carried out with members of the different market segments of the mobile industry world-wide (with most of the discussions held with European organisations):

- 4 Network operators
- 6 Hardware manufacturers (vendors)
- 4 Industry bodies/ public authorities
- 4 Internet registrars
- 3 Internet Service Providers
- 5 Application Service Providers
- 4 Content providers
- 20 End-users (mobile phone/Internet uses, both residential and business users)

The results of these interviews were presented and discussed with eight network operators in semi-structured face-to-face interviews. In this phase, the operator's view on the various options for specific TLD names was extracted and checked against the results from the previous market survey.

Finally, Theron collated all findings and tried to identify possible scenarios for a mobile-specific TLD. These have been evaluated mainly in light of the question: "Would there be any significant benefits for Mobile Operators to owning a mobile_ specific TLD within the present regulatory environment?"

3 Introduction to TLDs

3.1 Domain Name System

The following section addresses the Forum's suggestion to provide some background information on TLDs before starting a more detailed discussion in later sections.

The Internet is structured in a classification system (e.g. like animals/mammal/big cat/lion) to maintain order. This classification system is called the Domain Name System (DNS).

The DNS is based on a tree-like hierarchy that uniquely identifies a domain (e.g. web-site). The highest level of this hierarchy is called Top Level Domain (TLD), followed by the Second-Level-Domain (SLD) and possibly further sub-domains (see Chart 3.1).

For maintaining order in the content of the Internet, it is structured in a tree-like hierarchical system – the Domain Name System (DNS)

DOMAIN NAME SYSTEM: HIERARCHICAL STRUCTURE

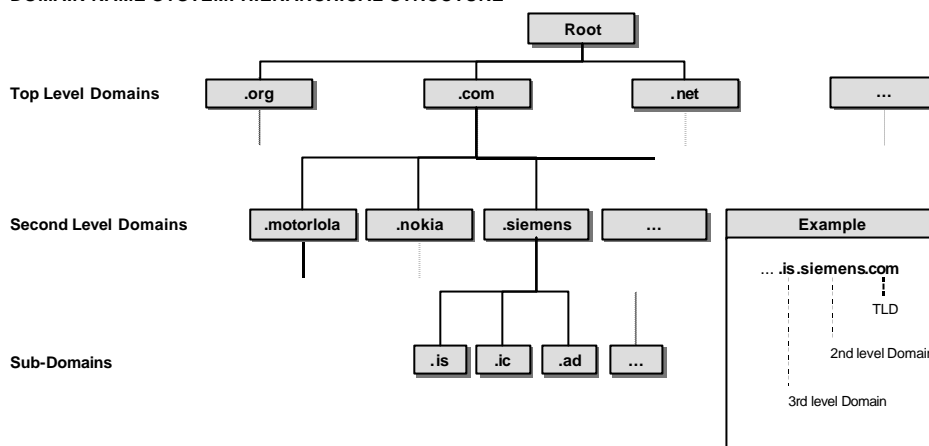


Chart 3.1: Hierarchical structure of the Domain Name System

When writing a domain name, the different hierarchy levels are separated by dots (see Chart 3.1.1). While we read domain names from left to right, the name is resolved from right to left, with the highest-level domain at the far right.

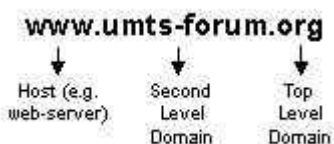


Chart 3.1.1: Structure of a Domain Name

3.2 Top Level Domains

TLDs are structured into two types:

- Organisationally structured
- Geographically structured

Organisationally structured TLDs are called generic TLDs (gTLD). Domains of a similar type are grouped under one TLD, e.g.

- .com for commercial sites
- .org for non-commercial organisations
- .gov for the U.S. government
- .net for network-related groups
- .edu for educational institutions
- .mil for the U.S. military
- .int for international organisations
- .arpa for Internet infrastructure

Geographically structured TLDs are called Country Code TLDs. In this category, sites are grouped by country, e.g.

- .ca for Canada
- .de for Germany
- .fr for France
- .it for Italy
- .jp for Japan
- .uk for the United Kingdom

The Internet Corporation of Assigned Names and Numbers (ICANN) is responsible for whether, how, and when new TLDs are added to the existing ones. In October 2000, ICANN approved seven new gTLD of the following types:

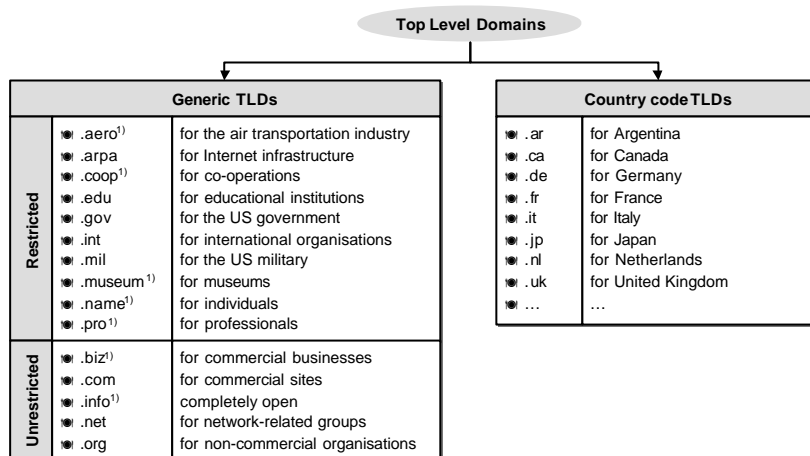
- .aero for the air transportation industry
- .biz for commercial businesses
- .coop for co-operations
- .info
- .name for individuals
- .museum for museums
- .pro for professionals

TLDs may be restricted to a specific use, charter (e.g. .gov for the U.S. government, .museum for museums), or open to any use (e.g. .info). Some of the former restricted TLDs (e.g. .com, .org) are now handled more openly.

Chart 3.2.1. gives an overview of the different types of TLDs:

There are two types of TLDs – generic TLDs (organisational structured) and country code TLDs (geographical structured)

TOP LEVEL DOMAINS



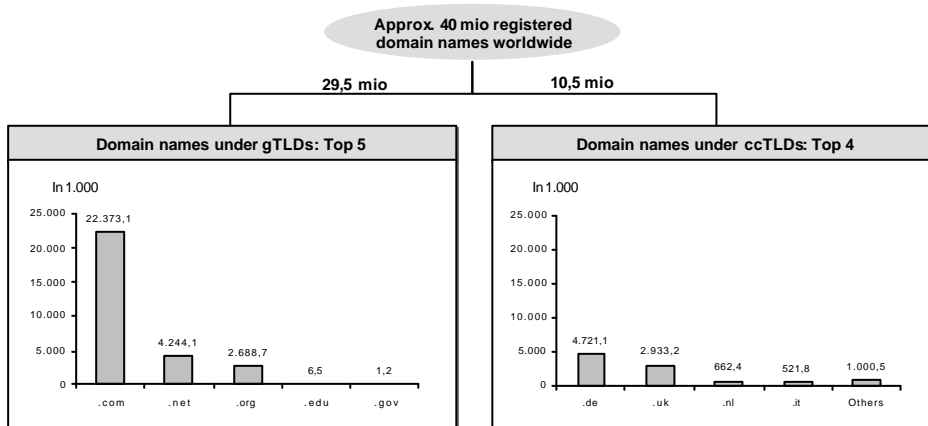
1) New gTLD

Chart 3.2.1: TLD overview

In August 2001, approximately 40 million domain names were registered world-wide. The .com TLD was the predominant TLD with over 55% of all registrations world-wide. Chart 3.2.2. gives an overview of the most important TLDs:

.com is the predominant TLD in the world – more than 55% of all domain names are registered under .com

NUMBER OF REGISTERED DOMAIN NAMES UNDER EXISTING TLDs



Source: www.domainstats.com

Chart 3.2.2: TLDs with most registrations world-wide

Three questions arise from looking at this distribution:

- Why is there a much higher number of domains under some TLDs than under others, e.g. .com versus .net?
- Does ownership of a specific Domain/TLD provide benefits to the owner, especially if tens of millions use the same TLD?
- Do “smaller” TLDs offer additional advantages?

The latter part of the report attempts to answer at least the second question.

3.3 DNS and IP addresses

Data traffic on the Internet is not routed directly over domain names but over IP addresses. An IP address is a unique address that identifies an interface on a host or node on a TCP/IP network. The format of an IP address based on today's used IPv4 standard is a 32-bit numeric address, written as four numbers with 1-3 digits separated by periods. Each number can be zero to 255, e.g. 255.255.255.0. For IPv6 standard, please see UMTS Forum Report Number 12.

A domain name corresponds to an IP address and allows users to locate computers on the Internet. IT is an easy to remember name

DOMAIN NAMES AND IP ADDRESSES

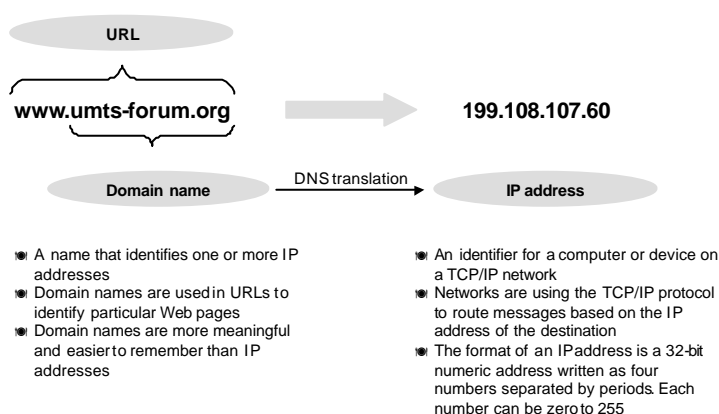


Chart 3.3.1: DNS and IP address

Because IP addresses are totally numeric, they are hard to remember and therefore not very user-friendly. This is the reason for introducing text-based DNS names. For routing traffic over the Internet, text-based DNS names must be converted into IP

addresses. This conversion is carried out by DNS databases (DNS servers) on the Internet, which match DNS names and IP addresses.

The Internet hierarchy is composed of different domain levels. DNS name servers also “matchmake” at different levels, and the DNS name server at any given level is considered the name/address authority for that level. Chart 3.3.2 shows how this process works.

For translating URLs/domain names into IP addresses the hierarchical structure of the Domain Name System is being used

DNS QUERY

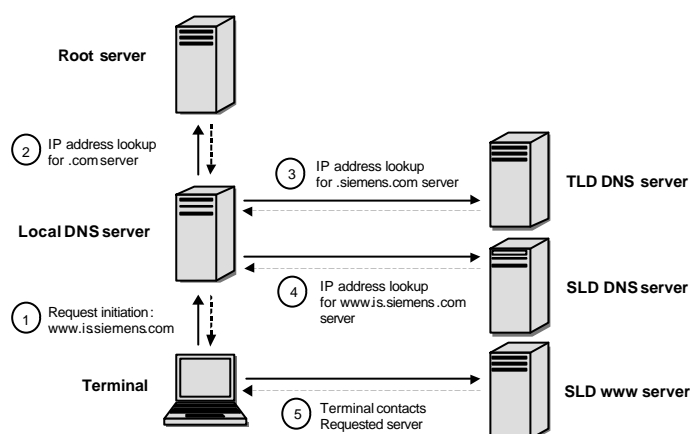


Chart 3.3.2: DNS query

1. A query is initiated by typing a domain name in a browser. The query is sent to the local DNS server
2. If the local DNS server does not know the IP address of the requested domain, it requests the information from the root server. The root server holds only the information for the TLD
3. The TLD DNS server, which holds the IP address for the SLD DNS servers in its TLD zone, is then contacted
4. The SLD DNS server holds all the information on the IP address of the requested domain name and sends it to the local DNS server, which forwards it to the requesting terminal
5. The terminal now can contact the requested server (e.g. www.server)

3.4 IP address and DNS name assignment and management

The assignment of IP addresses is structured hierarchically. ICANN has authority over all number spaces used in the Internet. This includes IP address space. ICANN allocates public Internet address space to Regional Internet Registries (RIRs).

RIRs manage IP addresses in large geopolitical regions such as continents. There are currently three RIRs:

- ARIN for America
- APNIC for the Asian Pacific region
- RIPE NCC for Europe

Geographical areas that are not covered by this structure are served by the nearest RIR. RIRs allocate IP addresses to Local Internet Registries (LIR) such as Internet Service Providers (ISPs).

LIRs are established under the authority of a RIR. They are responsible for the allocation of IP addresses to end-users (private and business).

The assignment of a DNS name is quite similar to the assignment of IP addresses. ICANN assigns the management of a TLD to a Registry that is completely responsible for that TLD, e.g. Verisign is responsible for the TLDs, .com, .org and .net, while NeuLevel manages the new TLD, .biz.

Each registry has one or more registrars (mostly ISPs, identical to the ones stated above as LIRs). These registrars are responsible for checking end-user domain name registration requests with the registry.

The complete process of IP address and domain name assignment and management is shown in Chart 3.4.1:

The assignment process of IP addresses and domain names is hierarchical structured with ICANN at the top level

IP ADDRESSES AND DOMAIN NAMES: ASSIGNMENT PROCESS

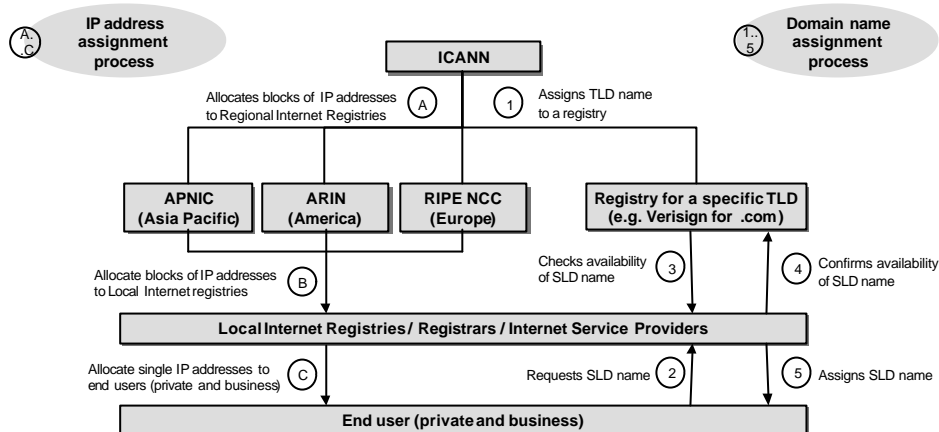


Chart 3.4.1: DNS name assignment and management

3.5 Future scenarios of the DNS

Currently, two main scenarios can be identified for the future of the DNS:

- ICANN keeps the authority over TLD assignment
- ICANN loses the authority over TLD assignment

Each of these scenarios contains certain sub-scenarios.

If ICANN keeps the authority over TLD assignment, the question arises as to how many TLDs it will assign over the next few years. The number can range from just a few to up to more than a hundred. This has an impact on the value of a single TLD.

If only a few more TLDs are assigned, they would become rare products and their value would increase. If more than a hundred TLDs are assigned, this number of TLDs may confuse the end-user. It would therefore be impossible for the end-user to keep an overview of all TLDs. Thus, the value of a single TLD will decrease each time a new TLD is assigned.

In contrast, initial developments can be identified which suggest that ICANN is losing complete authority over the TLD assignment process. Some companies are emerging that offer the registration of a domain name under a variety of TLDs independent from ICANN. These TLDs are not offered or supported by ICANN.

Domain names under one of these TLDs can only be accessed if special software is installed on the end-user's computer.

If ICANN were to lose the authority over TLD assignment, another scenario can be identified with regard to the structure of the DNS. It is possible that the current DNS system will change in the future, which will remove the need for TLDs.

This study focussed on the scenario that ICANN keeps the authority over TLD assignment in the future. No other scenarios were considered but should be borne in mind.

For further considerations only the current DNS and its assigned process has been looked at

FUTURE DNS SCENARIOS

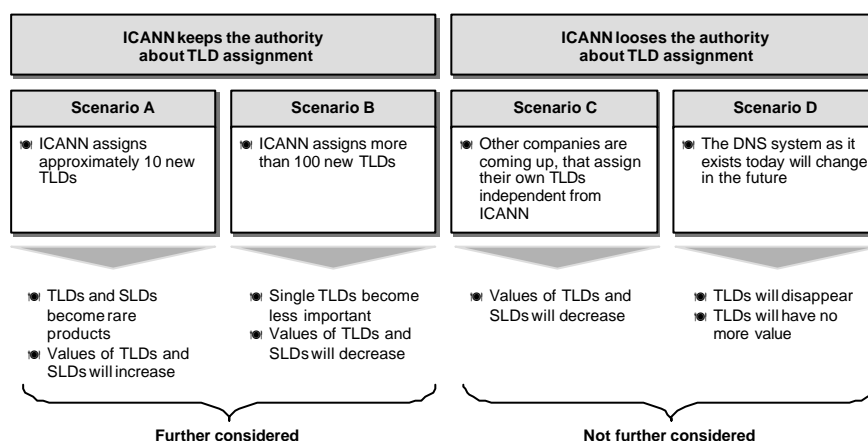


Chart 3.5: Future DNS scenarios

4 Relevance of a M-TLD

The discussions with MNOs, ISPs, vendors and other market participants indicate that some key players generally have a positive attitude towards a M-TLD. However, within the group of MNOs, there is reluctance with some MNOs to believe in the benefits the M-TLD brings and a hesitation to accept the challenge a new TLD may offer. The following discussion will provide a better understanding of the topic and thus an answer to whether the challenge to introduce a M-TLD should be accepted or not.

There are two generic questions concerning the relevance of a TLD specifically for the mobile world (operators, service providers, vendors and users):

- For whom is it important?
- What are the drivers that make it important?

Mobile network operators are the focus of this study and will therefore be considered in the most detail. However, other market participants have also been examined with a view to understanding the implications they may face.

4.1 Potential Stakeholders

Mobile communications have been dominated by Mobile Network Operators, who own the networks, provide the services and maintain the key customer relationships. In some countries, Service Providers play an important role in customer relationship. Recently, MVNOs entered the market and broadened this landscape. With the emergence of the mobile access to the Internet, other players (e.g. content providers, portal owners) have also stepped in. With closer links developing between mobile networks and the Internet, it is expected that for the rollout of 3G all these forces will participate and help to develop the market and the revenue flows.

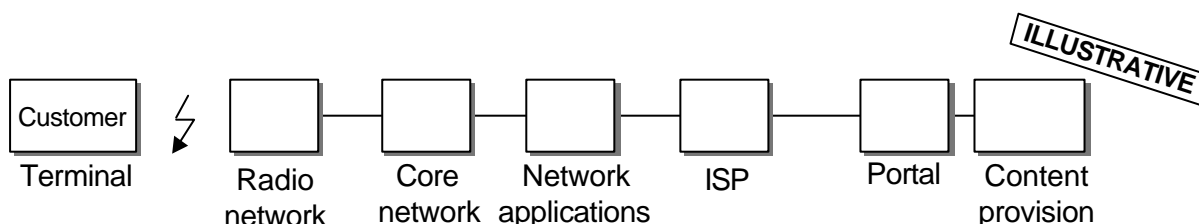


Chart 4.1. New Value Chain (illustrative)

The M-TLD may be of benefit to all these market players, depending on the role each takes in the market and the tangible benefits offered by the TLD. We will return to this question after looking at the benefits a TLD could offer anyone wishing to sell mobile services (MNOs, Service Providers, Content Providers etc.).

4.2 Potential impact zone of a M-TLD

Mobile markets are driven by three factors: technology, marketing and consumer behaviour. The following will try to analyse which of these factors would stimulate a M-TLD and also the direct impact a TLD could have on these drivers or markets.

4.2.1 Technology

Mobile data and mobile access to the Internet requires many technical developments and pre-conditions. Mobile-wise, some of these have been provided since the early days of mobile communications, e.g. SMS functionality. Others have been developed recently, e.g. packet-switched data. There have also been developments concerning the Internet and there is continuous improvement and change, however, technically the “systems” work and do not require specific TLDs:

- The Internet as it is today does not require additional TLDs to work. Addresses are limited by the available IP addresses (IPv4/v6 issue) and not by the number of TLDs.
- Mobile data, e.g. WAP and Intranet Access already work within GSM 2.5 and will continue to do so within 3G networks, without the need for a specific TLD.
- Mobile access to the Internet relies mainly on existing Internet technology e.g. web browsing mainly depends on the browser used and the bandwidth provided. Those factors are independent of TLDs.
- New types of services, that we can imagine today within the 3G-world (e.g. mobile gaming) also have no technical requirement for a specific TLD

For information on ENUM and IPv6, please refer to UMTS Forum Report No. 12.

4.2.2 Marketing

A broad variety of approaches to marketing mobile services has been used round the world. These have changed over time and depend on local market conditions and market phases. Given there is currently a reasonable level of competition within the markets, players have had to be much more creative marketing their services compared to the early days of mobile communications. The marketing toolbox they can draw on is broad and includes:

- Branding and overall positioning
- Product/service differentiation
- Quality
- Pricing
- Other marketing initiatives (promotions, campaigns)
- Sales channel management and incentives (presence and commissions)

However, some key learning concerning the success of various initiatives has taken place. In the present phase of the mobile telecommunication market, pricing and product differentiation no longer provides the expected results. The players' current focus is mainly on branding, quality (especially versus new entrants who frequently

suffer from lower quality and coverage), marketing initiatives and sales channel management.

Establishing closer links between mobile networks and the Internet may change the relevance of the individual elements above and it may add new ones to the list. For example, the player's quality and coverage may become irrelevant in terms of differentiation due to the sharing of infrastructure between competing mobile operators.

The question addressed here is whether a mobile-specific TLD could be an additional positive marketing instrument. Does it strengthen one or more of the aforementioned elements and even add a new dimension?

The arrival of new technologies such as WAP, GPRS and UMTS brings about major new challenges. Three essential developments have to be considered more closely to assess the marketing relevance of a TLD:

- a) Mobile broadband data communication and mobile access to the Internet has been added to the service portfolio offered. 3G will further stimulate that development.
- b) Selling additional services to existing customers (VAS, data etc.) to sustain margins while prices are dropping will replace acquisition of new subscribers, which was key during high market growth phases.
- c) The evolving value chain for mobile data offers players other than operators the chance to contribute and participate in the mobile cake. Moreover, competition will increase as new network operators participate and build additional infrastructure (UMTS licence holders).

New players, new technologies and decreasing subscriber growth rates will influence the marketing approaches

MAJOR MARKET INFLUENCES

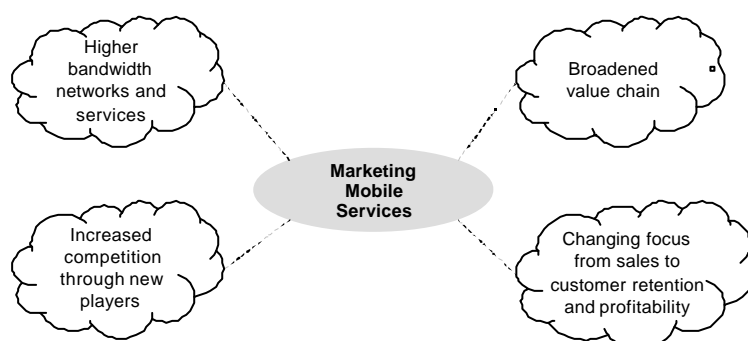


Chart 4.1. Major Market Influences

All these developments add significant new complexity to the entire industry. It is clear that it will require a higher level of sophistication in terms of marketing mobile services to end-users. However, it is also clear that first end-users have to be ready and prepared to participate. This will require intense customer communication and customer education on the part of the provider. A TLD could help educate and communicate with customers in a provider-specific yet generally homogenous (in terms of what the TLD represents) manner.

To examine the marketing relevance of a M-TLD, a framework based on the five Ps of marketing has been used:

- **P**ositioning
- **P**roduct
- **P**ricing
- **P**lacement
- **P**romotion

This framework helps us to understand which of the marketing approaches has high relevance for mobile services. Relevance has been used in the context of “most frequently used, efficient and successful” (e.g. marketing/ sales targets could be reached without destroying market value by entering fierce price competition).

Relevance of marketing approaches and potential impact of a TLD















The 5Ps have been reviewed under two criteria:

- relevance for marketing mobile services
- potential impact of M-TLD for the marketing elements

The result is provided within Chart 4.1.1:

Four marketing elements/approaches are relevant for an M-TLD

RELEVANCE MARKETING APPROACHES AND POTENTIAL IMPACT OF A M-TLD

	Relevance for marketing mobile services	Potential impact of M-TLD
Positioning (Branding)		
Product/service differentiation		
Quality		
Pricing		
Placement (Sales channel management)		
Promotion (Marketing Measures)		
Others (CRM etc.)		



 high
 low

Chart 4.1.1 Relevance of M-TLD for marketing approach

Only branding/communication, service differentiation, pricing and quality are potentially impacted by the M-TLDs. A more detailed investigation will provide the reasoning.

4.2.2.1 Positioning

Positioning is as important within the Mobile industry as it is in most other industries. But what does positioning mean? Positioning can be split into several dimensions. For our purposes, it seems appropriate to distinguish between:

- Brand positioning, which tries to create a unique and promising position against competitors in a specific market. Communication is its major vehicle.
- Product positioning, which tries to address customers' perception towards product-relevant attributes (this point is covered within the subsequent section- Product differentiation)

A simple framework can be used to investigate the opportunities a TLD offers within positioning

TLD AS POSITIONING VEHICLE

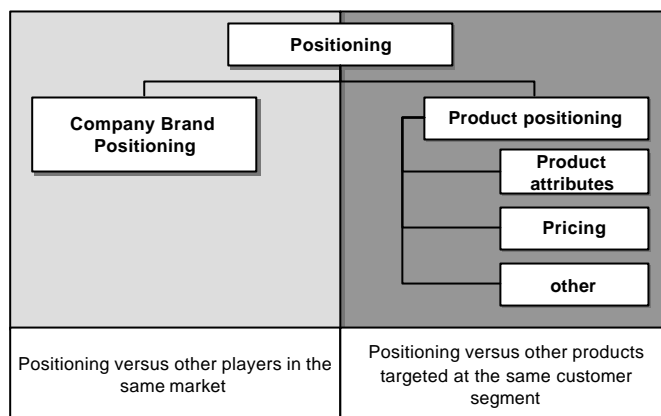


Chart 4.2.2.1: TLD as a positioning vehicle

Example

A (quasi)-MVNO, imagine a globally well-known brand, is reselling mobile services in the UK. It has shown some promising results concerning subscriber uptake, which proves its successful positioning. The products being sold are (almost) the same as the ones sold by the MNO. It has not been the product itself that sells, it has been to a major part the MVNO's recognition and awareness, its strong branding which has created this success.

Looking at branding more closely, we recognise that branding is used to differentiate against competitors within a specific market. This means by definition, that the number of strong and successful brands in a defined market is fairly limited. The stronger individual brands become, the more other players and their brands suffer. The strong brand in this case was able to create a unique position and attach valued attributes (as perceived by customers) to its brand name. Others are not able to do that. Their position is not unique and not as promising.

A commonly used TLD cannot be used to attach unique attributes to a player. It could only serve this purpose for a group of players. We would end up by defining a market sub-segment, e.g. MNOs within a given market by using a specific TLD.

Applied to a M-TLD this means that a TLD used for branding would be beneficial if it were to be limited to some market players, e.g. MNOs. In such a case, a M-TLD could be used as a branding vehicle for the MNO-community only.

However, assuming all the MNOs can use the TLD and there is no uniqueness associated with the TLD, using the TLD will not help an individual MNO differentiate its brand from other MNOs.

Sub-segmenting the market

As explained, a M-TLD could not help MNOs to create individual brand values, but it can help to define a clear position for a group of players against other groups/individual players.

Alternative sub-segments:

- A small group of MNOs versus the rest of the market (including other MNOs) would not be possible for the new TLD due to ICANN's assignment principles (see below) and potential competition law rulings.
- MNOs versus Service Providers, ISP, Content Providers, Portals etc. This option seems possible but not reasonable. It requires a restriction of the new TLD to MNOs only. Other market players could not use it. Therefore, they would be excluded from the benefits the TLD may offer. Their capabilities could not be fully leveraged to develop the mobile broadband data market as seems to be required.
- Pure-play MNOs without any fixed line activity versus integrated or full-service providers, such as incumbent fixed line operators with mobile and Internet businesses. A M-TLD could help to sharpen branding and differentiate the position for pure-play MNOs. Such a differentiation could be turned into advantages/disadvantages for each individual group. All players definitely want to avoid this potential discrimination (no added value for the community of all players).
- All other constellations, e.g. providers versus vendors must be evaluated in a similar manner.

Differentiation by type of player based on the use of a TLD would be possible. It would however be beneficial for a group of players only and this restriction may have negative impacts on the market. It limits the participation of other market players, e.g. ISPs, portals etc. and would therefore hamper market development. These players, all of whom are needed to develop the 3G market effectively, would be excluded, if the TLD is restricted to the group of MNOs.

In addition, implementation of a new TLD for exclusive use by a limited group of players may not be possible due to regulatory and competition law issues. It is unlikely that this policy would be supported by ICANN, as illustrated by the comments from ICANN board members approached during the course of the study.

Hence, in terms of positioning, a TLD for branding purposes is irrelevant. The issue of whether it is relevant for product positioning must still be addressed.

4.2.2.2 Product/service differentiation

Product positioning tries to address customers' perception towards product-relevant attributes. It is a means of differentiation used between competitors to allow the customer to identify specific values and benefits an offer might have.

To understand the relevance of product/service differentiation it is necessary to understand how differentiation can be achieved. An assessment framework has been applied:

Services are differentiated by attributes. Those attributes can be grouped into categories, which include:

- Functionality
- Quality
- Relevance / added value for the user
- Price
- Others

It is important to understand which values relate to which attribute. The following table provides an overview:

Categories	Attributes	
Functionality	standardised MMI (Man-Machine Interface)	proprietary MMI
	intelligent/sensitive	fixed
	general	personalised
	stationary use	mobile use
	location dependent	location independent
	wireless usage	fixed line usage
	simple/easy to use	complex to use
	broad functionality/service range	narrow functionality/service range
Quality	Low	high
	constant	variable
	fix, given	selectable
Relevance	for all customers	for specific market segments
Price	low	high
	determined	flexible

Example: 3G services could be positioned as services, which offer a clearly defined functionality and quality. These could be: wireless services, brought to the customers at high quality in terms of availability of service. They can be used with any mobile device and offer a functionality which is not common to the fixed Internet, such as location dependent services.

If each attribute and its values are examined and assessed to evaluate whether a M-TLD could address those differentiators in a positive way, some characteristics become relevant and others obsolete.

Category	Relevance
Functionality	Highly relevant
Quality	Highly relevant
Relevance	Obsolete, cannot be generalised which would be required
Price	Obsolete, neither a high, low or determined pricing (structure and level) would help

The essential items remaining are functionality and quality. To achieve service differentiation, positive values have to be assigned for mobile services.

These could include:

Category	Attribute Value
Functionality	Standardised MMI
	Intelligent/sensitive
	Personalised
	Mobile
	Location dependent
	Wireless use
	Simple to use
	Broad functionality/ service range
Quality	High
	Constant
	Selectable

Differentiation could cover one, a certain group of, or all aspects. The more positive aspects could be linked to a TLD, thereby deriving greater benefit.

This gives rise to two major issues:

Can these values be guaranteed by using a specific TLD designed to reflect them?

- an individual, group or all aspects?
- which ones are best suited

If compared with traditional telecommunication networks, today's largely fixed Internet suffers from its implementation, which lacks some of the essential features such as security and QoS.

Although the IETF and 3GPP have worked on new protocols to increase Internet functionality in this area, its penetration in the market is still relatively low compared with traditional telecommunication services.

The mobile world is well known for the provision of QoS and high-security features. The deficit of fixed line Internet in QoS and high security features offers an opportunity for the mobile world to fulfil some of the above-mentioned values when offering services under a new M-TLD.

It has yet to be analysed which TLD set-up, in terms of management and control, would be required. It is essential to find a solution, which is open to anyone, leaves enough flexibility for each individual player, but can guarantee, that the promise, still to be defined, is fulfilled.

Recent experiences with WAP illustrate the importance of customers' expectations raised by providers' promises. The discrepancy between promise and effective service perception has significantly hampered market development.

4.2.2.3 Others

The following marketing elements proved to have limited relevance in relation to a M-TLD. Therefore, comments and notes given have been kept comparably brief.

Pricing

Pricing as has always been used as tool to gain and sustain market position and long-term profitability. In the current market phase, pricing has lost its attractiveness due to a already continuously decreasing price level, which has significantly reduced margins for MNOs and providers. However, it is, and will continue to be used as a major vehicle to attract customers and specific customer segments where appropriate.

There is no foreseeable direct relation between TLDs and pricing. Therefore, a more detailed analysis has not been undertaken.

However, one could imagine that some services may be associated with a certain price level and some may not, e.g. 3G services might carry a specific price tag.

The price tag could be illustrated and communicated to the user by a TLD. This would be similar to premium rate numbers within PSTN (e.g. 0900 666666). Here customers would immediately identify that there is a premium service associated with a premium charge for using that number. This scenario has been regarded as service differentiation (see there for more) and not as the pricing topic itself.

Marketing Measures

Marketing measures such as campaigns and promotions are short-term activities to stimulate the market and boost sales. These campaigns usually vary significantly over time and they are designed around specific events, e.g. launch of service, fairs and exhibitions, Christmas business, holiday season, etc. It would make sense to run individual promotions with varying messages. The TLD would be a permanent attribute related to services/players etc. and would therefore rather be used for branding and general communication purposes.

Sales channel management and incentives

Sales channel management and incentives are still very important to influence undecided potential customers to select a specific offer from a range of competing offers. This element seems to have become less relevant as mobile penetration has reached high levels in most markets and thus acquiring new customers is no longer a priority. However, sales channel strategies for selling additional services, e.g. mobile access to the Internet via WAP or other technologies have still to be developed and implemented -this could re-vitalise this element of sales. Generally, sales channel management is irrelevant for TLDs.

Customer Relationship Management (CRM)

CRM and customer retention has become an important area within the mobile business. However, none of the discussions or the analyses has been able to identify a potential dependency on a M-TLD.

5 Strategic options for a M-TLD

Having considered the potential benefits of a M-TLD, we should return to the earlier question - "For whom or for which part of the business is a M-TLD relevant?" - in more detail.

Two options have to be considered.

Option 1: Selling domains to users

As mentioned earlier (see 3.4.), domains are managed by a registry, which uses local registrars to sell domains to end-users (private and commercial end-users). Two benefits arise from this position:

- Selling domains to users as a registrar (e.g. like many ISP do) will provide revenue.
- Management of the TLD has strategic value, which focuses around the ability to influence and control usage of the TLD.

Option 2: Using a TLD

As we know from the fixed line Internet business, many groups such as individuals and public bodies use TLDs to place content on the web. One example is the UMTS Forum, which uses UMTS-Forum.org; i.e. the TLD they use is .org. They realise certain benefits from this, such as some indication as to the nature of the user: - an industry organisation with common industry interest. Another example is an individual using a .com, .fra or .name domain name, like www.joe.blow.name, which is the web site address of someone living around the corner. In such a case, the benefit is quite different to the benefits identified under Option 1. These benefits include:

- Recognition of a certain status of a TLD holder.
- Easy to find for someone searching the Internet (due to higher probability to find Joe Blow under .name compared to any other TLD)

In the following, Option 1 will be described very briefly; it is not within the focus of the study. Option 2 will be discussed in much more detail. Here, a sub-set of different scenarios will be defined and investigated to understand the potential benefits of each scenario in detail.

5.1 Option 1: TLD Registry/Registrar

Some answers to the following questions have to be provided to understand the relevance of this option:

- a) What is the potential customer base for a M-TLD?
 - b) What is the strategic value of controlling a M-TLD?
 - c) What are the commercial benefits of running a registry/ being a registrar?
- a) Potential customers for a TLD registry/registrar could be MNOs, service providers, content providers, ISPs, Portals, residentials and any type of organisation (commercial or non-commercial). The number of customers and willingness to pay for the use of a domain varies significantly among the different segments.
- Segment MNOs: the number of MNOs is fairly limited. Although new MNOs will evolve throughout the world and others will disappear due to market consolidation, the total number of MNOs at any given time will probably be less than 1000 world-wide. The revenue generated in this segment is marginal compared to any MNO core business and is not worth the investment or the effort (assume 50 € per domain and user and year for 1000 registrants)
 - Segment Service Providers and content providers: This segment could be much larger than the MNO segment. Assuming that for each MNO there would be 50 Service/content providers, the potential customer base would only increase to maximum of 50 times 1000, which is still marginal business.
 - Segment end-users: end-users definitely form the largest customer segment which could be divided in two sub-segments: consumers and any professional organisation. Both groups are large enough to base a solid business on selling domains to them, as long as a demand for domains exists. A consumer's interest may relate to communicating a web site or e-mail address. For businesses, the motivation for owning a M-TLD could be to promote special services that it wants to sell to its mobile customer base.
- b) Strategic value of a M-TLD can be realised by controlling it. The organisation that owns the M-TLD (Registry) has control over assignments of domain names under that M-TLD. This control will allow for capturing/protecting value from that TLD in two ways:
- The TLD is restricted to a small group of users. The strategic value results from the privilege for individuals or groups of individuals being able to use it, whilst others are excluded. A high price tag would be possible. However most of the value is created by the user of the domain name and not with the registrar due to the limited number of registrar customers (create value for the registrants)
 - The M-TLD offers value to many parties and can therefore be sold to many registrants at a higher price

- c) The commercial benefits of running a TLD registry or selling domains as a registrar, is quite limited as previous statements illustrate. The main sources of revenue within such a business would be usage fees from domain holders. Only within the end-user business (any organisations and consumers) is such a case economically viable.

5.2 Option 2: TLD user, e.g. MNO uses TLD to promote its services

The previous analysis has provided some initial answers to the questions raised regarding the potential benefits of a M-TLD. Before looking at the possible options of how a TLD could be implemented, the stated arguments are summarised below:

- Technical requirements for a M-TLD do not exist
- Regulatory obligations for a M-TLD are not set, however, more than one M-TLD could be granted by ICANN
- From a marketing perspective, a M-TLD is not required, however, a TLD could offer benefits in terms of differentiation against other players (e.g. low quality providers) or other services (e.g. fixed-line Internet). Other TLD relevant areas within marketing have been investigated, e.g.
 - Positioning and market communication
 - Service differentiation in terms of various attributes (e.g. more functionality, higher quality compared to fixed line Internet services)
- No particular marketing value could have been identified - there are several alternatives as to how a M-TLD could be positioned and used
- The financial benefits for MNOs, service providers and registrars will depend on the option to be pursued

In the following section, five options for a M-TLD will be evaluated in more detail. The description and analysis of these options will enable identification of the key challenges and opportunities relating to this topic.

- **Scenario 1: Closed Shop:** Mobile operators are exclusively entitled to use the M-TLD. Other market players are not qualified to use the TLD.
- **Scenario 2: Open World:** Everyone is entitled to use the M-TLD.
- **Scenario 3: Code of Conduct:** Users of the TLD have to accept a commonly agreed and mandatory code of conduct. Otherwise, the TLD is open to anyone.
- **Scenario 4: Various M-TLDs:** A number of TLDs for mobile access to Internet and other services is available to all players and consumers.
- **Scenario 5: Wait and see:** The UMTS forum does not take any action regarding a M-TLD. It will wait and see if other individuals or groups are pushing forward.

Five options for a mobile TLD have been investigated in more detail

ALTERNATIVES FOR A MOBILE TLD POSITIONING

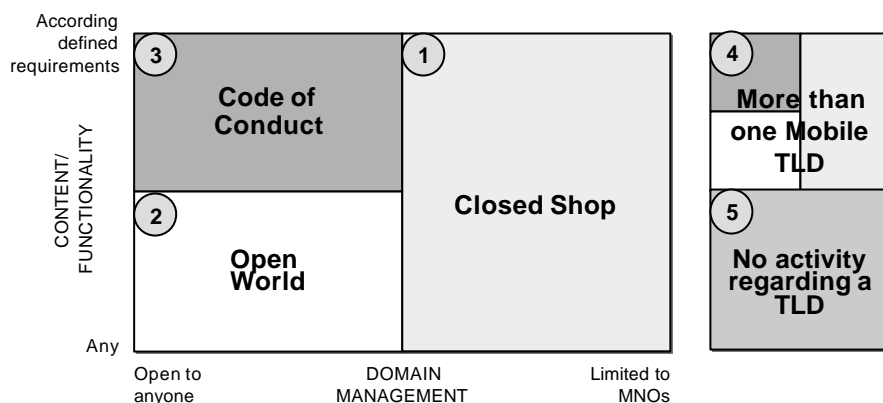


Chart 5.2: Options for a M-TLD

5.2.1 Scenario 1: “Closed Shop”

The “closed shop” scenario assumes that the M-TLD’s use is restricted to MNOs (similarly to the .aero TLD for the aviation industry). Other than MNOs, no organisation can register under this M-TLD.

In addition to the restriction of the TLD to MNOs only, a clear specification regarding content could optionally be applied. MNOs could decide what type of services or specification regarding content would be reasonable. For example, the TLD could just be preserved for MNOs regardless of services offered. Alternatively, the TLD could be preserved for Internet services provided by MNOs accessible via mobile networks. In such a case, classic-voice service would have to be marketed under a different umbrella, whereas all data services may qualify.

This scenario seems not realistic. Excluded parties will probably be able to engage competition law to give them equal access.

Pros and Cons:

A closed shop approach offers two main advantages:

- First, a M-TLD can point out that the mobile/3G networks provide the “mobile Internet” which is different from the fixed Internet, e.g. superior in terms of content, service offerings such as location, time, user and situation specific etc.
- Second, positioning of MNO service offerings could not be diluted by other providers of mobile services (e.g. content providers), because they would not have access to the MNO restricted use of the M-TLD

As a result, MNOs could draw benefits from the broad variety of marketing elements mentioned earlier. Consumers will be able to clearly identify mobile services and understand their specific added value over other services.

Due to the limitation of such a TLD to a handful of MNOs per country, the value for MNOs is quite significant, as customers will be able to relate it clearly to what MNOs want it to be.

However, there are significant drawbacks:

- Success of TLDs within the wired world is dependent on network effects or critical mass. A restriction to a handful MNOs and no support in the established ISP world could not create that critical mass to stimulate market growth. Public awareness would be very limited if the usage of a new TLD is limited to a handful of MNOs.

Why are .com domains so popular? Probably because there are so many and everybody knows them. Why is .net usage so limited? Probably because there are only a few domains and people do not know about them. Or is there any other value behind .com which .net does not have or could not have? Probably not. TLDs depend on critical mass, which is prohibited by this option. This is a key hurdle to overcome.

- Another drawback is the difficulties of defining and enforcing the rules of restriction.

What makes an MNO? Who and how can that be defined and controlled? Which pre-conditions have to be fulfilled?

- Granted spectrum licence (licence conditions are heterogeneous throughout the world)?
- Mobile specific infrastructure (MSC, HLR, IN, UTRAN or SGSN, GGSN), which of the systems qualify as an MNO?
- What happens in the case of shared infrastructure between a number of service providers? Who is the MNO if the network infrastructure is shared or operated by a joint infrastructure company?
- Is an MVNO or Enhanced Service Provider entitled to use that TLD?

All these questions must be answered and structures would have to be established to execute the rules.

- Competition law will probably provide enormous issues, if other market players would be excluded. The closed shop scenario is not realistic.
- How can additional rules regarding content, quality of content and functionality be controlled? Standards for networks, transmission protocols, terminals, MMI etc. will exist. But, how will they be enforced and monitored?
- Common industry strategy, to jointly develop the 3G markets with content providers, portals or any other third party that can contribute would be neglected and partially be made impossible. Content providers could not use the TLD MNOs use to promote their own mobile services. Non-MNO offerings would always be perceived as different, for example poor in comparison to MNO offerings (less quality, less relevance, less...). This is wanted neither by MNOs nor by any other player.
- The ICANN preference for issuing TLDs is not met by this scenario. ICANN clearly expressed a preference for an open domain rather than a restricted one. The likelihood of any application being accepted, which excludes other players in the same markets, is very low as the discussions with ICANN during the course of this study illustrate.

5.2.2 Scenario 2: “Open world”

This scenario is based on the assumption that the M-TLD is open to anyone. .com or .name are comparable examples. Registration of TLD only requires some basic formalities. Proof of status or any other qualifications will not be required.

Pros and Cons:

Benefits:

The key benefits of the open world would be:

- Due to the availability of the TLD to everyone, critical mass effects could be expected which would help to promote and spread the TLD around the world and deeply into individual market segments.
- Furthermore, there will be no legal conflicts with any potentially excluded players.

Drawbacks:

- Differentiation advantages can only be realised by first movers. The differentiation aspect is not sustainable long-term if the mobile domain is open to everyone. Openness of the M-TLD to everyone makes the TLD less specific, “less unique” and less rare. Its positioning (e.g. premium to fixed-line services) will be diluted as other TLDs are already well known in the fixed-line Internet. What does a .com site stand for? How is this different to a .net or a .biz site?
- The expected benefit that most Internet users will leverage the new TLD does not hold true. What does “Joe Blow” at the corner use it for? If he already has a domain, he probably does not need or does not want a second one. What does company xyz use it for? It probably has already hundreds of registered domains. The additional effort and hassle to add another one is probably manageable, but

what would be the added value if everyone could have the same? As it is just another domain, the value would be almost nil.

5.2.3 Scenario 3: “Code of conduct”

Code of conduct describes a scenario whereby a set of rules has to be defined and on a voluntary basis, interested parties participate. They fulfil the rules and thereby create the specified proposition based on the rules.

Example:

The M-TLD is open to anyone who guarantees a certain level of quality of service. Quality of service could for instance be service availability of 99.9%. By way of mutual trust, players have to ensure that they will adhere to the agreed QoS. To be able to achieve the specified QoS, each domain owner has to do what is individually required. Required activities will depend on their portfolio of services offered by their infrastructure and systems – end-to-end service availability has to be ensured from the customers’ terminal through to the application providers’ servers, which run the service.

Pros and cons

Benefits:

The key benefits of the “code of conduct” scenario are:

- Creates “common space” for marketing mobile (broadband) data communication (still to be defined, e.g. QoS)
 - Eases communication to end-user (same core messages anywhere)
 - Creates higher level of trust within consumer base
- Ideally based on customer-relevant, recognised and valued attributes (e.g. service availability) rather than technical pre-requisites providers have to fulfil.
- Leaves sufficient room for positioning, branding and product differentiation for each individual player.
- No discrimination between players. The system is open to anyone who wants to join in and is able to fulfil the rules. From a competition law perspective, a voluntary basis also seems preferable.
- Implementation hurdles are relatively low, compared to all other options, which have various restrictions. Likelihood of ICANN approval is the highest among all other scenarios.

Potential drawbacks:

- Some risk exists that the voluntary principle is not sufficient to guarantee specified rules. From Theron’s point of view, the risk seems very limited. The judgement is based on observed similar approaches in other industries, e.g. the Energy Star Programme for PC Monitors as a voluntary label of quality which succeeded (NB: Energy Star is a program developed by the American Environmental Protection Agency (EPA). It promotes a voluntary partnership between the EPA and manufacturers of computer systems, printers, and monitors. To qualify for the program, manufacturers must modify their products to consume less than 30 watts of power during inactivity status).

- Requires intense discussion and common understanding regarding specifying applicable rules.

5.2.4 Scenario 4: “More than one M-TLD”

The principle idea is that one unique TLD for the mobile world is not enough. Several TLDs evolve, whereby each has different objectives. Any of the other scenarios could be part of this scenario.

Example:

Each technology has its own TLD e.g. .GSM, .2point5, .3G, which is restricted to Network Operators that run networks according to the mentioned standard. Service providers may use different ones, which are independent of technologies, but focus around services provided, like .loc (for location based services), .MIP for mobile Internet Access Providers etc.

As the example already suggests, the added value such a system would offer seems small (if any). The effort and money required to communicate all these TLDs to the customers would be quite high. However, the share of voice for each TLD would be much lower and overall higher communication budgets would be required to compensate for this.

Pros and cons

Benefit:

- Broader variety of TLDs would make individual TLD more specific

Drawbacks:

- The “closed shop” approach would be required. Otherwise, a dilution of each individual TLD would be the consequence. The value derived from each TLD could otherwise not be sustained (main obstacles for “closed shop” see under 5.2.1)
- Not generally realistic/viable

5.2.5 Scenario 5: “Wait and see”

In this scenario, it is assumed that the mobile industry does not apply for a M-TLD for some reason. What would happen?

Others would probably have the idea of applying for a M-TLD. Some interviewees, mainly from the registry and registrar area expressed strong interest in a M-TLD. They may run through the same type of analyses, producing the same or maybe

different findings. Anyway, what results could be expected? What threats/risks does that impose on MNOs and other players?

- Open world: nothing changes in the open world scenario described above except for the driver – the ones who realise first-mover advantages may be different players. But this privilege is always just reserved for a tiny minority.
- Closed shop: for whom could that be? The only risk associated would be if MNOs were omitted. However, what would others do with it? Who should use it and for what?

Pros and cons

Benefit:

The key benefit of not applying for a M-TLD is that this option results in the least level of effort from the market players of the mobile industry. They will not have to discuss possible restrictions or other operational requirements. A long co-ordination process can be avoided and no one will be forced into doing something that they do not want to do.





















Drawback:


- The most important drawback of not applying for a M-TLD is the risk that not all possibilities to develop the market are pursued. A potential consequence is that MNOs lose a marketing opportunity for promoting mobile services (e.g. label of quality), which they do not support, at least in that particular scenario.


5.3 Comparison of potential scenarios

Each of the scenarios considered offers some benefits, but each also has major obstacles to overcome. The following chart illustrates a summary of the evaluation of the individual arguments as stated above.

Code of Conduct offers most benefits for all parties**COMPARISON OF ANALYSED SCENARIOS**

Effectively ¹⁾ beneficial for..	Scenario				
	Closed Shop ²⁾	Open World	Code of Conduct	More than one M-TLD	Wait and see
MNOs					
Other Providers					
End-users					
Entire Market					

 Many or huge benefit(s)

 No benefit or disadvantageous

1) considering benefits and drawbacks

2) not feasible due to competition law

Chart 5.3: Comparison of TLD scenarios

The essential findings are:

A) End-user perspective

For the end-user added value is created with a TLD only if it is meaningful (discrete meaning), supported by many registrants (to establish enough awareness) and effectively content behind it is experienced by the customer according to the expectation. Those three parameters are best met under the “Code of conduct” and “Closed World”, assuming that closed world means not only MNOs but also other relevant market participants (MNO exclusive scenario not considered as viable due to competition law issues)

B) Provider perspective

For providers (all kind of providers including vendors), basically the customer perspective must be taken to assess the different options. Additionally, competitive advantages have to be regarded. Under those two parameters, “Code of Conduct” seems best. The alternative “Closed Shop” in the sense of the .aero TLD (restricted to market players within air transportation) does not offer any additional benefits over “Code of Conduct”. It is less attractive, due the lack of control over content (type of content, quality of service etc.)

C) MNO perspective

If MNOs could develop and maintain major portion of the future mobile markets on their own (without any other players) the closed shop approach would be ideal. However, firstly it is commonly believed that all market participants will be required to develop the market and secondly competition law is a critical

showstopper to this approach. Otherwise only the “Code of Conduct” offers advantages of similar magnitude.

Overall:

- The “closed shop world” would probably offer most advantages in terms of differentiation and value to be captured within the group of users. However, the contribution in developing the market will be quite limited. Competition law will probably block such an approach or demand other disliked obligations from MNOs
- The “code of conduct” seems much more appropriate for strategic (all players can participate, critical mass can be reached) and practical reasons (no competition law issues, high likelihood of ICANN approval).
- No other scenario provides sufficient benefit to justify the efforts required to introduce a M.TLD.
- The key challenge for the code of conduct scenario arises from its design - the rules, and specification have to be mutually agreed. This will require a group of players (MNOs) to discuss their views and decide which product/service attributes and values should form the basis of a new M-TLD.

Given the expectation, that only “Code of Conduct” is a viable concept to take forward, the implications related to an application and introduction of such a TLD have been investigated at very high level. The main points are examined in the following section. No other scenarios have been considered in detail.

6 Implications for application and running of a new M-TLD

6.1 Considerations of the application process

No new application is currently scheduled or envisaged for the short to medium term. Thus, neither information on the process nor any specific criteria are available. However, two data points can be used for some high-level considerations:

- a) The last round of applications can provide some helpful insights into understanding the process and ICANN decision criteria.
- b) ICANN board members expressed their individual views in direct discussions during the course of the study. The comments individuals made are not official ICANN statements, however they give some indication of current thinking.

Recent application round

For the last application process in autumn 2000, ICANN defined some decision criteria on which new TLDs should be chosen. The decision was based on three issues:

1. Only a small group of new TLDs should be introduced
2. The new TLDs should be functionally diverse

3. The new TLDs must satisfy special criteria as defined by ICANN on August 15th, 2000
 1. Only a small group of new TLDs should be introduced
ICANN has had no recent experience of introducing new generic TLDs. As ICANN is responsible for the stability of the Internet, ICANN only wanted to introduce a small number of new generic TLDs and to assess how the Internet reacts.
 2. The new TLDs should be functionally diverse
ICANN wanted to introduce functionally diverse TLDs to prove a broad range of concepts for innovative uses of the DNS. The variety should range from fully open TLDs to highly restricted and chartered TLDs with limited scope to non-commercial and personal TLDs.
 3. The new TLDs must satisfy special criteria defined on August 15th, 2000
On August 15th, ICANN defined some additional criteria that new TLDs have to fulfil. These criteria consist of nine points from a technical and business perspective, e.g.: Internet stability, proof of concept, competition of registration services, utility of the DNS, unmet type of needs.

Indications from discussions with ICANN Board members

The following conclusions can be drawn from discussions with ICANN Board members:

- ICANN wants to understand the effects of the recently assigned and commercially launched TLDs before it starts the next round of applications.
- Within ICANN, there are divergent opinions on the number of TLDs to be assigned (many, more than a hundred or just a few more).
- A likely date for another application round is around 2003.
- The best chances of a successful application will require a consortium, which represents an entire industry. Individual players and groups without broad industry backing will face a greater challenge.
- A mobile specific TLD application would generally be very well perceived.

Application success factors

From the presented applications for new TLDs, a number of success and failure factors can be identified. They were:

- Relevant technical experience of applicant (e.g. registry, database, Internet)
- Understanding of market (e.g. strong business/marketing plan for registry with demand estimates, promotion strategy, projections of market size, penetration, revenues and costs)
- Financial strength
- Sufficient and qualified human resources

6.2 Legal issues

An assessment of the legal implications has to distinguish between the scenarios mentioned above. It is sufficient to investigate three scenarios in more detail, the other scenarios follow the same rules: Closed Shop, Open World and Code of Conduct.

Open World:

All discussions held with players, ICANN, and legal experts indicate that an open world approach would not give rise to any legal issues related to setting up a M-TLD and the required registry.

Closed Shop:

A Closed Shop approach is a critical concept from a legal perspective. Generally, a closed shop concept, whereby a M-TLD would be restricted to a certain group of players, e.g. MNOs, is possible (e.g. as recently demonstrated with the new .aero TLD). It is however dependent on certain pre-conditions. Competition law could prove to be a showstopper for this option, depending on how it is designed and how pre-conditions are met.

To be in line with competition law the following requirements must be met:

- restriction has to objectively justified and
- it has to be non-discriminatory

Objectively justified means that there have to be objective reasons why a restriction is reasonable. Reasonable meant in the sense that the restriction is necessary/supports market development and that it is in the interest of/of benefit to the customers.

Example:

An objective reason to restrict a M-TLD to e.g. MNOs could be that services offered under that TLD would guarantee a specific functionality, e.g. availability for the user which others services might not fulfil. Such a restriction could help to develop the market, which is also seen positive from a competition law perspective. The remaining question is: Is it necessary and positive for the market development (consumer and provider side) to exclude other market participants, e.g. ISPs to guarantee that specific functionality?

It will become difficult to find objective arguments to support why MNOs would be able to guarantee a specific QoS while ISPs will not. It would probably not be possible to exclude non-MNOs entirely.

Other solutions, e.g. that the TLD could be restricted to MNOs, whilst other players have the right to provide services on MNO platforms under the same M-TLD umbrella, would be more realistic from a legal perspective. Practically, a scenario where ISPs and content providers can provide their services only via MNO portals seems to be very unlikely.

Code of Conduct:

The Code of Conduct approach is by definition a voluntary commitment to accept and execute a set of rules specified by the code and commonly supported by a group of interest holders. There are no legal obligations for anyone. It is a non-binding agreement.

Example:

Any registrant (any individual or any organisation wishing to register a domain name under the M-TLD) accepts the rules specified by the code of conduct, which ensure that only services guaranteeing a defined QoS are marketed under the TLD umbrella. It is made clear to registrants that the value of the M-TLD is derived from fulfilling the rules specified. Should registrants misuse the M-TLD, no legal action can be taken by the registrar, the registry or any other party. The system works on basis of a common understanding and mutual trust.

A second issue is “cybersquatting”. Cybersquatting which is known from the fixline Internet where individuals or organisations register domain names they feel are valuable (usually brand names). Brand owners wanting to use the domain name have to purchase the squatted domain names at high price. This phenomenon kept organisations and lawyers quite busy. However, cybersquatting is not a M-TLD specific topic, it already exists for any given TLDs and any new one to be allocated.

6.3 Potential implementation concept, including naming

Based on the analyses provided above and the statements collected during the interviews, the most reasonable implementation concept is as follows:

- Application in line with the Code of Conduct concept
- Driven by a larger group of interest holders, ideally including the UMTS-Forum and the GSM Association and players from the Internet world. It will also be important to decide who should run the Registry for the M-TLD
- Strong focus on benefits for the end-user through the introduction of the new TLD
- Attributes to be linked with TLD would still have to be defined. They should centre around the key differentiators mobile services will have compared to fixed line internet, e.g. QoS
- TLD name could be anything, most liked was .mobile

- Activities to bring all required parties together and start the preparation should be started in the short-term. A ready-to-roll concept could be set-up, with a view to avoiding any last-minute applications

6.4 Resource requirements

Before a decision to apply for a TLD is taken, it is also important to understand its resource implication and how a registry is run.

Preparation for application/application

To prepare for application, it is advisable to found a consortium or any other type of organisation which

- defines the application content (marketing concept, technical expertise, business plan etc.)
- develops the application documents
- provides the financial background and
- has a management team that is highly regarded in the market place and has solid experience in related business (e.g. data centre, registry, registrar, ISP) to support the application at all required levels (e.g. lobbying)

An organisation, which has been already set-up to run the application, will provide higher level of confidence at ICANN. It will illustrate commitment to invest and the willingness to succeed and execute (compared to an application by individuals without existing formal organisation).

The recent applications indicate that about one man-year will be required for the initial application phase. Additionally, depending on the background of the applying organisation and its options on involving resources of backing organisations, funding for example for supporting studies, might be required.

Setting up the M-TLD Registry

After the TLD has been granted, capital will be required to set a TLD Registry to prepare for the launch of services.

Investment depends mainly on the number of domain names the Registry has to administer. For illustration purposes, a magnitude based on the figures SITA used for the .aero TLD has been assumed (pessimistic case: quarterly about 5000 registrations and almost 100% renewal in subsequent years over a period of about 5 years, some adjustments on time and investment required in pre-launch phase have been made).

Capital will mainly be required for:

- Sites and hardware (data centres, name server sites, servers, firewalls, disk space etc.)
- Software and system development
- Bandwidth, capacity to link infrastructure (data centre, name servers etc.)

Funding will additionally be required for:

- Staff (Management, Engineering, Operations, Marketing and Sales etc.). Most of the required services can be outsourced. The cost however will be within a comparable magnitude (it has been assumed that registration services are done by ICANN accredited registrars and no additional sales channel has to be built).
- Marketing expense (branding, advertising, promotions)
- Overheads (facilities, legal fees etc.)

The following table illustrates a possible cost/revenue scenario:

When	Cost	Revenue
Application	at least 0.1 -0.2m €, assuming similar application rules as in 2000.	0,- €
Pre-launch, excluding application, incl. launch	Capex: 1,0m € Opex: 0,5m €	0,- €
Post launch (annually)	Capex: 0.1m € Opex: 0.75m €	0,9m € (5 years average)

(Please note that the data provided has been taken from business plans provided to ICAN for application purposes. Actual cost data of individual Registries were not available)

Table 6.4: Financial Requirements

In case of higher demand for domain names under the M-TLD, higher revenue can be expected at almost similar cost.

7 Part II: Interview Results

7.1 Introduction

When conducting out the interviews with market participants, different levels of knowledge concerning the M-TLD topic among the interview partners were identified. This had an impact on the quality of responses, which ranged from very basic “gut-reaction” to well thought through comments.

It was established that Network Operators and Hardware Manufacturers had the deepest understanding of the M-TLD topic. Some of them had already done some research from their individual perspective.

Industry bodies and registrars followed close behind. They approached the issue from an Internet perspective and could give helpful insights with their knowledge of TLDs in general.

Internet Service Providers, Application Service Providers and Content Providers showed interest in the topic but did not possess a deep knowledge on the topic. Most of them did not recognise it as a current important issue.

Private and business users had no deep knowledge of a M-TLD at all.

It could be identified that interview partners with a higher level of knowledge or understanding of the M-TLD issue had a better attitude towards a M-TLD than the interview partners with only little knowledge or understanding.

Chart 7.1 summarises these findings.

The higher the understanding about the topic, the more positive attitudes were recognised toward a M-TLD

UNDERSTANDING OF TOPIC AND ATTITUDE ABOUT A M- TLD

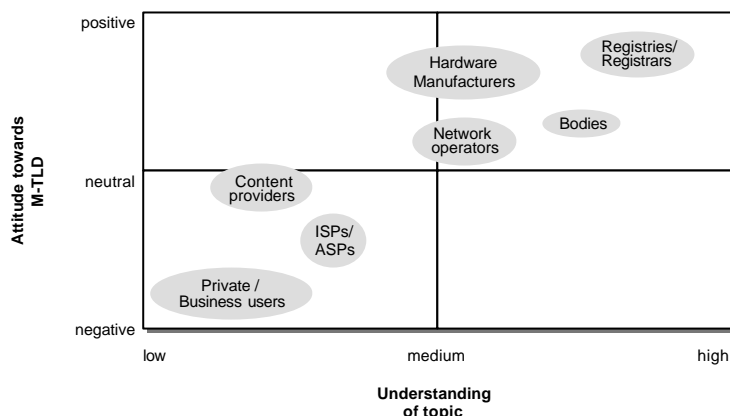


Chart 7.1: Level of understanding and attitude towards a M-TLD

7.2 Definition of a M-TLD

Before looking into the benefits, drawbacks and the organisation and management of a M-TLD in more detail, the term “Mobile Specific-TLD” must be defined. The interview partners were asked what they understood a M-TLD to be.

The answers were not very focused. A M-TLD was widely perceived as being about mobility and carving out a name space for mobile devices, content about mobility, mobile content and mobile services (see Chart 7.2).

The M-TLD was widely perceived as being about mobility and carving at a name space for mobile devices, content and services

DEFINITION OF A M-TLD

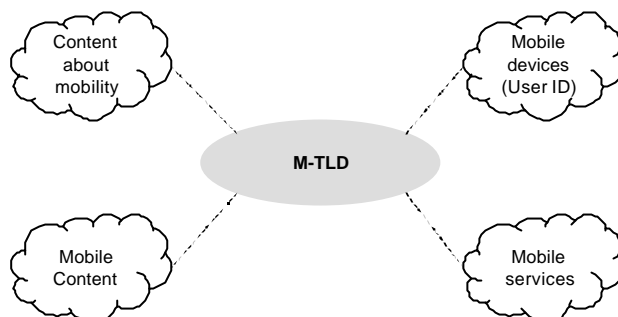


Chart 7.2: Definition of a mobile specific TLD

The idea of a technology specific TLD like .umts was rejected by nearly all of the interview partners. The prevailing view was that a TLD should not be linked to a technology. The identified reasons can be summarised as follows:

- Technologies change over time, while a TLD name must have sustainable and independent power
- A technology specific TLD is confusing to the user, because it is too difficult for users to understand differences in technologies (and providers pre-dominantly focus on selling services and not technology)

A technology specific TLD like .umts was heavily rejected. The prevailing view is that a TLD should not be linked to a specific technology

COMMENTS ON TECHNOLOGY SPECIFIC TLD

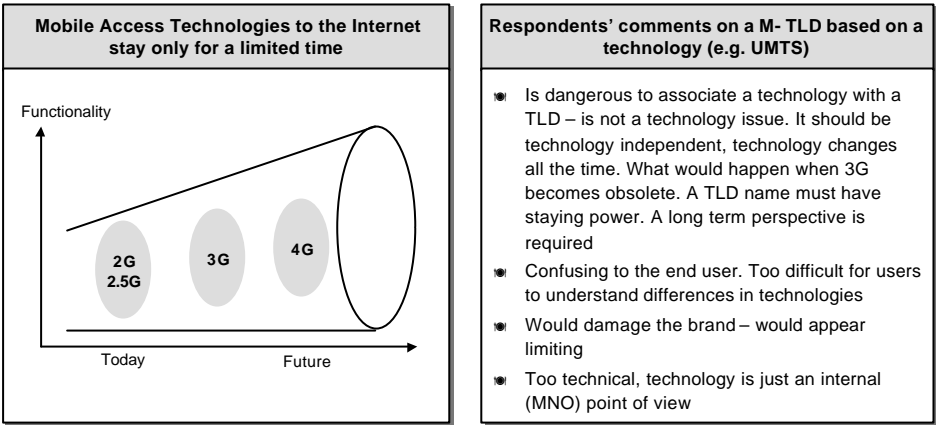


Chart 7.2.1: Views on technology specific TLD

7.3 General attitude towards a M-TLD

Overall 43% of the interview partners were generally in favour of a M-TLD, 33% were strictly against the idea and 24% were interested, but identified some issues that had to be clarified before they would decide whether to support the idea of a M-TLD or not.

These numbers are based on the 33 interviews with companies only, because nearly all of the end-users did not have a deep understanding on the topic and therefore only had limited knowledge.

Almost half of the interview partners were in favour of a M-TLD

NEED FOR A MOBILE TLD?

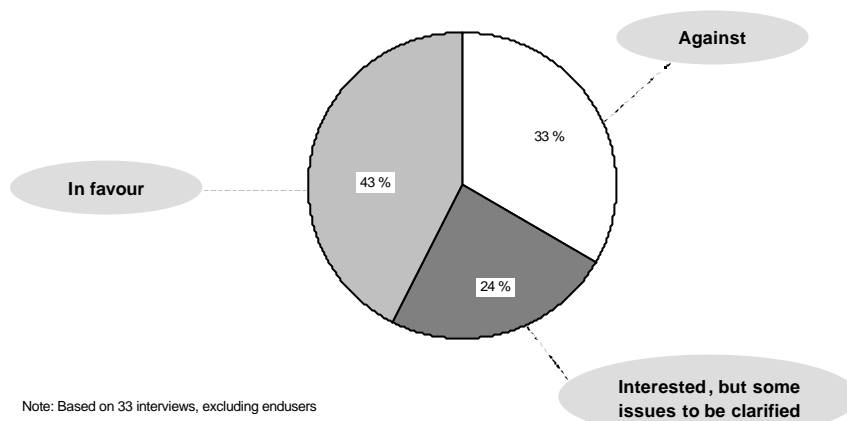


Chart 7.3: General attitude of the interviewed companies towards a M-TLD

It could be identified that within a sub-group of similar market players (e.g. hardware manufacturers) mostly similar opinions about the idea of a M-TLD were expressed, whilst there were more mixed opinions between the different sub-groups:

- Network operators, hardware manufacturers, Bodies and Registries were mostly in favour of a M-TLD
- ISPs, ASPs and Content Providers were mostly neutral or against the idea of a M-TLD or they expressed no strong opinion. Only one ASP was in favour of a M-TLD
- End-users mostly expressed no strong opinion, due to lack of understanding

Chart 7.3.1 summarises these findings:

Opinions on the need for a M-TLD were mixed between the different market players

M-TLD OPINION BAROMETER

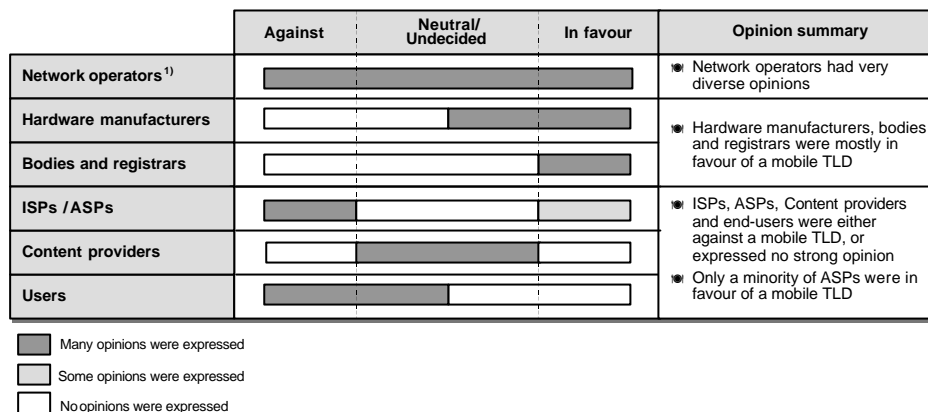


Chart 7.3.1: M-TLD opinions by market player segment

Even though most of the interview partners had a positive attitude towards a M-TLD in general, they also identified that a M-TLD must have some real benefits to the end-user and/or their businesses. The idea of a not well thought-through M-TLD was rejected by many of the interview partners.

Consequently, the benefits and drawbacks of a M-TLD have been further investigated in the next section.

7.4 Benefits and drawbacks of a M-TLD

7.4.1 Benefits

The interview partners identified the main benefits of a M-TLD in marketing and technology. There were no clear indications of benefits from a regulatory/legal or financial perspective.

Marketing

The marketing related benefits identified from the mobile market players can be summarised in two groups. The first benefit is from a provider's (provider of services or hardware) perspective and focuses around the possibilities of promoting mobile services and content. This includes the differentiation of mobile access to the Internet from the fixed line Internet, the provision of a label of quality and an easier brand communication perspective.

The second benefit is taken from the end-users' perspective. A M-TLD will assist end-users in finding mobile content and services. It simplifies the search for mobile services and content and signifies to the end-user the optimisation of the Internet for mobile access.

























Technology




Two technology-related benefits were identified from the respondents. The first is about providing a dedicated Internet domain space for mobile players. The second is about bringing together telephony and Internet.

It was established that different groups of market players had different opinions about the potential benefits of a M-TLD. Chart 7.4 provides an overview of the identified benefits split by views of different groups of players.

Hardware manufacturers, industry bodies and some network operators see the most benefits from a mobile TLD

BENEFITS IDENTIFIED

	Hardware manufacturers	Bodies ¹⁾	Network operators	ASPs/ISPs	Content providers	End-users
Organise, differentiate, increase visibility of mobile access to the Internet						
Assist end-users in search						
Provide dedicated Internet domain name space for mobile players						
Bring together telephony and Internet						

 Clearly identified
  Identified by some
  Not considered a benefit

1) Bodies include: ICANN, Internet registration service providers, industry co-operations

Chart 7.4: Identified benefits of a M-TLD grouped by market players

It became clear that hardware manufacturers and bodies (including ICANN, commercial Internet registration services and industry co-operations) expect the most benefits from a M-TLD. Network operators are slightly more cautious about the potential benefits a M-TLD. ASPs, ISPs, content providers and end-users are not entirely convinced of the benefits offered by a M-TLD.

All market player groups identified promoting mobile services and content from a marketing perspective as first issue. This indicates the importance marketing within the M-TLD discussion.

7.4.2 Drawbacks

The respondents identified the main drawbacks of a M-TLD as marketing and technology. Some more specific drawbacks were identified from a regulatory/legal perspective.

Marketing

The drawbacks of a M-TLD from a marketing perspective again can be summarised from two perspectives: end-user-related drawbacks and provider-related (MNO, ISP, vendor etc.) drawbacks.

The main argument of the user-related drawbacks is that a M-TLD could confuse the end-users (for example if a provider communicates a service offering under two different TLDs).

One drawback identified from a provider perspective is that the introduction of a M-TLD will add complexity and expense to the company's brand management. Previously, providers have promoted their brand without a M-TLD. If a M-TLD is to be introduced, these providers need to change their communication to that TLD. This will increase marketing costs. In addition, a provider would have to register a domain under the M-TLD for protective reasons, even if they do not want to use it.

Technology

























The interviewed market players also identified some technology-related drawbacks. The first identified drawback was that there were enough capacity for domain names under the existing TLDs and that therefore a M-TLD is not needed.




A second technology-related drawback was identified by nearly all of the ISPs and ASPs. They do not want to have a second TLD for mobile services and content, because they do not want to differentiate content and services by the platform from which they are accessed.

The drawbacks that were identified by the mobile market players are summarised in Chart 7.4.2:

ASPs and ISPs were the biggest opponents to the introduction of a M-TLD; end-users were largely unable to identify any clear benefits

DRAWBACKS / REASONS NOT TO INTRODUCE A M-TLD

	Hardware manufacturers	Bodies ¹⁾	Network operators	ASPs / ISPs	Content providers	End-Users
No clear or understandable benefits for end-users						
Adds complexity and expense to brand management						
Sufficient number of users can be handled under existing TLDs						
Unwanted differentiation of content and services by platform						

 Clearly identified
  Identified by some
  Not considered a drawback

1) Bodies include: ICANN, Internet registration service providers, industry co-operations

Chart 7.4.2: Identified drawbacks of a M-TLD grouped by market players

It can be seen that ASPs and ISPs identified the most drawbacks of introducing of a M-TLD. Content providers, hardware manufacturers, bodies and network operators identified some, whilst end-users did not identify any benefits for themselves from the introduction of a M-TLD.

Respondents see the fact that the end-user did not identify any benefits as the most important. This indicates that if a M-TLD were to be introduced, demonstrating a real benefit for the end-user is one of the essential issues.

7.5 Organisation and management of a M-TLD

7.5.1 Restrictions of a M-TLD

To differentiate a M-TLD from other TLDs, some restrictions for this TLD must be defined. Two factors for the restriction of a TLD could be identified in course of the interviewing:

- What type of content/service can be registered under a TLD?
- Who can register a domain name under a specific TLD?

Examples:

- The .info TLD is completely unrestricted. Everyone can register any type of content or service under this TLD.
- The .aero TLD is restricted to members of the air transportation industry. Therefore, content and services are restricted within the air transportation industry (e.g. air carriers, airports, suppliers, freight carriers and pilots).
- The .name TLD is restricted to individuals. However, there are no restrictions for content and services offered under this TLD.

The respondents offered a variety of opinions surrounding the issue of restrictions of a M-TLD. No clear opinion could be identified; there was however, some indication for preferred restrictions.

Domain name ownership

Opinions were mixed as to whether the registration of a domain name under a M-TLD should be restricted or not. No clear preference within the groups of different market players could be identified.

However, the majority of the mobile market players held the view that a M-TLD should not be restricted to one specific group. Whilst they were undecided as to whether domain names under a M-TLD should be open to everyone or just to players in the mobile market (see Chart 7.5.1).

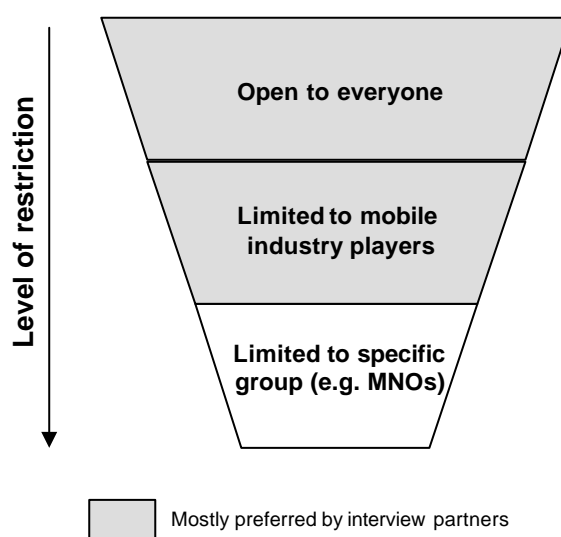


Chart 7.5.1: Preferred domain ownership restrictions

Reasons behind these opinions were that a M-TLD is for the mobile industry and that it should therefore be restricted to the mobile industry. It would be much easier to control certain quality standards if a M-TLD were to be restricted to players of the mobile industry. In contrast, some opinions were that the Internet is a free medium and that restrictions contradict the concept of the Internet. Restrictions will be complicated to define and to enforce. Legal challenges will be the result of restrictions.

Content/Services

A variety of opinions was expressed on what content and services a M-TLD should cover. No clear preference within the groups of different market players could be identified.

The majority of respondents saw a M-TLD open for content and services that are optimised for mobile use or that services are purely designed for mobile access (e.g. location based services). The TLD should not be open to any content, e.g. open for all type of content about mobility. It was possible to establish that a M-TLD should not be about a technology (e.g. UMTS) as mention earlier. Chart 5.10 shows these results in an overview:

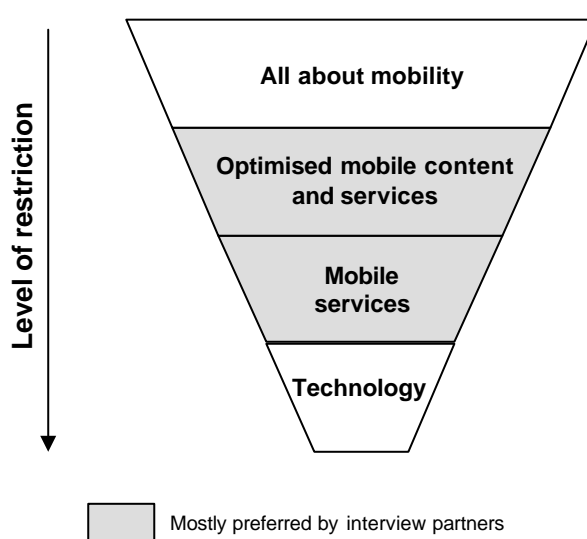


Chart 7.5.2: Preferred content/services restrictions

Reasons behind these opinions were that a M-TLD should broadcast a clear message and that content and services are primarily, but not only, for use on mobile platforms. A restriction would create a meaningful mobile community. Creating a label of quality would be one of the most important benefits of a M-TLD.

7.6 Management of a M-TLD

Clear opinions were expressed on who should run the registry of a M-TLD. The consensus was that it should be an independent, trusted and industry-backed organisation. It should be globally accepted and all players in the mobile industry should have the chance to be part of this organisation.

The opinions on whether this company should be a profit or a non-profit organisation were split. The perceived advantage of a profit organisation was the expectation that it would provide better services whilst the advantage of a non-profit organisation was that it would prevent misuse in domain name assignment.

7.7 Names for a M-TLD

A TLD name should be understandable in many languages and should be international. It should be obvious and communicate what is behind the TLD.

There was a variety of proposals for a M-TLD name. The preferred name was “.mobile”. This name was preferred by nearly all of the interviewed respondents. Other proposals that were mentioned are listed below:

- .mob
- .mbl
- .mty
- .go
- .cel
- .loc
- .mume (for multimedia)
- .online
- .tel
- .phone
- .person

7.8 Outlook on a M-TLD application

It was established that some of the interview partners close to the ICANN TLD application process believe that a M-TLD will be introduced in the foreseeable future.

Although the Nokia application was not accepted in the first round, the concept of a M-TLD received widespread support, particularly in the ICANN public forum. ICANN

Board members are generally receptive to the concept of a M-TLD, particularly if an application is strongly backed by a broad range of industry players.

Some of the interviewed Internet Registries and Registrars have indicated their willingness to be involved in a future application. They believe that a M-TLD has a huge market potential and it would therefore be accepted in the next ICANN application round.

Some of the interview partners expressed the opinion that the mobile industry should be proactive in applying for a M-TLD; otherwise, someone else will apply for a M-TLD.

Appendix A: ICANN objectives in introducing new TLDs

The reasons why ICANN wanted to introduce several new TLDs can be summarised in three main categories:

- Enhance the competition for registration services
- Enhance the utility of the DNS
- Enhance the number of available domain names

Enhance the competition for registration services

The main reason for introducing new TLDs to the DNS, is a “widespread dissatisfaction with the absence of competition in domain name registration” (White Paper, US Government).

It could be observed that competition at the level of registrars has increased over the last few years. However, at registry level, there is still only a low level of competition. One company (Verisign) is responsible for the domain names under the TLDs .com, .org and .net. More than 60% of all domain names are registered under these TLDs worldwide.

“This situation limits the effectiveness of overall competition and, even aside from strictly competitive issues, gives rise to concerns over the Internet community's lack of vendor diversity.” (ICANN).

Enhance the utility of the DNS

ICANN expects that new TLDs will enhance the utility of the DNS. With new TLDs it will become “easier for Internet users to find the web sites and other Internet resources they are seeking and would make it easier for the providers of Internet resources to be found”.

TLDs should be given “charters” which define the purposes for which they are intended. This would give TLDs a meaning and they would distinguish them from other TLDs.

Enhance the number of available domain names

As already stated, theoretically there are enough domain names available. However, the number of useful and desirable names is smaller than the number of theoretically possible names. Most of the “good” names are already registered. A new TLD will increase the number of available “good” names again.

Appendix B: List of respondents

In course of the study the following organisations participated in the interviewing and feedback discussions (excluding end users, which cannot be disclosed). In some cases several respondents within the same organisation have been interviewed, e.g. ICANN board members.

BeatNIC, Cube
Bertelsmann
British Telecom
Compaq Computers
Deutsche Telekom
Ericsson
Financial Times D
France Telecom
GlobalPlace
GSA Association
Hutchison 3G
IBM
ICANN
IOBox Group
Lycos Europe
Moon.AG
Motorola
Nokia
Paybox.Net AG
Pearson
Rabbiton
Room 33
Siemens
Sitenam/Affilias, .info
Sonera
Space2go.com
Swisscom Mobile AG
Telefonica Moviles
TelNIC
The GlobalName, .name
TIM
T-Online
UMTS Forum
UUNET, Worldcom
Vodafone
Westel