The Mobile TLD

Why the Internet top-level domain (TLD) enhanced for mobile use is important for the mobile industry and what should be done to ensure that it is created

An internal white paper for information to better understand the subject by the UMTS Forum mTLD Group.

This document is produced by the UMTS Forum, an association of telecommunications operators, manufacturers and regulators as well as ITand media industries interested in broadband mobile multimedia who are active both in Europe and other parts of the world. All members of the Forum have supported the development of this document. However, the views and conclusions expressed in this report do not necessarily represent the views of every member. Therefore the individual members cannot be bound by the detailed recommendations contained in the report. The UMTS Forum as an organisation does not have a position on mTLD.

Table of Contents

1. mTLD Vision Statement

An mTLD will permit the mobile industry to create globally implemented industry-wide naming solutions to a number of business and technology challenges. It will also facilitate the use of easily recalled text addresses - - names or words - - as an alternative to phone numbers and complex IP addresses. Finally, an mTLD will enable an optimal mobile business environment with easy to use and recognizable services.

2. Introduction

2.1.   Understanding the need for an mTLD

2.1.1.   Naming is a mandatory component in all packet networks for object identification and operative optimisation

Originally, only IP numbers were used on the Internet. When an increasing number of nodes and people using those nodes became involved during the early 80's, using numbers for finding other nodes was no longer feasible. One reason was that publishing an up-to-date directory became overly cumbersome. Thus, the Domain Name System (DNS) was created, whereby people could start using **names instead of numbers.** For example, when you enter www.umts-forum.org into your browser, it is translated by the DNS to the IP address **199.108.107.60**. If you want, you can go ahead and use this IP address for surfing, too, but it's not quite as easy to remember, is it?

Also, if the owner of the node (UMTSF) decides to change the IP address for any reason, communicating the change to the user community would require quite an extensive effort. This separate effort is not needed, because DNS's name to address mapping leads users automatically to the new address. Change of address may happen e.g. due to a move of the node to another part of the network or other re-allocations of network numbers.

To give a logical structure to the naming conventions and to distribute their management, a set of **'generic top-level domains' (gTLDs)** were established for different uses: **.edu** for educational use, **.gov** for government use, **.mil** for military use, **.org** for organizations, **.com** for commercial use etc. Within these TLDs one could then register a 'second-level domain' like **ucla**.edu, **fbi**.gov, **cnn**.com etc. Since the Internet was first being used primarily in the US and during the 80's to

human mind finds it much easier to remember them. We all also like to use the phonebook in our mobile handset and as a result very seldom actually remember the phone numbers of our friends and acquaintances at all. We should not expect people start to learn them again.

Figure 1: Names are fundamentally human

In short, naming is the natural way for people to refer to things like other people, pets, plants and places.

2.1.2.   Naming is a key control function

The 'mobile internet' is a fusion of the mobile telecommunications world and the Internet world. Currently the Internet industry is actively promoting its own solutions. If the mobile industry does nothing in this area, it will have very little control over what happens, playing a game where others make the rules. This is not to imply that there are inherent conflicts of interests, but we need to proactively make sure our needs are considered, too.

The importance of the mTLD for retaining control of several central aspects of the future mobile communications business is outlined in more detail below.

2.1.3.   The current DNS is a limited resource inadequate for the needs of the mobile industry.

The Domain Name space is crowded, especially in many of the country code TLDs (ccTLDs) and the .com TLD. This leads to legal disputes and the inability of companies in major markets to achieve satisfactory marketing of their products. Although ICANN, the Internet Corporation of Assigned Names and Numbers, decided in its October 2000 meetings to create seven new top level domains (.aero, .biz, .coop, .info, .museum, .name and .pro), the specific needs of the rapidly growing mobile business have not yet been considered. The new mobile TLD will expand the total name space and alleviate some pressure in the ccTLD and gTLD domains. It will also provide the mobile industry with an opportunity to uniformly contribute to the technological development of the DNS.

Today, there are already about 21,3 million .com second-level names, i.e. of the format **something.com**.[1] It is worth noting that most meaningful names even containing 'mobile' or wireless have been registered in the .com TLD as well as all major ccTLDs. Since a high percentage of all registered .com names are unused and just reserved by speculators, it is clear that users are not being offered the level of service they should when trying to find mobile contents and services.
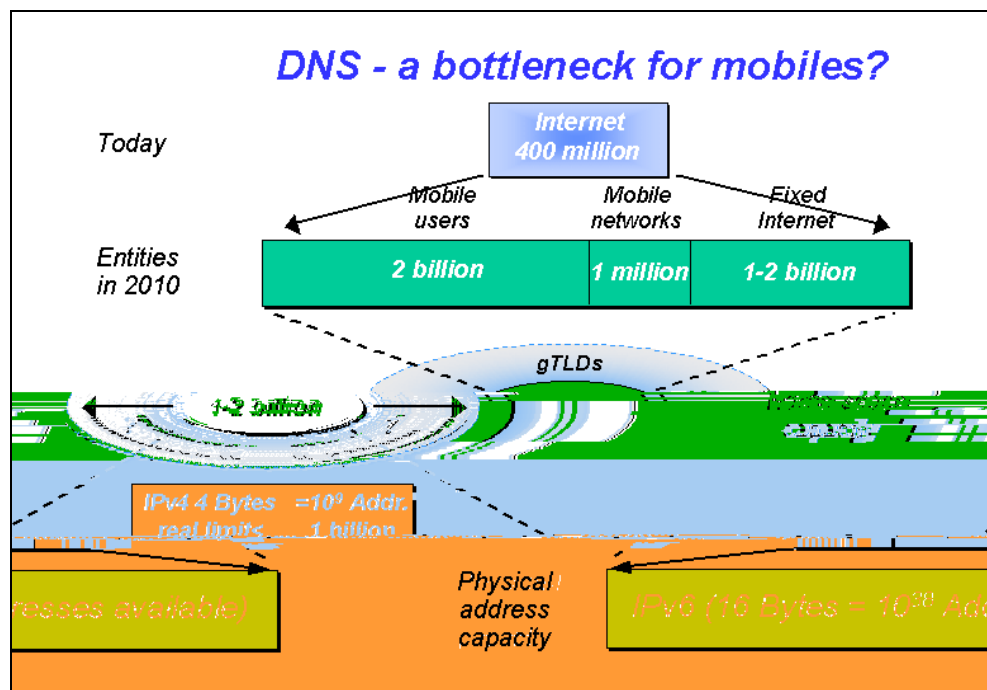
Figure 2: DNS – a bottleneck for Mobiles?

Although it's important to keep in mind that naming is a separate issue from addressing, they do present similar allocation and capacity problems for large numbers of mobile users. Naming and addressing are also strongly interrelated, when we move towards IPv6 implementations. Both routing support and DNS need upgrading to support new IPv6 based versions.

It is probable that more IP addresses will soon be needed for mobile use than for fixed line use. The IP address demand in the Internet today with approx. 500 million users will go up to 4 to 5 billion by 2010 depending on how many addresses per device is required. Considering, that the current user population has required already more than 2 billion addresses, IPv4's ~4 billion addresses will not be enough for long. The mobile industry decided already in 2000 to introduce IPv6 for mobile multimedia services in order to remove the physical address capacity limitations of IPv4. IPv6 will enlarge the physical address capacity to 10^{38} addresses. As shown in Figure 2, this address capacity will easily cover the demand for the long-term future, also taking into account that even small devices need multiple addresses due to multiple I/O ports per device in the future and also increasing demand of addresses for small intelligent gadgets.

2.1.4. Dedicated naming supports image building and business differentiation of mobility

If the mobile industry has its own TLD with a suitable name it will be able to ensure an offering of high-quality services under a common umbrella. In this paper, **.xyz** has been used since a name

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[1] Source: Domain Worldwide www.domainworldwide.com/

for the TLD is yet to be selected. There are already a number of suggestions, but a selection process needs to take place to choose the one to be used. (See section 6.)

In these rapidly changing technological times, when lots of both wireless and wire line services of greatly varying quality compete for customers, it is imperative that the mobile industry quickly establish **a uniform of quality.** People should be able to trust that whenever they use .xyz services, they will be optimised for consumption by a mobile user on the go and suitable for their terminals with limited bandwidth, memory, screen size, processing capacity etc.

These issue

It is important to have global attention to this issue. Based on current experiences from .com, it is obvious that mobile users would be best served by a single global mobile TLD. Having no mTLD or more than one would be very troublesome for handset users.

Since Internet companies typically are not UMTS Forum members, the members of the forum should be active in using their contacts to invite registry operators to get involved in the mTLD work. This is important since they possess invaluable expertise that is needed from the beginning of creating the detailed specifications of the mTLD infrastructure. Besides endorsing active participation in the mTLD Group by its operator members, the UMTS Forum hence decided at the GA#26 to encourage the participation by non-member companies who are potential registry operators of the mTLD to be created.

3. The mTLD Concept

As explained above, domain names have been used to create a user-friendly name or brand for content. As the number of users and quantity of data mushroomed, it became necessary to segment content into different TLDs denoting either the nature of the content provided: commercial, non-profit, professional, education, museum, etc. or based on its country of origin: .uk, .jp, etc.

In the fixed Internet, the fact that most users were accessing content from (fixed) PCs using a limited number of browsers: Internet Explorer or Netscape Navigator has limited the need for segmentation to content type or geographic location/language.

The introduction of mobile devices and mobile users has created the need to further segment content: First, because of the constraints mobile devices place on both the quantity and nature of the data that can be displayed. Second, because the content must be tailored to match the unique needs of mobile (vs. fixed) users. Because both data and usage are unique to the mobile user, mobile content must be segmented from fixed content. The simplest and most intuitive solution, from both a user and a Registrant perspective, is to create a unique mTLD for mobile content.

3.1.   What will the new mTLD provide?

The mTLD will provide a global domain name registry specifically focused on text (names, brands, etc.) identifiers for contact and content information and services for mobile devices.

The mTLD registry will be used by Registrants to extend their brand into the mobile data space, specifically as the domain name for information and services for the mobile community.

In many cases, the mTLD (domain) name will be the same or similar to established domain names in one or more of the gTLD or ccTLD registries. This capability will allow Registrants to build on the equity in their established brands while easily segregating content for mobile devices from fixed Internet content.

It is anticipated that the mTLD will be used as a platform to provide additional services that are unique to this environment.

3.2.   Why Registrants will adopt an mTLD

As it is not possible to have duplicate domain names within a single TLD, Registrants are faced with the unacceptable requirement of branding their mobile content separately from their primary

brand. For example: IBM would have to rename their *ibm.com* site to *ibmmobile.com,* or *mobile.ibm.com,* or *wap.ibm.com,* or *ibm.com/wap* to represent their mobile services. As a result, it would be difficult, if not impossible for an End User to guess the correct address. Most Registrants would find either alternative unacceptable, as it would require IBM to build a new brand around their mobile content.

The introduction of a new mTLD will solve this problem by allowing registrants to register their existing brand (domain name) in the mTLD, providing fixed/mobile segregation while maintaining the appearance of a single domain. Therefore, IBM would register *ibm* in the mTLD, allowing fixed content to be accessed (branded) *ibm.com* and mobile content to be branded *ibm.xyz.*

3.3.   Why users will adopt an mTLD

Users will quickly understand and accept the mTLD as it allows them to easily identify the content they desire in the mobile space based on established names from the fixed Internet space.

3.4.   How will the new mTLD work?

The mTLD will be operationally compatible with established Internet architecture: both IPv4 and IPv6, and will operate without alteration. Registrants will be allowed to register their desired identity so long as there is no duplication of mTLD domain names.
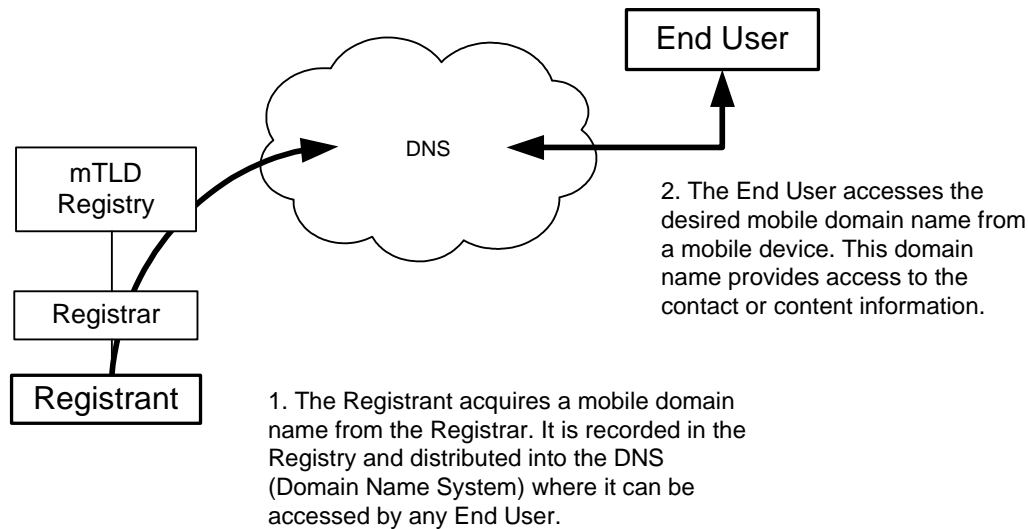
Figure 3: Name registration and Resolution

3.4.1.   Contact Information

Registrants will have the option of registering a simple online "business card." This will include basic contact information such as phone and email. End Users will be able to display this information and select the appropriate entries to initiate contact with the registrant. (see Glossary for an explanation of the mTLD community members.)

This service is intended for, but not limited to, individuals and small enterprises.

3.4.2.   Content Linking

Registrants will also have the option to use the mTLD registration to point the End User to a mobile Internet application: a Wap site, an I-Mode site, games, or other mobile applications.

This service is intended for, but not limited to, registrants who wish to provide more robust information and services to the mobile community. It is anticipated that registrants may start by simply implementing an online business card, then transition to more advanced functionality as their content is developed.

4. Key Benefits of the mTLD

4.1.   The interests of the mobile industry

The mTLD is to be created for mobile users that have access to mobile Internet services. The rationale for the mTLD can therefore be seen as unique and summarized as follows:

Optimized business value chain for the mobile industry

the mobile Internet needs to be defined in connection of those efforts. Important part of the effort is harmonizing critical naming components between operators. So first priority is that an End User is able to find the service and second to give users the necessary "Trust" that a service will work on his/her mobile terminal and that his/her "Expectations" will be met.

4.3.   The interests of the Registrants

Benefits to application and Registrants
▪   Ability to extend their current brand into the mobile space ▪   Mobile content and applications are easy to identify and discover ▪   Improved and consistent directory structures / naming conventions for mobile services are enabled ▪   The availability of a desired name is much more probable ▪   There are greater possibilities to collect mobile-specific statistics

While End Users will be the ultimate source of revenue and measure of success of the mobile Internet, content: information and services, is the reason users access the mobile Internet. Therefore, the mTLD must support and encourage the creation and access of content.

The mTLD will provide a logical naming convention that parallels the current TLD structure, but allows Registrants the opportunity to extend their established brands into the mobile space.

4.3.1.   The interests of the Network Operators

Benefits for mobile ISPs and Operators
▪   New opportunities for improved services are created ▪   Value-added services around naming ▪   More network revenue will be generated with improved user acceptance ▪   Better control of the user experience by avoiding inappropriate use is offered ▪   Better user satisfaction through quality of service control and improvements are possible

Active participation by the Operators is critical to both Registrant and End User adoption of the mobile Internet. Registrants must have a single mobile brand, provided by the mTLD, or they will not develop and promote content. The lack of meaningful content will result in low user acceptance and ultimately to the failure of the mobile Internet to reach its full potential.

The mTLD will not be based on a 'closed garden' solution. Content is not unique to any one provider and therefore it will need to be open and constraint free.

4.4.   The interests of the equipment manufacturers

Benefits for equipment manufacturers come from a possibility to rely on jointly agreed naming practises, which enhance the possibility to simplify the user interface. That can bring increasing acceptance of new mobile services, which increase the market size for both new End User devices and infrastructure products.

For equipment manufacturers, it is essential to do their utmost to facilitate a rapid uptake of new 'mobile Internet' handsets by the users. As the user base grows, it will grow into a full-fledged business ecosystem with room for both very small, medium-sized and very large players to find their place for making profit.

So the mTLD is important to the equipment manufacturers in an indirect way, since it's quite possible they will not directly profit from it, e.g. by selling domain names. Still, ensuring that the mobile industry thrives and new services are actively embraced by End Users, is the most important long-term goal that the equipment manufacturers must be working towards, together will all other players

4.5.   The interests of the software industry

To an increasing extent, the 'mobile Internet' will have programmers write code where they refer to remote software objects residing in mobile handsets, servers and other nodes of mobile IP-based networks. Hence, they will have a growing need for an intelligently planned, uniform naming structure within the mobile realm to ensure that objects are named so that they can be easily found. This is closely linked with the needs of the operators in the areas of service roaming.

Software applications for mobile devices will evolve rapidly as various standards emerge. This is outside of the scope of the mTLD, other than for the mTLD to provide a consistent structure for mobile content identity and navigation.

The consumer/user benefits from all of the above mentioned points enabling advanced mobile services with convenient user interfaces and access made possible by the mTLD. These benefits are more closely examined in the sections below.

4.6.   Improved Access to People and Content

From the End User's perspective there are two areas of use that need to be distinguished when naming is being discussed: Person-to-person (contact) communication vs. accessing contents and services.

4.6.1.   The mTLD provides a simple and intuitive naming structure that facilitates reaching other mobile users

A mobile handset user should be able to reach any registered user, using the same name wherever both parties are and whatever the application is. A user should be able to easily recognize or identify the origin of the incoming data communication. This is something people have come to expect in the current GSM world of global roaming. Therefore, it is an important minimum requirement to ensure a user experience that is at least as good as the current one.

The introduction of a new mTLD should provide an opportunity to agree on a formal naming structure to be incorporated into handset applications: phone book, content access applications, etc. so that the user will have a consistent experience. Complex addresses should be simplified to   the   fullest   extent   possible.   For   example: firstname.lastname.IDextension@subscriptionprovider.xyz_(e.g. John.Doe.1958@MobileOp.xyz) or *nickname@userdomain.xyz* (e.g. Johnnie@jazzman.xyz).

While this reflects the current addressing mechanism of the Internet, we will need to study whether an mTLD will modify this structure.

As with other TLDs, trademarks, service marks and other corporate identities and famous names will be protected by allowing a sunrise period where mark holders are allowed to register their marks prior to opening the mTLD to general registration.

4.6.2. A simple and intuitive naming structure will allow identification of contents and services suitable for a mobile user

Since the user of a mobile terminal has a smaller screen, more limited bandwidth and less computing power than desktop workstat

4.7.1. Mobile content developers will benefit from greater visibility to the mobile world through the mTLD identifiers

Creation of an mTLD will clearly signal the unique nature of the mobile Internet space. As a result, content developers will gain recognition within the new mobile services space, and be able to profile themselves as companies who are knowledgeable of the unique requirements of this industry. Since use of the .xyz extension in a URL will be something of a label of quality, it may be able to boost the sales of companies who are mobile data specialists.

The mTLD provides a consistent brand and identity globally. Any mobile user, anywhere in the world will be able to access content using the same mTLD name. This inherent capability of the Internet will allow roaming users to maintain a consistent interface and address for content regardless of where they roam or access the mobile Internet.

4.7.2. MMS is the first good example in mobile services, where naming issues urgently need to be taken care of!

For End Users, it is valuable to have an easy way to remember the identifier of their friends for outgoina0.098 0 0 10.98 130.495.8244 489.18am or aendendg usean

As you can see, 10 of the 13 Internet root servers are on the same country. There are natural historical reasons for the current situation, since it was in the US where the beginnings of the Internet of today were created. However, recognizing that the Internet is now a truly global phenomenon and that there is an evolution towards a mobile Internet going on, we need to make sure that the current clustering of the root servers does not hinder providing a high quality service in a cost effective way for mobile Internet users everywhere in the world.

Unfortunately, in the current DNS technology, the list of the names and addresses of all the servers for a given domain must fit into a single 512-byte packet. Even after efforts were made to shorten host names, the number of root servers remains limited to 13. Therefore the current domains have difficulty to stretch to offer a quality, cost efficient service in all parts of the world. For detailed information, please see section 2.3. of the RFC 3226 at http://www.faqs.org/rfcs/rfc3226.html

This situation is slowly improving due to the fact that BGP anycast related mirroring techniques are being tested to operate copies of current root servers in new locations. However, the fact still remains, that the decision of the locations is made outside of the mobile industry.

It has been proposed that new DNS root servers need to be deployed in certain regions of the world in the near future, with the introduction of IPv6. The location and performance of those servers affect directly the quality of mobile services since IPv6 has been planned to be in use in next generation mobile networks.

It's important to remember that since the DNS is a distributed database, a query doesn't necessarily go through a root server but maybe just to the nearest second-level domain name server. Still, we are facing a situation where the current DNS is not designed to provide the kind of service predictability that we are used to in the mobile telephony networks on a global scale.

For instance, a user who turns off his phone in Stockholm and then on again in Barcelona a couple of hours later has no problems in continuing to place and receive calls and messages. The same applies to a user who speeds along a motorway from one German city to another. Uninterrupted service is no problem for the network.

To maintain the current service level in this respect, we need to examine the roles of various IP mobility components and their relationship with DNS to get an optimal, quality solution. Relationships of Mobile IP, SIP and DNS implementations come easily to mind.

When a communications channel is being established between two mobile handset users that are fairly close to each other, the latency caused by signalling first taking place across the globe to some server on another continent, would probably be completely unacceptable. Especially, when people are already used to calls being established fairly quickly, the hyper modern 'mobile Internet' cannot take a step backward in this area. What is even more important is the consistency of the service quality. If the response at times comes quickly due to needed information coming from nearby caches and again in other cases takes considerably longer, when a remote, global search is required, users easily become frustrated and feel that the service is not trustworthy. Therefore, a good plan for the global DNS service offering is required. That plan needs to serve equally well intra- operator, inter-operator and roaming traffic.

The IP Multimedia Subsystem (IMS) in UMTS enables communications sessions to be established between multiple users and devices. It also includes the ability to exchange real-time person-to-person communications, including presence and location information between IMS and other IP networks.

Below are some examples of potential add-on services on top of a well-planned naming system:

With an IP Multimedia Subsystem (IMS) phone, the integrated information/data services will enable on-line directories to be provided. An on-line directory is always updated, because the network updates it automatically when Mobile user details change. Furthermore, once the contact has been found in the directory, the user only has to click on the name or URL to be automatically connected. Imagine having the worldwide Yellow pages instantly on tap with quick easy hierarchical menu-driven search!

4.8.2.   ENUM

The mTLD initiative is unrelated to, and completely independent of, ENUM. Accordingly, the implementation of ENUM should in no way impact the introduction of an mTLD. The mTLD consists of (text) domain names (words, names, or brand names) that make up the URL. For example: hertz.xyz consists of a TLD (.xyz) and a SLD (hertz). This URL is used to identify either a contact or content on the mobile Internet.

In order for VoIP users to be able to communicate with conventional PSTN users some form of interoperability between E.164 numbering schemes and IP addresses needs to be provided. That function has been designed into the ENUM definitions. Country level implementation design of ENUM has been started.

An ENUM can only be a numeric value that must be transformed into a suitable URL. Examples include: addresses (i.e., a telephone number) or identifiers (i.e., an ISBN or Social Security number), that once transformed, create a URL that can access data regarding the subject identified, a book for example, or in the case of a telephone number to establish a connection between the originating party and the identified device.

ENUM is simply a protocol that defines a methodology by which any standardized number can be converted into a URL. In this simple example of the ENUM protocol, a telephone number 442078280000 is first reversed 000082870244, and then expanded 0.0.0.0.8.2.8.7.0.2.4.4. Finally, when the .arpa TLD and the .e164 SLD are added, it becomes a complete URL: 0.0.0.0.8.2.8.7.0.2.4.4.e164.arpa, that can be used to map the original phone number to an IP addressable device.

	Form	Function	Example
mTLD	Alpha	A URL to access a contact or content on the Internet	Hertz.xyz
ENUM	Numeric	A protocol that defines the procedure used to transform a number into a URL. Once transformed, the resulting URL is used to obtain information, or establish a link to an IP telephony device	442078280000 must be transformed into 0.0.0.0.8.2.8.7.0.2.4.4.e164.arpa

The confusion that frequently surrounds ENUM is often a result of the misuse of the term. While ENUM is a protocol, the term is often used to refer to various applications that utilize the protocol.

The primary function of ENUM is to enable the existing global telephone service with more or less traditional phones using telephone numbers to connect with the new IP telephony networks with new totally IP based phones. Traffic from an IP phone to an IP phone can flow without phone numbers, e.g. based on IP addresses alone or associated to an address via a DNS name. This DNS name can be also a phone number in a domain, e.g. phonenumber@mobileop.xyz. That addressing wouldn't work from an IP phone to a PSTN phone or vice versa. That function is, where the ENUM comes into rescue.

ENUM is a query-and-response implementation that allows devices to access an ENUM database for number translation, such as converting telephone numbers to URL addresses. ENUM implementation also requires a gateway service to convey traffic to proper paths between the PSTN and IP telephony networks serving an endpoint on one side to find an endpoint on the other. For E.164-to-IP-address translation, a centrally managed ENUM database is the key. The support of ENUM will therefore be necessary in future mobile networks as well. Without ENUM or a similar solution co-existence and inter-operation of the PSTN and new telephone systems wouldn't be possible. ENUM is meant to serve all of the PSTN, i.e. both the wire-line and mobile. To maintain and enhance the mobility identity ENUM also needs to support and enhance the differentiation of these worlds not only on the numbering side, but also on the IP side in DNS naming.

Additional functionality can be built above ENUM: Suppose the called party is out of office, but accessible by cell phone for specified users ('Boss', 'Spouse', 'Best business partner' etc.) and is only available via e-mail. ENUM will use the information in the DNS to divert the call to any address, like the one for fax, phone, e-mail, or some other type of communication. Similarly, if someone wants to e-mail you, but only has your phone number, an ENUM client could query the DNS with your phone number and retrieve the proper e-mail address. Implicit in being in constant contact is ENUM's ability to act as a link to many of the emerging communications technologies such as presence, e-mail, and any other IP-based application. The ENUM implementation is a combination of use of DNS and SIP (Session Initiation Protocol). ENUM extensions to DNS have been accepted by IETF/ICANN and trials have started in a number of countries, e.g. Germany, UK and Sweden.

All of the above clearly shows the need for a new *'enhanced mobile DNS'* to cope with the new requirements of the future mobile networks.

4.8.3.   Positive user experience from contents and services

With simplified access to content and contacts, the mTLD has the potential to offer the mobile industry a significantly improved user experience.

4.9.   Optimised value chain for the Mobile Industry

The mTLD can help to ensure that the mobile industry is able to decide its own business models. To be more specific, there are two areas of compelling business reasons for an mTLD:

a)   Ensuring that name registration of the mobile realm resides within the industry, as outlined in section 4.10.1. below.

b)   Ensuring that mobile services can be charged at a premium to fixed services, as specified in section 4.10.2.

c)   Ensuring that the mobile industry doesn't just pay the costs of configuring and maintaining the DNS service, but also gets its share of naming related new revenues.

4.9.1.   Ensuring that the mobile industry is involved in the decision making

The mTLD will be applied for under the sponsorship of an organization representing the mobile industry. A sponsoring organization will be formed and all   representatives of the mobile industrywill be invited to join that organization. The role of this sponsoring organization will be to set the policies governing the mTLD name business. The sponsoring organization has not only rights to control, but also duties in overseeing the correct running of the mTLD.

Currently, there are approximately 160 registrars globally that have been accredited by ICANN to sell domain names. These registrars will be the primary distribution channels for the mTLD.

Wholesale pricing of mTLD registrations will be established through negotiations with ICANN.

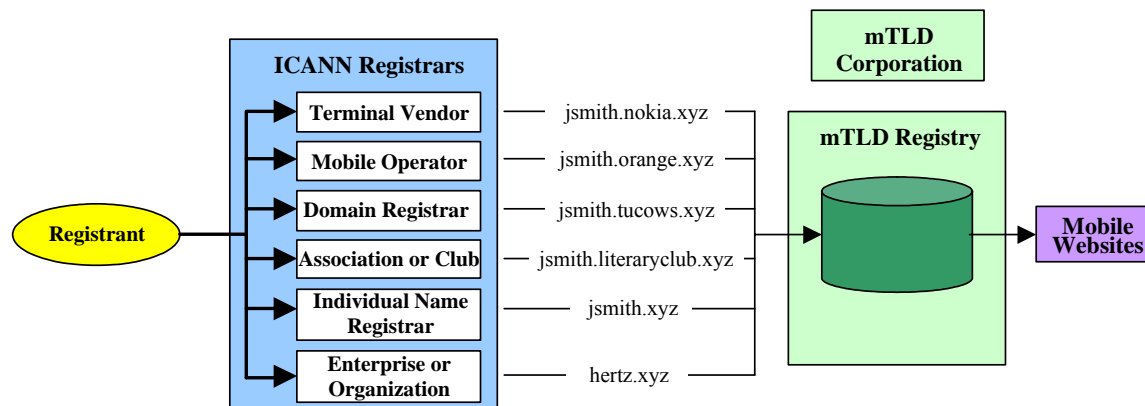## Example Business Models for the mTLD

Figure 6: Examples of certain aspects of possible revenue models for mTLD names
(The arrows signify process flows and the adjacent texts what is delivered)

The mTLD structure will allow third parties to establish subdirectories for corporations, organizations, generic domain names, etc. the exact function of these services will be defined by the organizations establishing the services.

When designing possible revenue models for the mTLD, one must keep in mind that there will be extensive structuring of the name space through second-level domains (SLDs) for specific purposes. For instance, SLDs based on country codes like **.de**.xyz, **.fi**.xyz, **.fr**.xyz, **.se**.xyz, **.uk**.xyz etc would be very useful. To be able to control certain types of uses and content, there exists an opportunity for SLDs like **.kids**.xyz and **.sex**.xyz. It is assumed that the sponsoring organization will determine the need for and timing of the release of these SLDs. Hence, Figure 6 above is just an example of what certain aspects of the mobile naming business could look like.

4.9.2. Market Size

4.9.2.1. Registrations

Currently, the total number of registered .com, .net and .org second-level domains (SLDs) is 27.2 million. The average annual wholesale payment for a domain name in these TLDs is currently USD 6, generating an annual business of USD 162 million wholesale. Portions of these registrants, probably less than 10%, (2.27 million) are probable candidates to register mTLD names as well.

4.9.2.2. End Users

The current addressable End User market is limited to the number of Internet enabled mobile devices. This is currently a very small percentage of the 1 billion available devices. As the market grows, the percentage that chose to enable the Internet function is expected to grow dramatically.

While these End User transactions will generate no revenue for the Registry, these transactions should generate data (packet) revenues and possibly a revenue shares for operators.

The estimate above is a rough one, since many classes of names will be offered and there will be prices both above and below the estimate in our example. Consumer prices may be lower than corporate names, but there will be far fewer corporate names in use than consumer names.

4.9.3.   Ensuring that mobile services can be charged at a premium to fixed services

Today, a person can in most markets be billed for making a call to a mobile handset, only if he is aware that he is dialling the number of a mobile subscription. Thus, the recipient need not necessarily pay anything for receiving calls – except when roaming e.g. abroad. This being the case, people carrying handsets can gladly keep them switched on, which allows many more incoming calls than would otherwise be the case. The end result is much more traffic in the mobile network, as is the case in those countries that use special area codes for mobile subscriptions. Compared to the case where mobile users are not differentiated, like in the U.S.A.

The same applies to the future situation when mTLDs names are used: instead of phone numbers. The contact information should indicate when the End User is about to establish communication with a mobile handset. Billing will remain the responsibility of the operator.

Internet top-level domain naming will become increasingly divergent with the adoption of many new domain names across different activities and sectors. Establishing and extending an mTLD brand and reach is clearly important as we place new distinct content and services to mobile consumers, and correspondingly there will be a need to differentiate these mobile-centric services and service providers from those provided through other media.

Overall, the mTLD will be a key factor for distinguishing the mobile world from other naming structures. It will also ensure that dilution and confusion in mobile naming does not become a future issue, and that brand control is retained and managed within the mobile industry, from the very beginning. mTLD produces clarity and avoids fragmentation in naming conventions.

5. Example Structure of the TLD Organization

The information in Section 5 represents one example of a structure for a global TLD service.. The ultimate structure of the mTLD will be determined by the members of the Sponsoring Organization.

5.1.   Sponsored vs. Unsponsored Registries

TLDs are officially classified into two main categories: Sponsored, or Unsponsored. A sponsored TLD has an organization or "sponsor", that ICANN has approved or will approve in the process of granting the TLD and to which it has delegated policy-formulation and administrative responsibilities for the TLD. Depending on the sponsor, ICANN may delegate more or less responsibility. An unsponsored TLD has no such organization and, therefore, they primarily adhere to the policies ICANN sets for it.
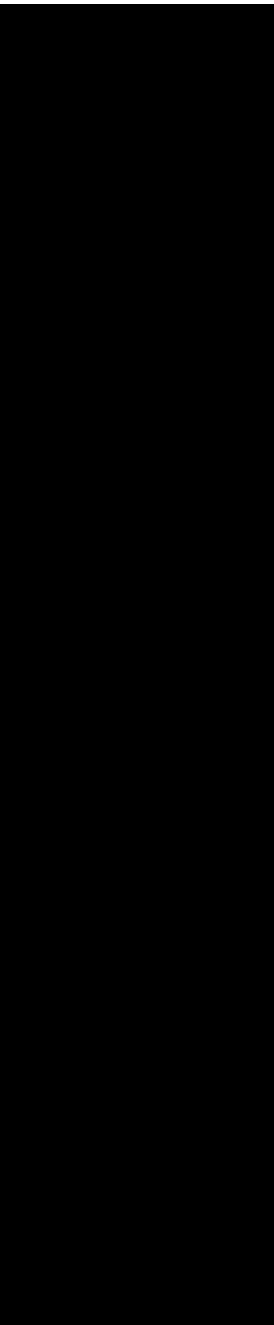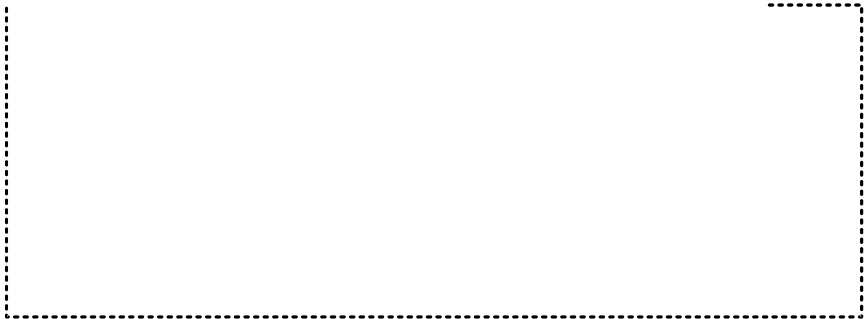
| .co p | 0 | M y   03 | Co- perat ves |

.museum	0	May 2003	Museums
.name	0	May 2003	Name
.edu	7,329		Educational

Source: http://www.domainworldwide.com/, 14 April 2003

Table 2: Status Classification of New TLD Registries

TLD	Sponsored	Unsponsored	Restricted	Profit / Non-Profit Registry
.info	-	Yes	-	Profit
.pro	-	Yes	Yes	Profit
.biz	-	Yes	Yes	Profit
.name	-	Yes	Yes	Profit
.museum	Yes	-	Yes	Non-Profit
.aero	Yes	-	Yes	Non-Profit
.coop	Yes	-	Yes	Non-Profit
mTLD	Yes	-	[1]	[2]

Source: ICANN *http://www.icann.org/tlds/*

[1] Registration will not be restricted, but the Terms and Conditions governing use of the mTLD will obligate the Registrant to provide content that is consistent with applicable regulations.

[2] The Sponsoring Organization will negotiate the pricing structure with the Registry and ICANN.

5.2.1.   IPR Regulation

Registries do not regulate IPR. ICANN, WIPO, the courts, and other organizations have legal authority over the registration and usage of trade names, trademarks, company brands, etc. Registries do not enforce IPR rights, but respond to legal authorities requesting the reassignment of domain names.

Most recent registries have incorporated a "sunrise" registration period during whi0.02 0 0 10.02 462.690850.02 3

5.5.   Legal Structure

UMTSF is supposed to consider the needs and interests of the mobile industry as a whole and naming is one of the issues, which will be an important control point in future mobile services. All parties in the mobile industry, independent of underlying radio network standards, should have a common interest of keeping this critical resource under industry's direct influence, and providing best possible services for mobile subscribers.

5.5.1.   Sponsoring Organization

A non-profit organization will be formed to act as the mTLD sponsoring organization. All members of the UMTSF will be invited to join this organization. Additional industry representatives may also be asked to join the sponsoring organization. The sponsoring organization will apply for the ICANN license.

The sponsoring organization will be asked to support the development and ongoing operation of the mTLD through the formation of the mTLD policy and the mTLD standardization bodies. Mobile industry representatives, through the Policy and Standards bodies, will establish the legal, financial and operational processes of the mTLD.

5.5.2.   Funding the Sponsoring Organization

Funding for the sponsoring organization will come from a membership fee and from a small fee for each mTLD registration. Reasonable membership fees should be established to attract the maximum participation from industry organizations. Funding of the ICANN application will be determined in the next phase of work.

5.5.3.   mTLD Registry Operations

The sponsoring organization can contract registry operations from a third party.

In order to insure that the mTLD registry is responsive to the needs of the mobile industry, the registry should be independent from current TLD registry operations.

M e   m ers

airgRs   n stisar   ar t s

8:                    st   ga

Any individual who accesses   content using th   D i   ere   n End Use
the fixed Internet, there is no3requ   stra
gR   y
a properly equipped mobile device can

596.1.3. Reseller

Many Registrars have est   domain name rese   ers are also retail distributors.
However, they have ch   to bypa   s of becoming an ICANN A thorized   strar,
and therefore must acq   n ICANN Authori   Registra
Some Network Operators may chose to be Resellers rather than Registrars.

5.6.1.4. Registrant

A Registrant is any individual or organization that chooses to register an mTLD. While individuals who register an mTLD will typically be owners of mobile devices that is not a requirement to become a Registrant. Companies providing content, for example: airlines, news services, stock brokerages, restaurants, and game providers, will typically not relate their mTLD to any mobile device.

5.6.1.5. Registrar

There are approximately 160 Registrars currently approved by ICANN. The Registrars are the retail distribution channels for all mTLD domain names. Only ICANN authorized Registrars can purchase a mobile domain name from the Registry.

5.6.1.6. Registry

The term "Registry" applies to

This figure indicates work areas that need to be considered when preparing an application to ICANN and subsequent implementation of the mTLD. It shows there is a multitude of technical, legal and commercial items to tackle. Whereas a commercial entity to be formed will handle the implementation of most of these when the mTLD is actually being built, the UMTS Forum has the opportunity to play an important role in the creation of the mTLD standards and specifications.

In sections 6.8 below, are examples of important areas that will require lots of work are briefly outlined. They are the kind of areas that need to be very carefully thought of when preparing the ICANN application.

5.8.   Name Portability Solution

The standard domain name structure provides name portability. However, depending on the naming standards that the Sponsoring Organization and ICANN select, name portability could be a concern. Therefore, this subject has been moved to the "issues" list, for further discussion and analysis.

5.9.   Policy Issues

Policy development requires special attention and consensus because the mTLD will be built in an uncharted converged environment of telecommunications and the Internet. Many policy issues will demand analysis and development including:

a)   Policies for: ex-directory requirements, harassment and nuisance communications, emergency service requirements on a worldwide basis, customer complaint handling, embargoing and monitoring problematic words, trade mark issues, and global misdialling management.

b)   Future capacity issues: including the development and possible negotiations on country-specific addressing with the mTLD and its resolution. (Many countries believe they have the exclusive rights over any domain-address that is nationally oriented).

c)   New policies regarding structures and controls on premium-rate and adult-services.

d)   Policies covering all abuses of the system. For example: using the system for covert surveillance, or registration and ownership of numbers within a domain-name string that may well conflict with ITU numbering.

e)   Type of customer data that can be captured, who has ownership of this data in the registration chain, and data protection implications.

The Harvard Law report on .NAME provides a useful guide to what the UMTSF can expect in terms of policy management issues for a restricted mTLD. This report estimates approximately an 8% abuse of this particular restricted domain[4]. Because of the complexity inherent in mTLD policies, we may need to assume a higher level of negative aspects that will require management.

To meet the demands of the new mTLD namespace, the Sponsoring Organization will need to generate appropriate new policies.

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[4] Source: *http://cyber.law.harvard.edu/people/edelman/name-restrictions*

5.10. Technical Issues

5.10.1. Root Servers

The mobile industry is concerned about the following:
- The mobile industry in the form of the mTLD Sponsoring Organization, can control the locations and the scaling of the key DNS servers and of the operation of the mobile DNS service.
- "*Enhanced mobile DNS'* may be needed to cope with the new requirements of future mobile networks.
- Mobile DNS needs to be planned in co-operation with standards in mobile IP networks, e.g. early support for IPv6 naming is required, while maintaining support to IPv4 support for a long time.

To address these concerns, an mTLD should deliver a high quality of service including fast and reliable DNS lookups.

6. Summary

This white paper outlines the need for, and benefits of, the introduction of a uniform, industry-controlled mTLD.

GSM provides the mobile industry a graphic example of the benefits that can be realized, by all parties, when a single standard is adopted. An mTLD will provide the single global platform for mobile contact / data identification and navigation. Properly constructed and administered, an mTLD will allow: Registrants, End Users, device manufacturers and network operators to build and access standardized offerings, an essential antecedent to increased mobile data usage.