# Mobile Web

Ljupco Antovski, Marjan Gusev

University Ss. Cyril and Methodius, Faculty of Natural Sciences, Institute of Informatics
Arhimedova 5, 1000 Skopje, Republic of Macedonia
anto@ii.edu.mk ; marjan@on.net.mk

**Abstract:** The most emerging technologies that currently are subject of extensive research cover introducing mobile technologies and applications for ICT solutions of business processes. In this paper we present basic concepts for a framework and principle-driven model to automate business processes. Business processes can be modeled and supported by ICT enabled technologies. The mobile network services become increasingly more sophisticated. The Web services architecture and its implementations evolve and mature. By integrating these technologies, consistent business models can be enabled on a broad array of endpoints. In order to make this integration happen at a technical level, mechanisms are required to expose and leverage existing mobile network services..

## 1 Introduction

Today the mobile commerce landscape is dominated by relatively simple infotainment services. Moving beyond these simple services requires overcoming the inherent input/output limitations of mobile devices through higher degrees of automation and the development of services that understand the context within which their users operate – e.g. their locations, the activities they are engaged in, which their friends and colleagues are as well as a number of other contextual attributes and preferences.

Majority of mobile operators operate over a GSM network. A GSM mobile network currently requires the use of a mobile terminal (a phone) containing a Subscriber Identity Module (SIM). The SIM, implemented through a small form-factor smart card, is used for authentication. The SIM authentication mechanism provides an especially secure critical link between the subscribers account and mobile network operator bills, and the services that are offered by the mobile network operator or third-party service providers, delivered over a trusted network and transmitted over a radio bearer to the mobile terminal.

Main goal in bridging the IT and mobile worlds is to leverage the market of developers by not requiring them to develop with alternative tools, platforms, or application models just to integrate into their applications mobile network services and the associated commercial mechanisms.

On the other hand the developers can quickly and easily pick up Web services programming techniques within the tools and platforms they use today to integrate Web services into their ongoing work. The Web services architecture is a modern and effective approach to integration across heterogeneous systems with widespread implementation and adoption. There is no need to develop an alternative means. The Web services specifications represent a rich protocol framework for Web services by adding infrastructure-level capabilities to traditional Web services. They are built on the existing foundation of XML, SOAP, and WSDL and represent a set of specifications, not a product.

## 2 Current State of the Art

We are facing today the emergence of WEB 2.0. It is a phenomena that is arising and is defined by Gartners 2006 book "Emerging Technologies Hype Cycle" as 0 one of the top key technologies over the coming ten years. Everyone defines it different. There was a survey by Basecamp where 13% didn't know the definition and 87% new but gave a completely different answer.

There are several exams of successful business models that can easily be transferred in the mobile world. We are numbering: Google with

- AdWords,
- AdSense – new model, pay per action not per click;
- Click to call – eBay, Viacom – connect the customer and buyer.

There is a noticeable convergence of services and content as in:

- Skype Mobile,
- YourTube – IPTV with branded content,
- iTunes – video download service,
- IMS (IP multimedia subsystem) – deploy richer IP services without network integration.
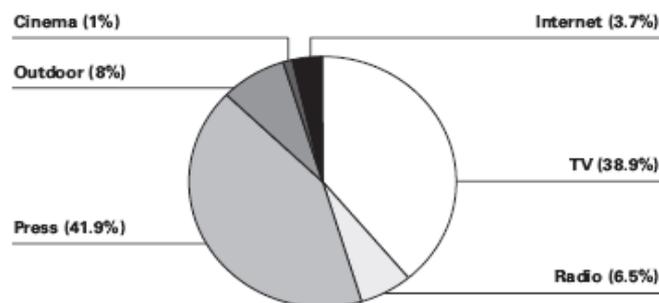


Figure 1. Marketing Market Share – source eMarketer, 2007

But still the e-services and m-services are to take larger share of the market as the eMarketer survey (Figure 1) shows they take only 3.7% of the total media market share. According to Arthur D. Little, the web services are the centre of the current business model on the fix and mobile Internet. Figure 2 shows the business model.
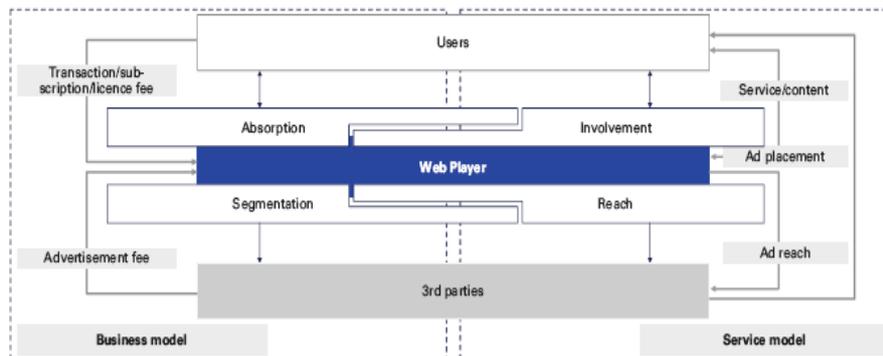


Figure 2. Internet Business Model

In this model there are several differences that the "old" Internet model. This model is characterized by:

- Needs
    - Sharing
    - Consumption
    - Production
- Preconditions
    - Absorb and involve users
- Building blocks
    - Personalization
    - Long Tail
    - Connectivity
    - Interaction
    - Accessibility
    - Simplicity
- Differences from the "old" web
    - Rich Content
    - Rich user experience

The main difference is who the model is funded. According to Google it is 99% marketing and only 1% other sources.

# 3 Success factors

The Success Factors Model for M-Business was developed following a comprehensive review of available literature. The available experience of governments and other organizations around the world was used in the modeling. The model initially focuses on M-Business. However, the success factors are equally relevant considerations with each change in technology, such as a move from E- M-Business.

The Success Factors Model assumes a service delivery where the level of M-Business sophistication positively correlates with the level of service delivery functionality. Five levels of functionality in electronic service delivery (mobile and web presence) are classified [4]:

- Basic – provides basic wireless access with non interactive responses.
- Advanced – delivers updated real time information or periodically enhanced material.
- Interactive – allows formal interactions between business and government service providers.
- Transactional – provides a single entity interaction for mobile and wireless users. Regardless of agency, a mobile request is executed through a single interface.
- Fully interactive – offers a secure mobile wireless transaction through a single interface for payment, ordering and billing of services. Agency independent, it offers the users anytime and anywhere access from a mobile wireless device with secure identification and authorization. It offers the ability to use critical data regardless of the device's size and susceptibility to loss or theft.

Adopting mobile and wireless technologies as part of that platform allows a move from E-service delivery to M-service delivery. The planning, development and implementation of services requires careful attention to the factors that promote or inhibit a successful project. The pillars of the model are:

- Return of Investment – The need to investigate public funding of infrastructure and the options for joint ventures with private operators [4]. The high initial investment must deliver return of investment after an acceptable period of time. Realization of cost benefits from long term contracts with telecommunications companies and application vendors is the priority in this pillar.
- Reengineering – There have to exist a centralized authority and political support over potentially fragmented/rival channels [10]. Cohesive legal and regulatory environment must be effective to facilitate M-operations. The framework has to relay on uniform interface for services and multi jurisdictional service delivery. Technology portability from older systems to M-interfaces is an essential part of this pillar.
- Education – Wider communication of mobile wireless literacy is underlined. In order to achieve mass market usage, there should be a standard operating environment regardless of device or interface. Re-definition of products and services has to occur to enable them to work in the mobile wireless arena. A clear strategy should foster the

development of M-skills sets within agencies and enable equal access for all demographic groups [2] [17].

•   Security –Data integrity regardless of interface device particularly in relation to loss and theft is never to be compromised. Transaction audit and transparency for financial interactions exist on every level. Seamless moves to future enhancements, and secure warehousing of data images through minimal duplication between agencies should be planned in the design of the system [5].

•   Acceptance – Every agency should offer a seamless service via uniform mobile wireless interface with centralized shareable customer relation management backend for mobile wireless citizens. Process participation by citizens in M- evolution is essential. The platform must be opened for regular public review and communication of initiatives.

•   Infrastructure – Key infrastructure is understood to exist in order to provide mobile wireless connections to all constituents. The use of provider contracts is encouraged to facilitate initial support for specific socio-economic groups. Consistent user interface regardless of location and usage pattern is again emphasized.

The absence of any of the critical success factors will inhibit realization of the potential benefits of delivering M- services [6]. The proposed framework must ensure coherence between the requirements and the principles so that the business requirements will be met by a solution that accords with the principles, and that the relevant principles are always grounded in business requirements. The framework principles are established in a multi-level hierarchy. The top level comprises common, general principles that, among other things, reflect the need for coherence across the public sector. The next level comprises principles that normally aim to optimize the IT solutions within the focus of the mobile communication and technology. At the lowest level are principles directed towards a specific system and standard or portfolio of systems and standards in a given institution that offers the service.

The purpose of the general framework principles is to ensure the honoring of the visions and objectives of the e-government initiative in the area of mobile communications. A common mobile public services framework must first and foremost incorporate the following five principles [2]: Interoperability, Security, Openness, Flexibility, and Scalability.

Our recommendation of a service-oriented model stresses that interoperability is not just based on reading data on mobile devices from other systems, but that there must be functional coherence between the systems..


## 4  Conclusion

With the availability of always-on networks for mobile phones becoming more widespread, mobile access to data will become easier than ever. Web Services seem like the natural solution for integration problems, but mobile phones do not have the privilege of guaranteeing support for the core web services technologies. However, you can still

effectively deploy a web service for mobile clients by deploying a client interface using existing technologies available. As there are more advanced mobile phones with support for WS, you can even choose to deploy a pure SOAP client without the need for a middleman.

This combination of powerful, though resource-constrained handheld devices connected via a mobile network to a set of wireless services supplied on an as-needed basis is what will truly transform the dispersed workforce into fully mobilized corporate citizens.

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