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Title: **Position Paper on 3G Portals**

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Reference: UMTS Forum Report 16: 3G Portal Study - A Reference Handbook for Portal Operators, Developers and the Mobile Industry

Introduction

With customer uptake of Third Generation (3G) mobile portal services anticipated to generate more than US$ 200 billion[1] in operator revenues over the next decade, The UMTS Forum predicts that mobile portals will be critical to the end user's experience of 3G services. Although superficially similar to the familiar portals of today's fixed Internet, 3G mobile portals exhibit significant differences in character due to the additional challenges of content optimisation for small form factor devices, and the necessity of delivering that content to the mobile user. In the 'traditional' Internet space, developers are concerned primarily with the consistent packaging, delivery and presentation of content across mobile and fixed devices. In the mobile industry, in contrast, developers are more focused on resolving the technical issues to enable data transmission on historically voice-centric networks and devices.

Recognising that mobile portals will play a central role in any consideration of the 3G value chain, it is critical that progress to market is unhindered by industry confusion over technology choices, standards and service options. This paper is intended to offer practical guidance to mobile operators and service providers as they define their own 3G portal offerings for business users and consumers.

Background: What is a mobile portal?

Defined as 'an entry point to a wealth of information and value added services', a portal is Internet/Intranet based with a browser-based interface, and can be personalised, delivering content according to a device's characteristics and a user's needs.

Since the advent of i-mode and WAP (using cHTML and WML as page description languages), many industry players including mobile operators, Internet Service Providers and phone retailers have invested considerable sums in tailoring their own portal offerings. Content and services provided by these 'first generation' mobile portals can be considered as falling into six main categories:

- Communications and community – e.g. e-mail, calendar and chat.
- Information – e.g. news, weather, directories.
- Lifestyle – e.g. listings of events, restaurants, movies and games.
- Travel – e.g. hotel listings, direction assistance and timetables.
- Transaction – e.g. banking, stock trading, purchasing and auctions.
- Other – includes information about personalisation, location-based services, device type, and advertising, and also about the openness of the mobile portal, billing and target group.

Similarly, a 3G mobile portal is defined as a mobile portal accessed via any of the family of systems collectively recognised as 'Third Generation' (in Europe: UMTS, based on W-CDMA radio access technology).

To help classify and analyse the characteristics of this emerging market, The UMTS Forum has developed a structured approach to characterising five likely types of 3G mobile portal:

- **Mobile Intranet/Extranet portals:** A 3G portal that provides secure mobile access to corporate Local Area Networks (LANs), Virtual Private Networks (VPNs) and the Internet. Typical services include corporate e-mail, calendar, training and customer relationship management tools
- **Customised Infotainment portals:** A 3G portal that provides device-independent access to personalised content anywhere, any time. Typical services include streaming music, short film/video clips and m-commerce applications.
- **Multimedia Messaging Services portals:** A 3G portal that offers non-real-time, multimedia message access allowing the provision of third-party content. Examples of typical services include multimedia 'postcards', video clips and movie trailers.
- **Mobile Internet portals:** A 3G portal that offers mobile access to content services with near-wireline transmission quality and functionality. Typical services include browsing, gaming and m-business.

[1] UMTS Forum Report 13 available at http://www.umts-forum.org/reports.html

- Location-Based Services portals: A business and consumer 3G portal that enables users to find other people, vehicles, resources, services or machines. It also enables others to find users, as well as enabling users to identify their own location via terminal or vehicle identification. Typical services include emergency services, asset tracking, navigation and localised shopping information.

In the world of 3G, we will see not just one but a proliferation of different types of portals, dedicated to different service categories. Looking further ahead, the 3G portal of tomorrow will play the role of a multimedia switching platform where end users can enjoy total control over their personal access to a wealth of 3G services and applications. But what are the issues that are being faced now by industry as it plots its roadmap from today's relatively primitive portal services to the sophisticated personalised entities of tomorrow?

Portal Application Development: The Critical Issues

Application development requirements for mobile services differ from conventional voice-centric telecommunication services, being typified by shorter development lifecycles, an increased number of service offerings and increased pressure to generate a return on investment. Because of large economic opportunities presented by 3G for mobile operators, the research and development activities of manufacturers of portal platforms and mobile terminals, content developers and aggregators are intense. Against this backdrop of activity, much confusion exists in the mobile portal marketplace due to a number of factors including:

- Multiplicity of mobile terminal types with a wide variation in form factors, operating systems and browsers;

- Numerous content development languages and tools;
- Variety of open and proprietary incompatible standards for information presentation and formatting.

To provide services and applications that meet 3G mobile users' needs, therefore, a more dynamic approach to application development is required – one necessitating timely development of mobile extensions to Open System Architecture, Application Programming Interfaces (APIs) and Internet markup languages that will provide an efficient content development environment. This in turn points to the need for **open standards** in order to allow rapid service development in a multi-service market.

APIs: An Open Approach

With adoption by the Third Generation Partnership Project (www.3gpp.org) of an **Open Services Architecture** (OSA) Framework for building new mobile applications, however, industry is assured an environment that favours the rapid, cost effective development of voice and data/Internet services alike. This framework offers APIs to support security, integrity, service registration and discovery, plus other features such as call control, location, user interaction, messaging and charging. A number of trials have already been conducted to establish the feasibility of an open API gateway approach across multiple vendors.

Markup Languages

The UMTS Forum observes that industry effort is underway to limit the number of markup languages for mobile devices. These currently include WML and cHTML (both now migrating into XHTML Basic) as well as more recent developments such as CXML, ebXML and VXML that have been created for specialised applications such as e-commerce and voice control.

Personalisation

Communication, information and entertainment needs vary from one individual to another, and the personalisation of a mobile access device will enrich the end-user's experience of 3G portal services while driving increased usage and revenues for operators. 'Personalisation' can have many aspects, ranging from the visual formatting of an individual's home page to user-selected alerts for news headlines, weather reports, stock quotes or personal calendar appointments. With operators recognising the importance of personalisation, an increasing number of vendors are now offering tools to manage the content, presentation and access profile of an individual's portal.

Terminal Trends

Unlike the world of fixed communications that is currently dominated by a polarisation between two device types – desktop PCs and notebook computers – it is likely that a variety of mobile devices will appear, providing a rich user experience of 3G portal services. Technological developments will see increases in processing power and battery life driving changes in form factor and functionality. While browsers are currently 'burned in' to most terminals, software-based, downloadable browsers will become increasingly prevalent. Similarly, technologies like J2ME will bring many of the benefits of JAVA™ - including code portability between platforms and scalability – to mobile devices. Against this backdrop of a more open approach to mobile device architecture, much work still needs to be done to rationalise the large (and growing) number of mobile operating systems already in existence and to harmonise human/machine interface (HMI) standards. This will provide developers with a consistent environment for the input, handling, control and display of information on the multiplicity of tomorrow's 3G mobile devices.

Technical Area	Implications to Industry
Browser	The industry has adopted a market approach, with multiple proprietary browsers available. The low-end devices will continue with the current burned-in browsers. Industry consolidation into a few browsers that are downloadable is likely and highly desirable to reduce the complexity of managing multiple environments by operators. Standardisation of human-machine interfaces will be needed as the market matures.
Operating System (OS)	Industry has adopted a market approach with some consolidation of available OSs. There will likely continue to be more viable operating systems available in the future. An open standards-based operating system will reduce the cost of a mobile device, as no licensing fee will be required. Linux and eCos developments may impact the market adoption of mobile operating systems.
Terminal Technologies	Insufficient battery life and power consumption issues will impede the ability of 3G terminals to deliver the full potential of mobile multimedia services in the short term. Research needs to be intensified in the area of battery technology. If the potential of development such as fuel cells could be realised in the relatively near term, this could significantly impact the growth of the 3G market. Adoption of high-resolution colour displays would impact the growth of the 3G services market. The power consumption of new displays can be a factor in this growth.

Other Critical Portal Service Enabling Capabilities

A number of other significant technical issues will impact on the delivery and market acceptance of 3G portal services. Perhaps the most contentious of these is security, where a current lack of privacy policies and open-standard solutions, coupled with uncertainty over strategies for dealing with mobile junk mail (spam) and viruses, presents several major challenges to industry. Another area where there is a current lack of clear industry co-ordination is billing, charging and payment: while the financial industry and manufacturers are working to integrate micropayment technology into mobile devices, uncertainty remains over which billing systems will be accepted by end-users and the timescales to bring solutions to market. The UMTS Forum highlights in particular the principle of 'calling party pays' that is already familiar in the GSM world. This issue will be of even greater relevance to 3G due to the large amounts of network traffic that will be generated by multimedia messaging and file transfers.

Further areas deserving closer cross-industry co-ordination include quality of service, interoperability and standards for the exchange, formatting and presentation of media.

Examples of billing for 3G portal services from the end-user perspective

Type of Portal		Remarks
Mobile Intranet/Extranet	◐	The corporate could receive a consolidated bill for all employees. Extranet partners get their own bill.
Customised Infotainment	◐	The user could be billed for most of the infotainment services. Advertisement-based services should be free to the end user.
Multimedia Messaging Service	●	The mobile operator provides multimedia-messaging service and bills the end user. If a portal operator chooses to provide third party content, the mobile operator may or may not bill the user depending on commercial arrangements.
Mobile Internet	◐	The mobile operator provides Internet access (mobile ISP) and bills the end user. If a user conducts commerce transactions then the operator may or may not bill the end-user depending on commercial arrangements with the portal operator.
Location-Based Services	◐	The mobile operator provides location-based service. If a portal operator chooses to provide this service, the mobile operator may or may not bill the user depending on commercial arrangements with the portal operator.

● End-user gets billed   ◐ End-user gets selectively billed   ○ End-user does not get billed

Selecting Standards for Media Exchange

As already demonstrated by the immense popularity of MP3 as a *de facto* standard for exchange of audio files (and their associated metadata) between Internet users, media formatting and compression trends will play a key role in the uptake of media-rich file sharing, messaging and other 3G services. While a number of proprietary and open standards-based options currently exist in the industry –

the MPEG family being an example of open industry-based standards for multiple media such as audio, music, graphics and pictures, video and integrated multimedia – proprietary solutions create a fragmented market and raise the cost of service creation and delivery. In particular, it is important when selecting media standards to avoid the imposition of additional cost burdens

on the end-user due to licensing and related considerations.

While individual media format standards are evolving in their own right, there is also a convergence underway to create unified integrated media standards. Industry is already making efforts in this area and The UMTS Forum accordingly welcomes further initiatives.

Conclusions and Recommendations

While still very young, the mobile portal industry is now being forced to address issues that are critical to delivery, including billing, security, privacy, quality of service, interoperability and content formatting. Synchronisation between the efforts of all industry sectors – including mobile operators, portal operators, service providers, content developers and terminal manufacturers – is vital to the creation of a service environment that encourages use of 3G services and in turn drives revenues for operators. Without this harmonised environment, developers will not be afforded the best chance to exploit 3G's unique blend of capacity, speed and enriched, interactive service capabilities to best effect.

To help achieve this goal, The UMTS Forum therefore recommends:

1. The mobile industry must focus on selecting the 'best of breed' from today's plethora of standards, platforms and operating systems to create a 3G service environment that is truly portable, transparent and easy to access for business users and consumers alike.

2. Three open media encoding standards will play a pre-eminent role for 3G services development and are recommended by The UMTS Forum:

    *   JPEG 2000 for still pictures
    *   MPEG-4 for audio/video based services
    *   MP3 for audio applications

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