

December 2002

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Werner Schachner
eBusiness Competence Center

Wolfgang Sattler
eBusiness Competence Center

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Recommended Citation

Schachner, Werner and Sattler, Wolfgang, "DYNAMIC VALUE-LOGIC-MAPPING: A METHOD FOR MAKING CHANGES DUE TO DIGITAL ECONOMY VISIBLE IN A BUSINESS MODEL" (2002). *AMCIS 2002 Proceedings*. 58.
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DYNAMIC VALUE-LOGIC-MAPPING: A METHOD FOR MAKING CHANGES DUE TO DIGITAL ECONOMY VISIBLE IN A BUSINESS MODEL

Werner Schachner and Wolfgang Sattler

evolaris Privatstiftung

eBusiness Competence Center

werner.schachner@evolaris.net

wolfgang.sattler@evolaris.net

Abstract

For meeting the requirements due to the dynamism of digital economy it is essential for businesses to have a detailed knowledge about the correlations of effects in their own company. By using the method “Dynamic Value-Logic-Mapping” it becomes possible to realize and experience these correlations without risks. The use of this method primarily focuses on the development of the “Business Value Logic” model, which does not just represent the elements of the current business model of an enterprise, but also demonstrates the interaction between these elements (the so-called “Business Logic”) at the top level of the model, as well as across all levels the logic underlying the entire business value.

This method will mostly be applied at workshops involving various interest groups of the enterprise concerned. Using this method in this particular way enables visualizing various views of the enterprise by means of networks of interactions. The application of the entire method (ranging from the collection of information concerning subjective interests in an enterprise to the systematic deduction of targeted actions at the process level) contributes substantially to the explanation of/sensitization for interactions taking place in an enterprise and the evaluation of current business models, future variations of business models and/or new business models. Furthermore it eventually forms the basis for realizing risks and chances of an enterprise and its business environment at an early stage, as it can be considered as a form of “monitoring”.

Introduction: Background and Relevance of Method Development

Most probably today’s economy is faced with the most dramatic changes since the Industrial Revolution, namely the e-business revolution. After the first Internet hype, which has brought forth the New Economy and has led to the establishment of many Internet start-ups, a process of convergence has been taking place since the beginning of the new millennium, which seems to result into a fusion of two totally different business worlds. On the one hand there is traditional business with its set of traditional rules (Old Economy), on the other hand there is the highly dynamic New Economy with its revolutionary business models. Due to the fusion of these two spheres eventually an electronically networked business environment, the Net Economy, is created, which embodies the advantages of both business worlds. Existing enterprises are thus faced with the enormous challenge to reorganize themselves for this Net Economy (transformation), in order to be able to persist in the digitalized business world.

For successfully managing this transformation process, it is essential to understand the various “mental models” (Senge 1990) of the interest groups involved (in the respective business model currently in use). These mental models do not just form the basis for the logic underlying the current business model, but among others may also impede – in case it is a rigid one – the success of future, potential and innovative business models or variations of business models.

We think that new ways of visualizing the logic of business models (Business Logic) are required in order to support this transformation process. In this context the objective has to be to influence, in a targeted way and by modeling these logics together with the interest groups involved, the mental models of the decision-makers of the enterprise, as well as to make graspable for

the decision-makers the impacts of alternative business decisions on the current business model without running any risks. The method “Dynamic Value-Logic-Mapping” (DLVM) tries to meet these requirements.

The Role of Business Models in this Method

As the DVLM method intends to show the logic of various business models at the highest model level, it is crucial to base this study on a clear understanding of the concept “business model”.

Since the end of the 1990ies, the concept “business model” has been increasingly used again (as an example for the numerous authors dealing with this concept please refer to e.g. Alt and Zimmermann 2001), but only in very rare cases the concept is discussed / defined in detail. It can be concluded from the latest definitions that the notions associated with the concept “business model” are primarily focused on entrepreneurial activities and on profit-making.

For the present study, the description of business models based on the seven sub-models by Petrovic, Kittl and Teksten (2001) represents an important contribution to understanding the concept “business model”:

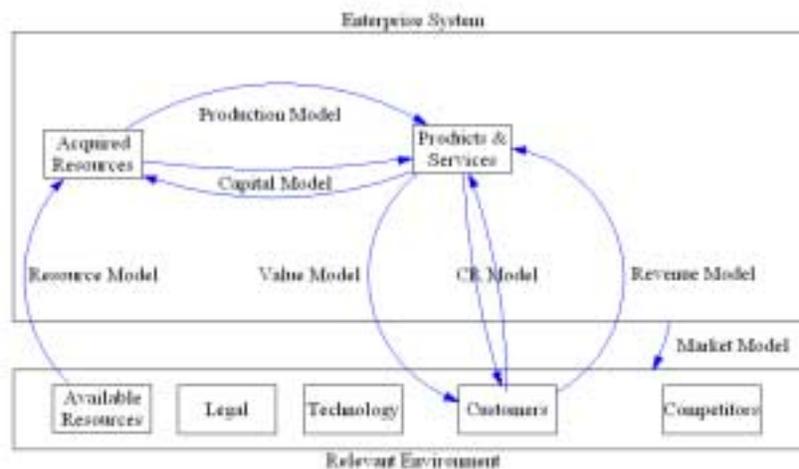


Figure 1. Sub-Models of a Business Model (Petrovic, Kittl and Teksten 2001)

A business model can be divided into seven sub-models, which are an extension and modification of Wirtz’s (2000) model:

1. Value Model—Describes the logic, which core product(s)/service(s)/experience(s) are delivered to the customer and other value-added services derived from the core competence.
2. Resource Model—Describes the logic, how elements are necessary for the transformation process, and how to identify and procure the required quantities.
3. Production Model—Describes the logic, how the elements are combined in the transformation process from the source to the output.
4. Customer Relations Model—The logic, how to reach, serve, and retain customers. It consists of the following sub-models:
 - Distribution Model—The logic behind the delivery process.
 - Marketing Model—The logic behind reaching and retaining customers.
 - Service Model—The logic behind serving the customer.
5. Revenue Model—Describes the logic of why, how, what, and when the company receives compensation in return for the products.
6. Capital Model—Describes the logic, how financial sourcing occurs to create a debt and equity structure, and how that money is utilized with respect to assets and liabilities, over the time.
7. Market Model—Describes the logic of choosing a relevant environment in which the business operates.

In the research work, on which the present paper is based, the “elements of a business model” and the “logic of a business model” have been clearly distinguished from each other and are strictly kept apart.

The application of the complete DVLM method enables not just a depiction of the elements of the currently valid business model and a visualization of its logic, but also a representation of the logic underlying the entire business value of an enterprise (Business Value Logic).

The Business Value Logic as a Core Component of the Method

In order to make the impacts of alternative business decisions on the entire business graspable for the decision-makers without running any risks, the Business Value Logic (BVL) of the enterprise in question is visualized in the application of the method. The knowledge about the flow, the contents, the targets etc. of the processes taking place in an enterprise serves as a basis for drawing up the BVL model, a process which primarily takes place in workshops for the interest groups involved. The internalized knowledge of the participants of the workshops thus covers the basis. Process modeling itself, however, is not part of BVL modeling.

Modeling of the Business Value Logic is taking place on three different levels, which comprise the following contents:

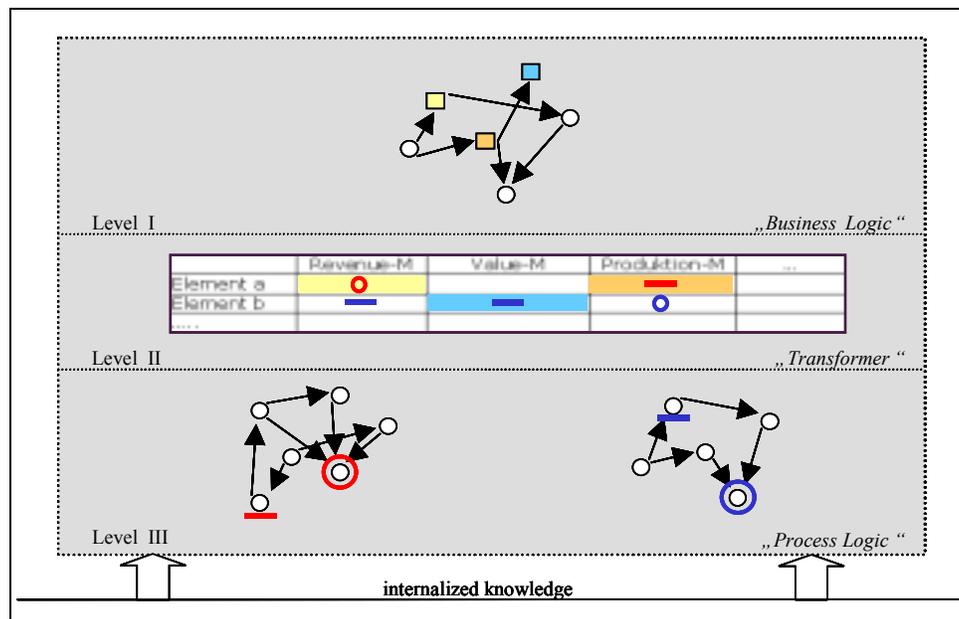


Figure 2. The Model of BVL According to Sattler/Schachner

The third level of the model, i.e. process logic level, contains various networks of interactions, which represent specific complex problems involved in selected processes or partial processes taking place in the enterprise. These networks enable a comprehension of the individual logics underlying the considered sub-areas of the system (processes). For this purpose, direct correlations associated with the interaction between the elements/variables (interests of those concerned) in the respective areas are described in the networks of interactions of Level III.

In order to ensure completeness and avoid overlapping of contents of the BVL model, a so-called transformer, which is generic in character, is used on the second level of the model. The transformer can be compared to a grid, which lists in a well-structured way all the components of the business model according to the seven sub-models mentioned above (Petrovic, Kittl and Teksten 2001) and can thus be considered as the “maximum version” of a business model’s possible elements. This means that while modeling the BVL it is not fixed at the second model level, which variables describe a business model, but only which areas of an enterprise can be described by means of enterprise-specific variables, in order to visualize the underlying business model.

The key variables of each network of Level III are then entered into the corresponding field or corresponding fields of the grid in the transformer.¹ As a result the current configuration of the underlying business model (i.e. the enterprise-specific, existing elements of the business model) is visualized.

The top level, i.e. the level of business logic, is formed by means of a network of interactions, which is based on the key variables in the transformer. As opposed to the networks depicted at Level III, only indirect correlations of effects are represented in this network. This type of presentation does not allow any detailed information with regard to direction of the effects, intensity and time delay of effect correlations (detailed information on these aspects are contained in Level III), but guarantees clarity by concentrating on the very essentials.

Development/Contents/Stages of the Method

The DVLM method is primarily based on the research method “Action Research” (for further reading please refer to Checkland 1998) as well as the method “Networked Thinking and Actions” (“Vernetztes Denken & Handeln” according to Honegger 2001).

Action Research applies scientific experiments to topical issues of business practice and thus requires an intensive cooperation with and involvement of scientists, experts and non-professionals. Numerous features/concepts of Action Research play an important role in the application of the method (interdisciplinarity, problem-orientation, action-orientation, participation in practice, cyclical process flow, process of conscious and reflective learning...).

The method of Networked Thinking and Actions (for further reading please refer to Probst/Gomez 1991 and Gomez/Probst 1999) is used both in the development of the DVLM method (development of the DVLM method by applying Networked Thinking and Actions to a concrete example) and as a basis for the method itself. The concept of Networked Thinking and Actions deals with the question, “How can a complex question be analyzed systematically and/or visualized in teams in order to deduce and/or implement targeted actions?”. In modeling according to the DVLM method the following ten steps have to be worked off:

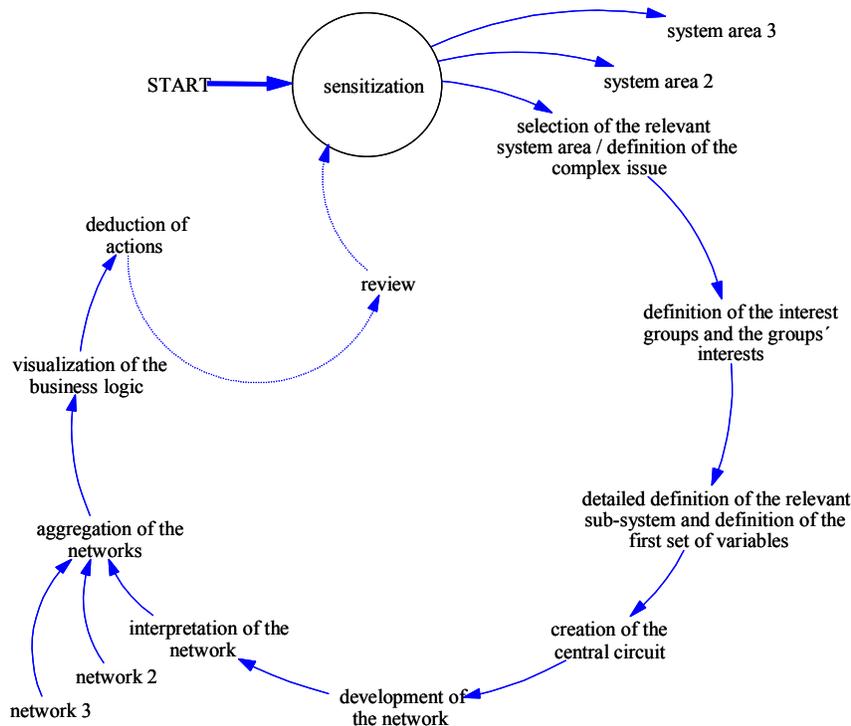


Figure 3. The Individual Steps of the Method “DVLM” According to Sattler/Schachner

¹Into the field in the grid whose interpretation is considerably supported by the variable.

1. When preparing modeling of the BVL it is essential to ensure the confidence of all those who participate in the method, to define the expectations the individual participants have with regard to the results of the modeling process, as well as to guarantee the ideal composition of the team.
2. In order to lay the basis for modeling the Business Value Logic of a company, the system areas to be modeled (processes/process stages) have to be selected and complex issues to be dealt with have to be defined accordingly.²
3. At this stage the interest groups are defined with regard to the respective area of the system, and the groups' interests involved in this particular system area are listed.³
4. By systematically selecting concepts from the interests listed in step 3 (first set of variables) the relevant sub-systems to be modeled (processes / process stages) are carefully defined.
5. Before beginning to model each and every network of interactions of a sub-system, a central circuit (referred to as motor) is created, which demonstrates the correlations of effects of the interests of the core interest group.
6. While further developing the networks, the correlations of effects of all variables involved in the respective sub-system are gradually visualized.
7. The correlations of effects between the individual variables are depicted by means of arrows that can be interpreted with regard to direction, intensity and time delay of the effects. By assigning "roles" (tractability and measurable points) to the individual variables, the interpretation can be concluded.
8. When aggregating the networks of the various sub-systems, the so-called "transformer" is used (also refer to the 3-level model of the Business Value Logic). This means that key variables of the individual networks of the sub-areas of the system are entered into the transformer, which eventually leads to a visualization of the existing business model.
9. In a final representation of essential correlations between the individual elements/areas of the transformer, the Business Logic of the respective enterprise, that is the logic underlying the current business model, is visualized.
10. Based on the definitions of the desired business targets of the enterprise and allowing for enterprise-specific design of the considered sub-systems, it is possible to deduce from the Business Value Logic actions that are required due to specific situations. By "pursuing" various correlations of effects across all levels of the BVL, the impacts of individual alternative business decisions can be made graspable without running any particular risks.

As reality and perception are subject to continuous changes, existing models have to be analyzed/checked and cultivated in an iterative process (review).

Areas of Application and Potential of Benefits When Applying this Method

By modeling the Business Value Logic while applying the DVLM method it becomes possible to visualize the logic underlying the business value of the enterprise and thus understand the correlations of effects within an enterprise. With the aid of the BVL model, which represents the core component of this method, it furthermore becomes possible to forecast – without running any risks – the impacts that alternative future business decisions will have on the entire enterprise and thus make these impacts graspable as well as comparable. During these forecasts, the transformer is used in order to frequently switch between the business logic and the process logic level, and due to an "interpretation" of the model-like, visualized correlations of effects the transformer eventually helps indicate further concrete approaches for targeted actions on the process level.

The most important objective when using this method therefore is not the "optimization of business processes", but it is to demonstrate a situation-dependent necessity to change existing business models, and it also should make the management of processes possible in accordance with the underlying business logics in case that process changes are required. Making use of this method thus creates the following potential for benefits:

Explanation/Sensitization: Create transparency and understanding with regard to the elements of the existing business models and their interactions.

²While applying the DVLM method, an individual network of effects is drawn up for every system sub-area —STB¹ to STBⁿ — which represents the very essentials and thus gives an answer to complex underlying questions.

³Very often the participation of important internal and/or external groups of interest in the modeling workshops is only possible at very high expenses. In these cases, other supporting/complementary methods for collecting information (e.g., interviews, questionnaires, etc.) have to be applied.

Evaluation: Enable forecasts with regard to the operability of the current business model as well as to future, possible, alternative business models (or future alternative variations of the existing business model), and with regard to determining changes in the current business model which are inevitably caused by external factors.

Monitoring: Possibility to realize at an early stage future potentials of risks and opportunities, due to a model-like integration of changes depending on specific situations (within the enterprise and/or in the business environment) into the model of Business Value Logic.

Other potential benefits associated with the application of this method are for example:

- By guaranteeing transparency in the model, the basis for understanding problems in the enterprise can be laid.
- Business decisions taken in the enterprise can be communicated in a convincing manner because they can be easily comprehended due to the use of the model.
- Reasons for reaching/not reaching targets set in the enterprise can be analyzed by making use of the model.
- The visualization of the Business Value Logic of an enterprise facilitates at an early stage the perception of possible potentials for changes within the business environment and thus contributes considerably to the sustainable success of the enterprise.

Possibilities and Limits of the Method

The typical application of the method leads to new models that do not depict 1:1 the underlying real business models. Based on a very careful and systematic selection of the sub-systems to be modeled at level III, information is collected and visualized, which still enables the deduction of the logic behind the real business model.

Above all in the interpretation of the networks of effects contained in the model, as well as in the deduction of actions from the model, usually not all influencing factors and not all premises are known. As a result the BVL model is partly based on “forecasts” and “probabilities”. By cultivating and continuously developing the model further through reviews, however, it becomes possible to ensure a certain quality of the estimates.

The BVL model does not represent a decision model in the classical sense. The model does not allow showing the “ideal state” or the “optimum state” of the modeled systems (enterprises) through a simultaneous evaluation of individual action packages. However, by applying the method DVLM, it becomes possible to forecast and evaluate the effects of individual actions. When combining this approach with traditional decision-making means, the application of this method still represents a powerful tool in the entire decision-making process.

As the BVL model typically contains many qualitative variables, it is not possible to carry out a computer-assisted simulation of the entire model. A computer-assisted simulation of individual parts of the model, however, is possible and supports a better understanding of the correlations of effects in the model.

Previous Results

In previous research activities dealing with the development of methods, the entire method has already been conceived and verified in individual applications. During the development of the method, the model architecture for the Business Value Logic was conceived as well.

First tests in applying the method in practice have already been made by use of Business Value Logic modeling within AVL-List GmbH (AVL is the world's largest privately owned and independent company for the development of powertrain systems with internal combustion engines as well as instrumentation and test systems in the automotive industry) and have shown that the method is practically applicable and yields useful results.

Next Steps/Further Research

The next stage of research will focus on defining the elements of the individual sub-models of a business model. The development of the transformer then has to be carried out on the basis of these results and taking into account the latest literature in related disciplines (controlling, strategy development...).

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