

Mobile/Wireless Research Group
Publications Series 2002-2003

Pateli, A., Giaglis, G. 2003, 'A Methodology for Business Model Evolution: Application in the Mobile Exhibition Industry', in G.M Giaglis, H. Werthner, V. Tschammer, K.A. Froeschl (eds.), Proceedings of The Second International Conference on Mobile Business – m>Business 2003, Vienna, Austria, June 16-18, pp. 87-102.

Contact Author: A. Pateli, <pateli@aueb.gr>

Mobile/Wireless Research Group Scientific Coordinator:
Dr George M. Giaglis, Assistant Professor
Department of Management Science and Technology
Athens University of Economics and Business
47A Evelpidon & 33 Lefkados St., GR-11362, Athens, Greece
Tel: +30 210 8203658, Fax: +30 210 8203685
E-mail: giaglis@aueb.gr, <http://www.eltrun.gr>

A METHODOLOGY FOR BUSINESS MODEL EVOLUTION: APPLICATION IN THE MOBILE EXHIBITION INDUSTRY

Adamantia G. Pateli

PhD Researcher

ELTRUN: The E-Business Center

Athens University of Economics and Business

47A Evelpidon Street, 11362, Athens, Greece

Tel: +3-210 8203663, Fax: +3-210 8203664

pateli@aueb.gr

George M. Giaglis

Assistant Professor

ELTRUN: The E-Business Center

Athens University of Economics and Business

47A Evelpidon Street, 11362, Athens, Greece

Tel: +3-210 8203658, Fax: +3-210 8203664

giaglis@aueb.gr

ABSTRACT

Technology is increasingly becoming a major driver of business change. However, it is well documented that businesses cannot readily exploit the advantages provided by technological innovations unless these are combined with some sort of organizational restructuring. More often than not, business model evolution is necessary in order to leverage investments in new technologies. However, the process of how a business model might evolve is rather under-researched and entails a relatively high risk for many organizations. This paper draws on prior theoretical works and a real-life case study on the introduction of mobile services in the exhibition industry to formulate a novel methodology, based on scenario development, for guiding the process of business model evolution in inter-organizational settings. The methodology allows for extending, rather than invalidating, existing business models in order to minimize the risk involved in the transition process, to keep the new model in alignment with the principles underlying its prior counterpart, and to take into account the business interests of all stakeholders involved.

1. Introduction

The first wave of mobile evolution has been focused on providing advanced voice and text-based services through mobile networks. However, recent advances in the telecommunications industry have enabled the development of advanced mobile data services, which in turn has challenged organizations, other than the mobile network operators, to enter the mobile market. Arguably the complexity of the mobile business (m-business) landscape makes it almost infeasible for any single business entity to provide an end-to-end solution. Thus, revenue sharing, customer ownership, and transparent cooperation become critical factors in the m-business value chain. Those companies with the ability to create business-to-business relationships without conflicts of interest are the ones most likely to succeed (Paavilainen, 2002). A valid and useful m-business model must explicitly account for the need of partnership that will characterize the sector and provide the best possible answers to questions regarding the type of value that each partner will contribute based on its core competence, the distribution of revenues and profits between them, the type of service offerings, and the business structures that will be required to implement the changes (Rulke et al., 2003).

Under the influence of mobile trends, business models of the traditional or e-business world are set under question, and companies are faced with the challenge of business model change. However, creating a radically new business model is a high-risk strategy, as the probability of getting it right is acknowledged to be low (Kalakota and Robinson, 2001). Companies will typically choose to focus on an improvement strategy that is less risky and extends or renews existing strategy and business model.

Even in the case of business model evolution however, the process is not risk-free. Organizations will need to anchor their efforts on well-documented and structured approaches to business model change in order to avoid the pitfalls associated with strategy re-orientation, especially given the complexity of the m-business industry and the need to co-operate with other stakeholders for the provision of added-value services.

Existing research work on defining structured methodological approaches for business model evolution is rather fragmented. Most efforts are applicable only under certain business conditions, they are typically dependent on the codification used for business model components, and mostly provide a general framework rather than a stepwise

methodology that can guide a business model evolution process. This paper aims to fill this gap by proposing a stepwise methodology allowing companies to design alternative scenarios for business model evolution or extension under the impact of m-business innovation. The proposed methodology constitutes the result of a research that synthesizes and improves existing literature in the area by combining it with the insight gained through a real-life case study of multinational setting. The methodology is based on the identification of scenarios that depict possible changes on the current value chain and business model of an industry. Scenario-based business model development is the primary novel characteristic of the methodology, in line with several recent research works that argue in favour of scenarios as an efficient way of strategy design in uncertain and complex business environments (MobiCom, 2002; Sideris & Pateli, 2003; Kulatilaka & Venkatramen, 2000).

The next section outlines the extant theoretical background on the business model evolution process. Then, section 3 outlines the process by which background theories have been synthesized to produce the proposed methodology for business model evolution. The methodology is then applied towards revisiting the business model of the exhibition industry in the light of introducing a technology innovation, namely a Mobile Exhibition Guide. The last section includes a discussion on contingency factors affecting the applicability of alternative business models in different exhibition environments, as well as theoretical and practical implications for further research.

2. Background Theory

While the necessity and complexity of business change have long been documented in the literature, it is only recently that researchers have started focusing their attention on *business model* change and its specificities. Technology innovation, initially in the form of e-business, has been the main driver of this body of research. While researchers do not necessarily always use the same terms to denote the transition from a current to a future business model through technology innovation, relevant research can be found under terms such as business model ‘transformation’, ‘augmentation’, ‘extension’, and ‘evolution’ (Pateli, 2002).

Linder & Cantrell (2001), working for the Accenture Institute for Strategic Change, have identified four basic types of change models, in an increasing degree of transformation/innovation introduced (see *Table 1*). The identification of four types of Change Models is quite useful, since it may help companies to identify the level of change, and thus the change model, they want to introduce and then build the organisational machinery required for executing their change model.

Type of Model	Description
<i>Realization Models</i>	They exploit the potential of their current business model in order to grow and profit. It represents the least actual change model.
<i>Renewal Models</i>	They concern <i>geographic expansion</i> and <i>growth in their customer base</i> , but no substantial changes in their operating business models. They concern <i>revitalising</i> the firm's <i>product and service platforms, brands, cost structures, and technology bases</i> . A renewing firm leverages its core skills to create new positions on the price/value curve.
<i>Extension Models</i>	They expand businesses to cover new ground. An extending company stretches its operating model to include <i>new markets, value chain functions, and product and service lines</i> .
<i>Journey Models</i>	They take a company to a totally new business model.

Table 1. Different Types of Change Models (Linder & Cantrell, 2001)

In 2001, the Evolaris eBusiness Competence Centre (Petrovic et al., 2001) started developing a methodology for changing business models that was based on the three learning stages of Senge and Sterman (1994), as well as a number of system theories, such as System Dynamics, Thinking in Networks and Action Research. The Evolaris methodology included seven steps for moving from the current (AS-IS) to the future (TO-BE) model as depicted in *Table 2*.

Stage	Steps
<i>Understand</i>	a. Identify the business model (BM) from different angles b. Identify the key factors of the BM. c. Model the core reinforcing and balancing feedback loops d. Expand the BM to the full network.
<i>Identify Technology's Influence</i>	e. Identify the influence of the Internet on the BM's variables f. Recognize and interpret possibilities for changing the problem situation
<i>Change</i>	g. Develop an action plan

Table 2. Stages and Steps of improving business models (Auer & Follack, 2002)

Although this framework can be considered as a good starting point for introducing a change methodology grounded on a well-established theoretical basis, the steps of the methodology are only described in general terms and no guidelines are provided for the core part of the methodology, namely the change itself. On the other hand, Kulatilaka and Venkatramen (2000) suggest an options approach for designing IT strategy and defining business models based on the capabilities of the firm and the evolving conditions in the marketplace. This approach provides a company with flexibility in adopting new technology and changing its business model. Based on this approach, Kulatilaka and Venkatramen (2000) propose companies the following three steps to invest in new technology:

1. *Assessment of opportunities* for change and consideration of ways to exploit these opportunities.
2. *Acquisition of options*, which includes mixing options reflecting the likeliest opportunities and the future scenarios for the company and the marketplace.
3. *Acting on options*, which involves deploying additional capabilities, restructuring the company, reassessing its partnerships, and generally making the necessary adjustment to its business model in order to gain advantage of the option's promised opportunities.

Following a different path, Pramataris et al. (2001) employ a set of analytical tools in order to construct a proposed business model for a digital interactive advertising

marketplace as part of work done within the iMEDIA research project (IST-1999-11038). They present their work in the form of a sequence of ten steps, each of which makes reference to both the data collection method and the theoretical/analytical constructs employed (see *Table 3*). This method starts from designing the industry's current business model and ends at synthesizing the proposed business model. The primary limitation of such an approach lies on defining, rather than investigating the need for, a new player that plays the role of service provider and takes on all the newly generated services and functions. The method of work is compatible with the three learning stages used by Linder and Cantrell, since steps 1-5 describe work done in Phase I (*Understand*), steps 6-7 describe Phase II (*Identify technology's influence*), and finally steps 8-10 outline Phase III (*Change*).

Ten Steps for the derivation of a New Business Model

1. *Examining the relationships developed by key players currently in the market.*
 2. *Defining current business objectives for each key player.*
 3. *Identification of current value flows in the marketplace.*
 4. *Identification of key competitive drivers in the market.*
 5. *Synthesis of the current business model.*
 6. *Embedding the innovative technology framework into the current business model.*
 7. *Defining requirements for technological capability development for existing key players.*
 8. *Defining the mediating functions performed by the service provider.*
 9. *Developing a new co-operation scheme in the marketplace: exploiting the existence of the new service provider.*
 10. *Synthesis of the proposed business model.*
-

Table 3. iMEDIA Methodological Approach

3. A Proposed Methodology for Business Model Evolution

This section outlines the proposed research methodology for business model evolution under the influence of a technology innovation. The discussion of the proposed methodology is made through description of the primary steps and their contribution towards the final goal, which is the design of a set of alternative business models in the form of scenarios. Having resulted from a systematic work on synthesising existing literature, the proposed research methodology combines the following features:

- a) It is based on the **3 phases model** followed by the Evolaris eBusiness Competence Centre (Auer and Follack, 2002; Petrovic et al., 2001),
- b) It addresses **renewal** and **extension business models** as defined by Linder and Cantrell (2001),
- c) It follows the approach of Kulatilaka and Venkatramen (2000) for defining **scenarios** as an intermediate step between the design of current and future business models,
- d) It uses and revises several **steps** included in iMEDIA methodology for the design of a future business model.

However, the proposed methodology also extends existing research in the field by incorporating the three novel features. Firstly, the design of extension business models is based on the identification of a set of **scenarios for alternative cooperation schemes** among the involved parties. Secondly, it includes an **analysis** of the resulting business models in terms of **components**, following the business model framework proposed by Pateli and Giaglis (2003). Finally, it includes an additional step for **assessing the impact** of the renewal or extension business model on the marketplace (both vertical and horizontal markets).

The methodology comprises three key phases. *Figure 1* illustrates the six steps of the proposed methodology in correspondence with the three key phases identified in the business model evolution process. In what follows the figure, we briefly discuss the primary mission and anticipated result of each phase and describe the tasks included in it through a sequence of steps.

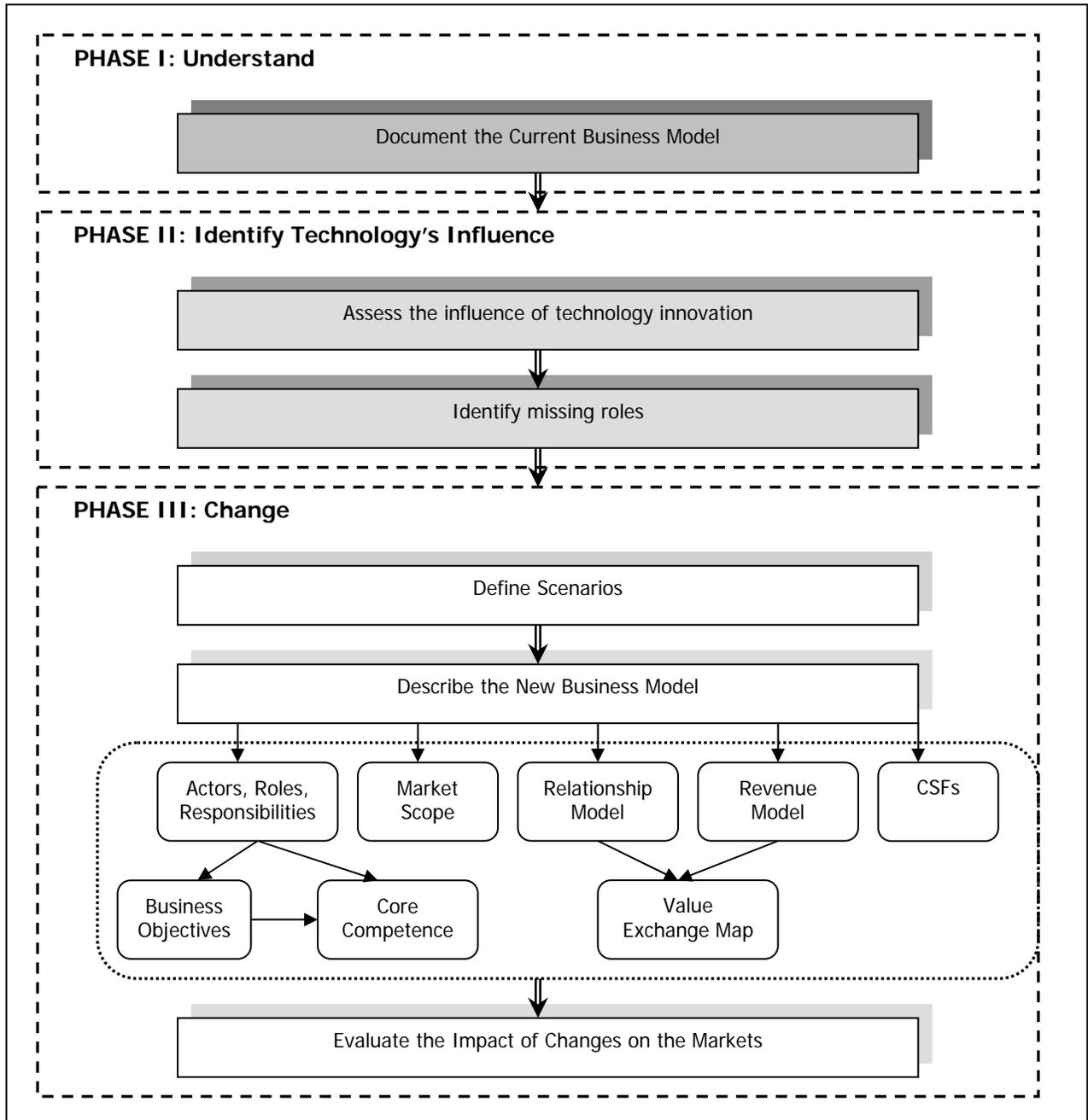


Figure 1: The Proposed Research Methodology for Business Model Evolution

Phase I: Understand

This phase is concerned with the design of the current/reference business model and aims at enabling an in-depth understanding of the current business situation. This phase includes the following step:

Document the Current Business Model. The initial step of the proposed methodology includes depicting the current business environment with the aid of a business model analysis framework, such as those proposed by many researchers in the field (Gordijn et al., 2001; Weill & Vitale, 2001; Osterwalder & Pigneur, 2002; Hamel, 2000; Pateli and Giaglis, 2003). The final outcome is a business model construct that can be used for *understanding* the key elements and mechanism in a specific business domain and their relationships, *communicating* and sharing the understanding of the business among business and technology stakeholders, *specifying valid requirements* for the technology solution that is developed, and identifying options for *changing and extending* the current business model.

Phase II: Identify the Technology's Influence

This phase is concerned with assessing the impact of technology innovation on the current business model. The anticipated result is the identification of possibilities for evolution or extension of the current business model. This phase includes the following steps:

1. ***Assess the influence of technology innovation.*** This step corresponds to Phase II of the Evolaris methodology and step 6 of the iMEDIA methodology. It includes an identification of the benefits that the technology solution brings to the key players in the business model and a specification of the changes imposed on the current business model's elements.
2. ***Identify missing roles.*** This step corresponds to Phase II of the Evolaris methodology and steps 7 and 8 of the iMEDIA methodological approach. It includes an identification of the requirement for one or more new roles that accomplish new business functions and a description of the activities and the functions of these roles.

Phase III: Change

This phase is concerned with the design and description of the future business models. This phase ends at visualising the new business situation through the design of the transformed value chain and the new business models. The steps included in this phase are:

3. ***Define scenarios.*** This step corresponds to Phase III of the Evolaris methodology and step 9 of the iMEDIA methodology. Having identified and justified the need for one or more new roles, this step includes defining a set of scenarios, each of which proposes a different cooperation scheme and way of distributing responsibilities between new and existing players in the new business environment.
4. ***Describe the new business model(s).*** This step corresponds to Phase III of the Evolaris methodology and step 10 of the iMEDIA methodology. Based on the scenarios identified at the previous step, this step revisits the current business situation, as this was illustrated in the current business model (*step 1*). This step aims at describing one or more business models by indicating the value offered by each player in the future model and defining financial and communication flows among them.
5. ***Evaluate the impact of changes on the market.*** This step is not included either in the Evolaris methodology or in the iMEDIA methodological approach. However, it is considered necessary to conclude the proposed business model description by estimating the impact of the transformed business model on the structure and dynamics of the concerned vertical and horizontal markets.

4. Case study

4.1. Description of the Mobile Exhibition Guide

mEXPRESS (mobile in-EXhibition PRovision of Electronic Support Services) is a European-funded project that aims to exploit the technological opportunities arising from evolution in the areas of wireless networks and indoor positioning technologies (such as Indoor-GPS) in order to support and facilitate the professional exhibition industry in a context-aware manner. The project has developed a mediation platform, namely a Mobile Exhibition Guide, oriented to exhibition shows and events, aiming to: enhance visitors experience in terms of interaction and functionality in an information-rich environment such as an exhibition show; improve business communications and promotions within the exhibition and extend promotional effectiveness during and after the exhibition, and;

assist and support exhibition management and operations by offering real-time location information of persons inside the exhibition.

Based on a number of user (visitors, exhibitors, and organizers alike) behavioural requirements captured and analysed at the early phase of the project (Fouskas et al., 2002), the Mobile Exhibition Guide is designed to provide the following services (illustrated in *Table 4*), listed per type of user.

Visitor Services	Exhibitor Services	Organizer Services
<ul style="list-style-type: none"> ▪ Online and Onsite Registration ▪ Personalized and Location-aware Navigation Plan ▪ Routing advice ▪ Exchange of “virtual business cards” with Exhibitors ▪ “Bookmark” stands and exhibits ▪ Interaction with a closed user group ▪ Receiving Targeted Messages (Offers, Announcements) from Exhibitors and Organizers ▪ Participation in a Message Board for communication with other visitors 	<ul style="list-style-type: none"> ▪ Online Content Management ▪ Exchange of “virtual business cards” with Visitors ▪ Real-time Information and History Statistics on Visitor Behaviour ▪ Promotion of their exhibits via targeted spots ▪ Notifications to Organizers in emergency cases 	<ul style="list-style-type: none"> ▪ Information on Profile and Preferences of Visitors ▪ Content Management ▪ Common and Targeted Announcements to Exhibitors and Visitors ▪ Real-time Information on Visitors Position ▪ History Statistics on Visitor Flows and Behaviour ▪ Online Feedback from Visitors

Table 4. Mobile Exhibition Guide’s Services per User

4.2. Application of the Proposed Methodology

Following, we discuss how the proposed methodology was applied for extending the current business model of the exhibition industry.

Phase I: Understand

Step 1: Document the Current Business Model

This phase is mainly concerned with the design of the Reference Business Model for the exhibition industry (mEXPRESS, 2002). At that time, the primary aim was to understand

the current business situation for two reasons: to define realistic business requirements for the design of the mobile exhibition and to outline the business environment in which it is introduced. As a result, a simplified, but also as realistic as possible, version of the reference business model was generated to feed the design of the system.

The key **roles** identified in the exhibition business environment include: a) *Hall Owners*, who provide the physical infrastructure, b) *Organisers* that provide the service platform for efficient interaction between exhibitors and visitors, c) *Exhibitors* who play the role of stand-holder or/and parallel event organiser and use exhibition events as effective marketing tools, d) *Visitors* who play the role of visitor of exhibitions and participant of events in order to receive the services of exhibitors and organisers, e) *Sub-contractors* who provide support services to organisers (e.g. security, cleaning, electronic equipment) or/and hall owners, f) *Media Partners* providing media coverage of the event and publicity to organisers and exhibitors and g) *Sponsors* providing capital in return of leveraging their brand. The primary business relationships of this model are illustrated in

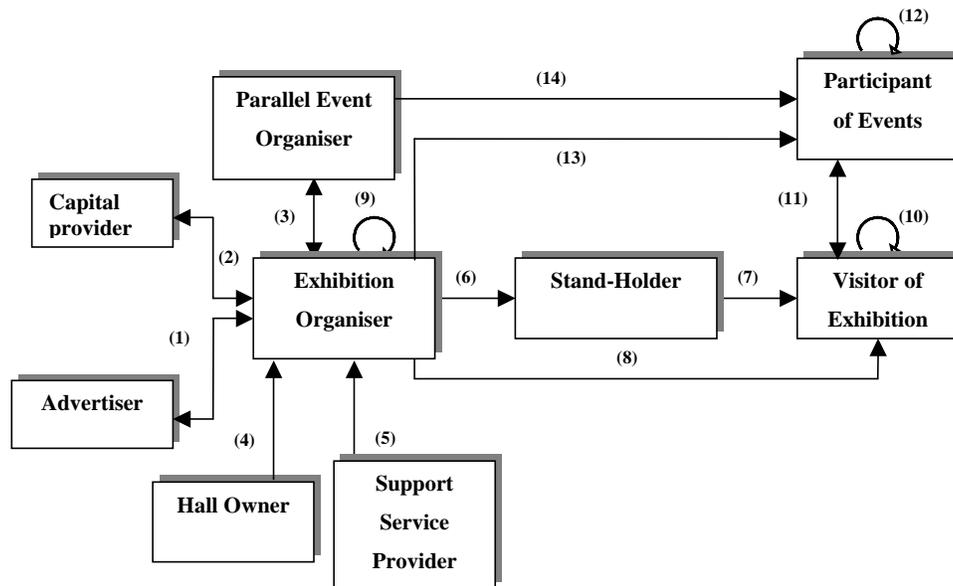


Figure 2.

Figure 2: Reference Business Model

Phase II: Identify Technology's Influence

Step 2: Assess the influence of technology innovation

This step included a definition of the benefits that are rose from the introduction of the mobile exhibition guide to the concerned actors and a discussion of the elements of the current business model that are volatile to change due to technology innovation. More details on this step are documented in (mEXPRESS, 2003).

Step 3: Identify missing roles

The roles identified in the Reference Business Model Analysis were not enough to support the new activities implied by the use of the mobile exhibition guide. More specifically, the need for one or more new player(s) accomplishing the following groups of activities was recognised.

1. Infrastructure Installation and Maintenance, including functions for defining the requirements for, installing, and maintaining the networking, positioning infrastructure as well as any other hardware unit required to support the mobile mediation platform.
2. Software Configuration and Support, including functions for configuring and administrating the mobile software application.
3. Content Syndication, Management and Delivery. Syndication refers to “selling the *same* information to many *different* customers, packaging it with other offerings in uniquely valuable ways, and then redistributing it” (Werbach, 2000). In our case, syndication concerns packaging the information produced, such as statistics reports, with other offerings, such as visitors' profile, and then customising it to the requirements of different users, such as exhibitors and organisers.

Following, a table matching new roles with existing players that could potentially play them was created. The ultimate purpose is to identify whether the existing players could take on the new roles. The cells filled with 'X' concern functions that could possibly be executed by the respective player, the cells filled with '?' concern functions that could probably – but not for sure – be executed by the respective player, while the empty cells stand for functions that cannot be executed by any of the existing player.

Function \ Player	Hall Owner	Organiser	Exhibitor	Visitor
Infrastructure Installation and Maintenance				
▪ Define requirements for wireless networking, positioning infrastructure and any other hardware unit	×			
▪ Install wireless networking, positioning infrastructure and any other hardware unit				
▪ Administrate the wireless networking, positioning infrastructure and any other hardware unit	×			
▪ Maintain the wireless networking, positioning infrastructure and any other hardware unit				
Software Configuration and Support				
▪ Make the initial registration of organisers	×			
▪ Initialise records in the database				
▪ Complete all administration tasks		?		
Content Aggregation, Management and Delivery				
▪ Define the type of data regarding visitors and exhibitors' profile to be stored in the system		×		
▪ Define the type and the form of statistics collected		×		
▪ Collect and package statistical data	?			
▪ Collect and package data on visitors profiles	?			
▪ Deliver statistics to organisers and exhibitors	?			
▪ Deliver (anonymous) data on visitors' profile to exhibitors and organisers	?			
▪ Control and delete any dummy or false content of the DB		×		

Table 5: Mapping of new functions to existing players

Phase III: Change

Step 4: Define scenarios

The table constructed in Step 3 illustrated that the current key stakeholders of the traditional exhibition industry were not enough to fulfill the functions corresponding to the newly generated roles. Only a subset of these functions could exhibition organisers and hall owners execute. Thus, new player(s) incorporating one or more of the following

roles should be introduced: 1) Technology Provider, 2) Software Administrator, and 3) Content Syndicator and Distributor.

Following, a number of alternative change options were generated based on a diverse distribution of responsibilities and roles between existing or/and new players. The final change options produced two scenarios for business model development via a combination of techniques, such as brainstorming, interviews with key actors and domain experts, and study of business models applied in similar cases where a technology innovation motivated a business model evolution. *Tables 6 and 7* briefly illustrate each scenario in terms of the players involved and the type of relationships among them.

SCENARIO A	Partnership of Hall Owner with a Third Party
Title of BM:	The “Market-Maker” Business Model (MM)
Key Players and Roles:	1. Third Party, 2. Hall Owner
Short Description:	The scenario concerns the development of a partnership between an independent body – a Third Party – and one or more Hall Owners, playing in common the role of the mobile Exhibition Service Provider (m-ESP). These two bodies make a semi-permanent agreement for providing the mobile exhibition services through the technology infrastructure that the Technology Provider installs at the premises of the concerned Hall Owner. Hall Owner can then provide the service to any exhibition show organised either by itself or hosted organiser. The last ones provide it as a default service for exhibitors that pay for it via the booth rental price and as premium service to visitors.

Table 6: The Basics of Scenario A

SCENARIO B	Dominance of Hall Owner
Title:	“The Full-Service Provider” (FSP) Business Model
Key Players:	Hall Owner/ Organiser
Short Description:	According to this scenario, the overall responsibility for both the technology infrastructure support and the service provision and management belongs to a Hall Owner, usually also acting as Exhibition Organiser. Hall Owners can buy the service package of the mobile exhibition guide (including technology infrastructure and software) from its developer, called here as Technology Provider. Then, they have two possibilities: a) keeping the mobile exhibition guide as proprietary technology/ service and provide it only to its exhibition shows, or b) renting it to hosted organisers of exhibition shows. The last ones can charge their customers an extra fee for providing this service. As in the first scenario, exhibitors may be charged an extra fee over the price paid for stand renting. While in B2B (trade) shows, visitors usually are invited and thus not charged for participating, in B2C (public) shows, visitors may be charged with a fee over the standard entrance ticket.

Table 7: The Basics of Scenario B

Step 5: Describe the new business model(s)

This step includes description of the business models that were generated from the above scenarios by discussing mainly their similarities and differences on the primary elements characterising a business model (Pateli and Giaglis, 2003). Due to space limitations, we present only the attributes of outmost importance in what follows.

Actors, Roles and Responsibilities

Table 8 presents a distribution of the required roles to new and existing players of Scenario A and B. The first column of the table illustrates the three primary roles identified above, adding to them the critical roles of the Infrastructure and Content Provider as well as the role of the Users, while the first row presents the four key stakeholders of the exhibition industry plus a new third party, who participates in Scenario A. In certain cases, one role may be assigned to more than one actor. Cells filled with “A” indicate the assignment of the specific role to the corresponding player according to Scenario A, while cells filled with “B” indicate assignment of roles according to Scenario B. Finally, cells filled with “A/B” indicate similarity in the assignment of the specific role between the two scenarios.

Roles \ Players	Technology Provider	3 rd Party	Hall Owner	Exhibition Organiser	Exhibitor	Visitor
	Infrastructure Provider	A/B		A/B		
Software Administrator		A	B			
Content Provider				A/B	A/B	
Content Syndicator & Distributor		A	B			
Service Provider		A	B			
Users				A/B	A/B	A/B

Table 8: Key Actors and Roles in Scenario A, B

Market Scope

The target market of both business models is the same as far as exhibitors and visitors are concerned. Differences can be identified in the roles of *hall owners* and *exhibition organisers*. Specifically, in the “Market-Maker” business model, the third party is addressing large-sized hall owners that are willing to co-operate with external service providers for delivering value-added services through their premises. The “Full-Service Provider” business model is also targeting large-sized hall owners. However, in this case, hall owners have the human and financial resources required, and thus prefer to, develop, support and provide value-added services internally. In Scenario A, the target market of *exhibition organisers* includes those usually organising trade shows (or mixed purpose events) and are themselves, or are hosted by, hall owners that have signed an agreement with the mobile Exhibition Service Provider (m-ESP). In Scenario B, the corresponding target market includes organisers of trade shows (or mixed purpose events) that are themselves, or are hosted by, hall owners that have installed the wireless networking and positioning infrastructure at their premises.

Cost and Revenue Model

The cost factors characterising both business models are identical and involve a once-only implementation cost for the wireless networking and positioning infrastructure, as well as a once-only purchase cost for the software, including costs for administration and support services. While, the “Market-Maker” business model is based on a *revenue-sharing agreement* between third party and hall owner - organiser, jointly acting as the mobile Exhibition Service Provider (m-ESP), the “Full-Service Provider” model is financially based upon either a *sponsorship* or an *investment* made on Hall Owners infrastructure for providing value-added services.

Nevertheless, in both cases, the primary revenue streams that can support the viability and wealth of the business model are:

- Revenues from selling syndicated and customised exhibition content (e.g. statistical reports) to organisers and exhibitors,
- Rental fees paid for the Mobile Exhibition Guide by organisers,
- Fees paid by organisers for getting online feedback from visitors,

- Advertisement fees paid by exhibitors for the placement of their ads in the site of the mobile exhibition guide,
- Extra fees hidden in the booth rent paid that exhibitors pay to hall owners – organisers.

Step 6: Evaluate the impact of changes on the market

The impact of the Proposed Business Models was specified in terms of a number of direct or indirect effects brought about on the vertical market of exhibitions, as well as on the horizontal market of mobile services. The primary effects of applying the Mobile Exhibition Guide in the exhibition industry were discussed based on the model of “Five Competitive Forces” described by Michael Porter (1985) and included: a) new players, b) new products and services, c) enhanced value proposition of existing services, e) increase of hall owners’ bargaining power over organisers, and f) increase of organisers’ bargaining power over exhibitors. Similarly, the most evident effects on the mobile services market are: a) increase awareness of and familiarisation with mobile applications, c) encourage development on more advanced public mobile applications, and d) enforce the role of Service Provider over the currently dominant role of mobile operators.

5. Discussion And further Research

5.1. Discussion: Towards a Contingency Model for Scenarios

In this paper we have proposed a methodology for Business Model evolution based on the identification of alternative scenarios. Each scenario is a description of a different way of allocating responsibilities, contracting partnerships and ensuring revenue for the business model. Based on scenario definition, a different description of the transformed business model’s primary components is provided.

It is of course expected that, in practice, more than one business models for the exploitation of the mobile exhibition system will be applicable in different exhibition markets depending on their unique characteristics. In this paper, we have discussed only two possible generic scenarios and their associated business models. The final

selection/decision on the business model to be applied in a given situation will be based on a number of factors regarding both *external* (market) and *internal* (firm-specific) conditions.

Recent research work on strategy theory has recognized three primary types of effects on a firm performance. These include strategy, industry, and firm-asset or resource-based aspects. This three-dimensional framework, being tested using empirical data (Spanos and Lioukas, 2001), results in supporting arguments that consider both external (industry-related) and internal (firm-specific) influences as significant determinants of performance (Henderson and Mitchell, 1997). Also recently, a close correlation of the literature that addresses business models with the traditional strategy theory has been identified. This literature concerns integrating the three aforementioned strategic perspectives in the definition of a conceptual business model that includes description of customers and competitors (industry), the offering (general strategy), activities and organization (the value chain), resources-base (resources) and the source of resources and production input (factor markets) as well as the process by which a business model evolves (management) (Hedman and Kalling, 2003).

Table 7 outlines the factors, grouped under the three strategic perspectives, used to guide the decision on the favourable conditions under which each of the business models developed is more likely to materialise in practice. The identification of factors is followed by an outline of the favourable conditions, in the form of a contingency model, for the operation of each business model.

Strategy-level Factors

- *Strategic Objectives* of organisers. It concerns their strategy focus and their expectations for the mobile exhibition guide's contribution to achieving their strategic goals.

Industry-level Factors

- *Industry Structure*. This factor addresses whether the market in which the business model is introduced is either monopolistic or oligopolistic or a highly competitive market.
- *Balance of Transaction Costs and Costs of internal development*. It calculates the costs for contracting partnerships with third parties for providing the mobile exhibition guide in comparison with the costs incurred in case of internal development of the required capabilities and resources (Li & Whalley, 2002).
- *Legal Profile of Organisers*. It defines whether the market of organisers is dominated by private companies or public organizations. Such a factor is declarative of the organisers' motivation and strategic incentives for applying a technology innovation and thus differentiating themselves.

Organization-level Factors

- *Firm Capabilities and Assets*. It is a factor that contributes to assessment of the organisers' position in the market and the identification of the roles that it assembles. Thus, a business entity that has experience in organizing exhibition events is keeping the role of exhibition organiser, while an entity that has both the resources (mainly infrastructure) and the experience of organizing events is considered as keeping the dual role of hall owner and exhibition organiser. The strategic objectives and thus the attitude of these two business entities towards a mobile exhibition guide may vary significantly based on their existing capabilities and assets.

Table 9: Factors Influencing the Selection of a Business Model

Based on this analysis, Table 8 outlines a contingency model illustrating the conditions under which each of the proposed business models for the exhibition industry becomes more attractive.

Conditions Favouring the MM Business Model	Conditions Favouring the FSP Business Model
a) High degree of <i>competition</i>	a) <i>Monopolistic or oligopolistic</i> markets
b) Large number of <i>private</i> exhibition organisers	b) Markets dominated by <i>one or few private or public</i> exhibition organisers
c) Organisers are <i>separate entities</i> from hall owners	c) Organisers <i>own their own exhibition centre</i>
d) Organisers follow a <i>differentiation strategy</i> through the provision of value-added services	d) Organisers follow a <i>cost-leadership strategy</i> under the concern of keeping their existing customer base
e) <i>Transaction costs are lower</i> than the costs of providing the service based on internal skills/ resources	e) <i>Transaction costs are higher</i> than the costs of providing the service based on internal skills/ resources

Table 10. A Contingency Model for the Exhibition Industry

5.2. Future Research Work

There is ample space for more elaboration of the findings/ results of this paper as well as further research in business models' correlation with other scientific disciplines. An obvious stream of research could be directed towards extending and enriching the description of each business model with the results of a financial analysis made on each scenario. Based on data collected for the market size, calculations of costs (for hardware purchase, software development and service provision) and definitions of possible revenues, a cash flow model could be designed to illustrate the distribution of costs and possible revenues among the concerned actors for each scenario. Such a research work will significantly contribute to the assessment of each business model's viability. Testing the proposed scenarios for business models design through presentation of both the technology and the business solution to real users is another direction of intense research interest. Such research work is scheduled for later stages of the mEXPRESS project.

An even more significant and challenging research stream includes investigation of related disciplines, such as the theory of industrial organizations, strategy theory, and

theory of network economics, under the perspective of identifying factors that contribute to the design but mainly the assessment of business models.

ACKNOWLEDGEMENTS

This work has been performed in the framework of the IST project mEXPRESS (IST - 2001-33432), which is funded in part by the European Commission. The authors would like to acknowledge the contributions of their colleagues from Intracom Hellenic Telecommunications and Electronics Industry S.A, L.M. Ericsson A/S, Elisa Communications Corporation, Pouliadis Associates Corporation, Space Systems Finland Ltd., Research Centre of Athens University of Economics and Business, Helsinki University of Technology, The Finnish Fair Corporation, ROTA Ltd. The authors are solely responsible for this document; it does not represent the opinion of the European Commission, and the European Commission is not responsible for any use that might be made of data appearing therein.

References

- Auer, C., Follack, M. (2002). Using Action Research for Gaining Competitive Advantage out of the Internet's Impact on Existing Business Models, In *Proceedings of the 15th Bled Electronic Commerce Conference – eReality: Constructing the eEconomy*, June 17 – 19, Bled, Slovenia, 767-784.
- Fouskas K., Pateli A., Spinellis D., Virola H. (2002). Applying Contextual Inquiry for Capturing End-Users Behaviour Requirements for Mobile Exhibition Services, In *Proceedings of the First International Conference on Mobile Business*, July 8-9, Athens, Greece.
- Gordijn, J., Akkermans, J.M. (2001). Designing and Evaluating E-Business Models, *IEEE Intelligent Systems*, 16(4), 11-17.
- Hamel, G. (2000). *Leading the Revolution*, Harvard Business School Press, Boston.
- Hedman, J., Kalling, T. (2003). The business model concept: theoretical underpinnings and empirical illustrations, *European Journal of Information Systems*, 12, 49-59.
- Henderson, R., and Mitchell, W. (1997). The interactions of organizational and competitive influences on strategy and performance, *Strategic Management Journal*, Summer Special Issue, 18, 5-14.
- Kalakota, R., Robinson, M. (2001). *mBusiness: The Race to Mobility*, McGraw-Hill Publishing Company, New York.
- Kulatilaka, Venkatramen (2000). *Winning in Digital Markets: Reframing the Business-Finance-IT Conversations*, draft paper, School of Management, Boston University.
- Li, F., Whalley, J. (2002). Deconstruction of the Telecommunications industry: from Value Chains to Value Networks, *Telecommunications Policy*, 26(9-10), 451-472.
- Linder, J. C., Cantrell, S. (2001). *Changing Business Models: Surveying the Landscape*, White Paper, Institute for Strategic Change, Accenture.
- MobiCom (IST-1999-21000) Consortium (2002). Deliverable D6.2 “*Investigation of New Market Dynamics and New Business Models*”.
- mEXPRESS (IST-2001-33432) Consortium (2002). Deliverable D1.1 “*Actors Requirements Framework & Realistic Application Scenarios*”, [available online from: <http://mexpress.intranet.gr>, last accessed 10th May 2003].

- mEXPRESS (IST-2001-33432) Consortium (2003). Deliverable D6.1 “*Dissemination and Use Plan – Midterm*”, [available online from: <http://mexpress.intranet.gr>, last accessed 10th May 2003].
- Osterwalder, A., Pigneur, Y. (2002). An eBusiness Model Ontology for Modeling eBusiness, In *Proceedings of the 15th Bled Electronic Commerce Conference – eReality: Constructing the eEconomy*, Bled, Slovenia, June 17 – 19, 2002, pp. 75-91.
- Paavilainen, J. (2002). *Mobile Business Strategies: Understanding the Technologies and Opportunities*, Wireless Press, 50-51.
- Pateli, A. (2002). *A Domain Area Report on Business Models*, White Paper, [available online from: www.eltrun.gr, last accessed 10th May 2003]
- Pateli, A., Giaglis, G. (2003). A Framework for Understanding and Analysing e-Business Models, In *Proceedings of the 16th Bled Electronic Commerce Conference – eTransformation*, June 9-11, Bled, Slovenia.
- Petrovic, O., Kittl, C. Teksten, R.D. (2001). Developing Business Models for eBusiness, In *Proceedings of the International Conference on Electronic Commerce 2001*, October 31 – November 4, Vienna, Austria.
- Porter, M. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*, Free Press, New York
- Pramataris K., Papakiriakopoulos D., Lekakos G., Mylonopoulos, N. (2001). Personalized Interactive TV Advertising: The IMEDIA Business Model, *Journal of Electronic Markets*, 11(1), 17-25.
- Rulke, A., Iyer, A., Chiasson, G. (2003). *The Ecology of Mobile Commerce: Charting a Course for Success Using Value Chain Analysis*, In Mennecke, B. E., Strader, E. J., (Eds.) *Mobile Commerce: Technology Theory and Applications*, Idea Group Publishing.
- Senge, P.M., Sberman, J.D. (1994). *System Thinking and Organizational Learning: Acting Locally and Thinking Globally in the Organization of the Future*, in Morecroft, J.D., and Sberman, J.D. (editors) *Modeling for Learning Organizations*, Portland: Productivity Press, 195-216.

- Sideris, I., Pateli, A. (2003). Using Mobile Business Evolution Scenarios for assessing m-Business Models, *EURESCOM Summit 2003 – Evolution of Broadband Services*, 29 September - 1 October, Heidelberg, Germany (forthcoming).
- Spanos, Y.E., Lioukas, S. (2001). An Examination into the Causal Logic of Rent Generation: Contrasting Porter's Competitive Strategy Framework and the Resource-based Perspective, *Strategic Management Journal*, 22, 907-934.
- Weill, P., Vitale, M.R. (2001). *Place to Space: Migrating to eBusiness Models*, Harvard Business School Press, Boston.
- Werbach, K. (2000). Syndication: The Emerging Model for Business in the Internet Era, *Harvard Business Review*, 78(3), 85-93.