# Business Model Innovation with the NEFFICS platform and VDML

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**Abstract.** The NEFFICS platform combines an open innovation social media platform with a business modelling and operations platform. Business Model Innovation is supported with a basis in a Business Model framework with seven dimensions, where each dimension is supported by a corresponding diagram view from our proposed Value Delivery Modeling Language (VDML). The paper shows the use of the various VDML diagrams illustrated by an example. Business Model innovation can take place through new ideas within all of the dimensions, which can be elaborated and analysed further through a two level diagram approach.

**Keywords:** Business Model Innovation, Value Delivery Modeling Language, VDML

## 1 Introduction and Motivations

This paper presents the support for Business Model Innovation (BMI) in the NEFFICS platform which combines an open innovation social media platform with a business modelling and operations platform. BMI is supported with a basis in a Business Model (BM) framework with seven dimensions, where each dimension is supported by a corresponding diagram view from the Value Delivery Modeling Language (VDML) [1] developed by the NEFFICS project. VDML has now been proposed for further standardisation within the Object Management Group (OMG). This paper is focusing on the use of VDML diagrams to support the different dimensions of BMI.

## 2 NEFFICS platform support for Business Model Innovation

The NEFFICS innovation community provides a social media based platform for the suggestion and management of ideas and challenges. In the process of evaluating BM ideas it is possible to create and/or link structured VDML-based representations of BMs, and parts of the design of the business system that support them. Social collabo-

rative work and structured model-based design-work is now integrated into a single BMI process.

The innovation community supports the steps of a BMI process. Community members can submit challenges and ideas into a social BMI process where the status and progress can be presented and further analysed and progressed, collaboratively. A BMI funnel manages the progress of "to-be" BM ideas through different stages. BM ideas can be analysed, further refined and implemented through linked VDML models in the Business Operations platform (BOP), which also enable further process and service innovation support as described in [8]. In the following this paper will focus in particular on the support for Business Model Innovation with VDML.

## 3 Business Model Innovation with VDML

In NEFFICS, BMs are considered to consist of seven building blocks. Each BM building block or "BM dimension" is typically associated with or can be split up to one or more "BM items". A BM can conceptually be represented as a cube. The faces of this "Business Model Innovation cube (BMI Cube)" [2, 3], denote the six BM dimensions of "Value Propositions", "Customers", "Activities" (the "value chain"), "Capabilities" (or Competences), "Network Partners" and "Value Formulas". The ways in which the various BM items may be connected, across these BM dimensions, can be thought of as the seventh BM dimension, called "Relations".
The BMI Cube, together with an unfolded representation, in this paper referred to as "BM Diagram", is represented in Figure 1.

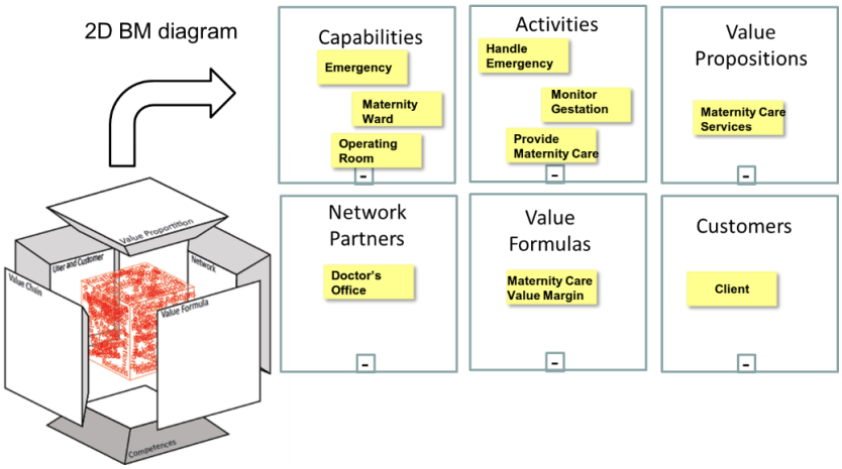


**Fig. 1.** BMI Cube with BM Diagram as 2D representation

The main areas and related diagrams of VDML align with the dimensions of the BMI Cube, as indicated in Figure 1, where VDML provides a diagram for each BM dimension. Every BM item, as associated with a BM dimension, can also be represented on the corresponding VDML diagram. This allows a two level navigation from

the BM diagram to the "underlying" VDML diagrams which represent how a BM item (according to its dimension) is related to other BM items (according to their dimensions). Thus VDML-based models provide a structured and detailed representation of BM items (according to the six dimensions) and their "relationships" (seventh dimension). Compared to other visual approaches for business model innovation, like the Osterwalder Business model canvas [4], this provides an integrated model based representation for each of the building blocks well suited for further analysis and simulation.

## 4 Business Model views with VDML diagrams

In the following it is shown how each of the six BM dimensions is expanded by a corresponding VDML diagram. The example diagrams are extracted from a pilot case on hospital maternity care services in the NEFFICS project.

The VDML role collaboration diagram, based on value networks [6], is used for modeling of the interactions, value exchanges and relations for both the Customers and the Network partners in the BM. From a Customer element in the element level of the Customers dimension of the BM, a Role Collaboration Diagram (VDML) might be started, in which the corresponding Party role, filled by the customer, is highlighted as shown in Figure 2.

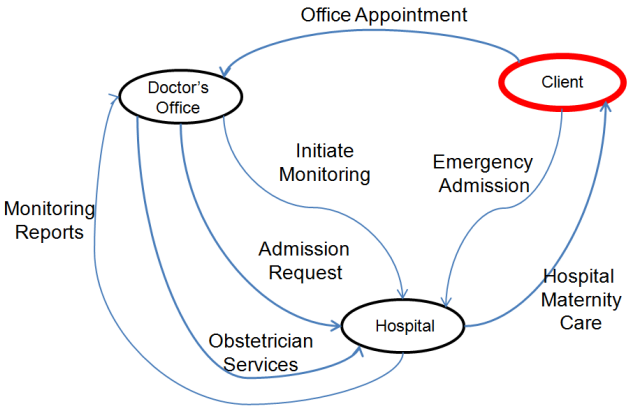


**Fig. 2.** VDML Role Collaboration Diagram, with Customer highlighted

Note that the BM, as represented in Figure 2, is defined from the perspective of the Hospital, as its owner. The Role Collaboration diagram shows how "the business", in its role of Hospital, collaborates with its customer (here in the role of Client). From the Doctor's Office, being defined as network partner in the BM, the same Role Collaboration would be started, whereby the role of "Doctor's Office" would be highlighted. Note that in this simple example both customer and network partner collaboration is contained in the same Role Collaboration diagram. This is not a necessity. A BM might be based on multiple "Collaborations" in VDML. From the "Maternity Care Services" value proposition in the BM diagram in Figure 1 a so-called Value

Proposition Exchange diagram from VDML is started, on which the value proposition is highlighted (see Figure 3). This diagram provides a higher level abstraction on the same "Collaboration". Rather than showing the various interactions, as in the Role Collaboration diagram, it focuses on the "packages" (and sets of values) that are exchanged. Value aspects as such are not visualized in the diagram, but just the "packages" (value propositions).

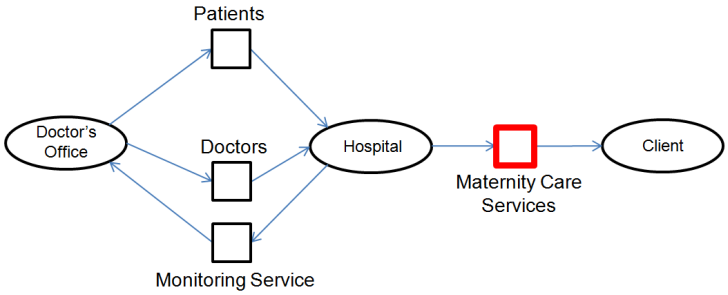


**Fig. 3.** VDML Value proposition diagram with a proposition highlighted

Note that an abstraction of the relation between the value proposition and the customer can also be visualized in the high level BM diagram. In the BM, the "Activities" building block defines what functions are required to create, capture, deliver the value proposition(s) to the targeted customer(s). When selecting, for instance, the activity "Provide Maternity Care" from the BM diagram in Figure 1, a VDML Activity Network diagram that highlights that activity can be started as shown in Figure 4.

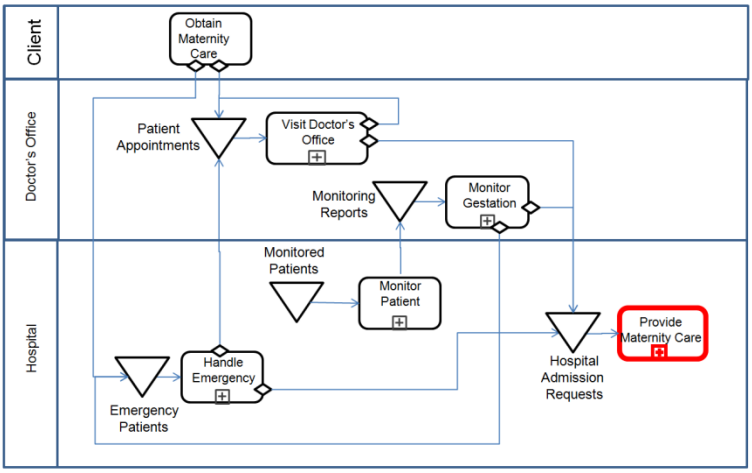


**Fig. 4.** VDML Activity Network Diagram, with an Activity highlighted

The "Activities" dimension of the BM contains the activities that, in VDML-terms, explicitly contribute the "Values" that are articulated by the Value Proposition. These Activities form the "Value Stream".

The “swim-lanes” in Figure 4 represent the same roles (here Party roles of a Business Network collaboration in VDML) as the “ovals” in Figures 2 and 3. Connectors in 4 as far as they cross “swim-lane” boundaries, denote the same “Deliverable Flows” (VDML) as the connectors in 3. Although different aspects of Value Delivery Models (VDML) are represented in different types of diagrams, the “model” is fully integrated.

According to VDML, activities require capabilities. Capabilities are applied through activities. For instance, one of the capabilities that are required to perform the activity “Provide Maternity Care”, is the capability “Maternity Ward”, as provided and managed by the “Clinical Oversight” unit of the Hospital. So, from the Capability “Maternity Ward” in Figure 1, a Capability Management Diagram (VDML) can be started, in which the corresponding “Capability Offer” is highlighted as shown in Figure 5.

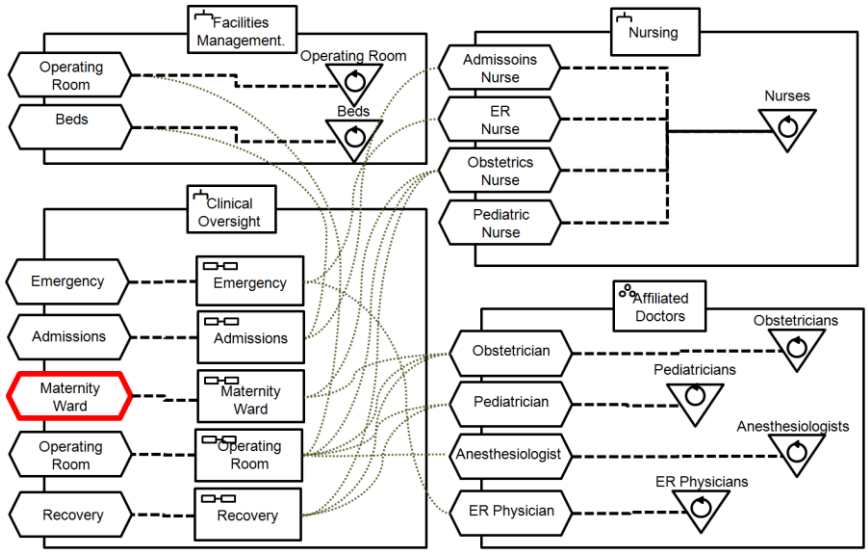


**Fig. 5.** VDML Capability Management Diagram, with a Capability Offer highlighted

As Figure 3 suggests, all Parties that collaborate, in the Business Network, may provide and receive value propositions from each other. Only the value proposition(s) that “the business” (here the “Hospital”) provides to the customer(s), are defined as part of the “Customers” dimension of the BM from Figure 1. The other value propositions are not represented directly, but do impact the BM indirectly, via the “Value Formulas” dimension.

In VDML, a Value Formula is defined as the Measure that measures a formula used to calculate the Value Margin, creating the Value Margin’s Measurement. Value Margin is a more general concept than “profit”, which is a Value Margin in just economical or monetary terms. Behind the value formula lays “a calculation” that the BM uses to calculate a result, in monetary terms or in terms of other types of value, or in terms of both. A BM can have one or more value formulas. Within VDML the

support for value measurements is provided through integration with the Structured Metrics Metamodel (SMM) standard [5].

A VDML Measurement Dependency diagram can be used to provide a graphical representation of a Value Formula, whereby calculation details are abstracted from the view.

Figure 6 provides the VDML Measurement Dependency diagram that could have been started from the "Maternity Care Value Margin" value formula in the BM diagram in Figure 1. Hence the corresponding element is highlighted in the VDML diagram.

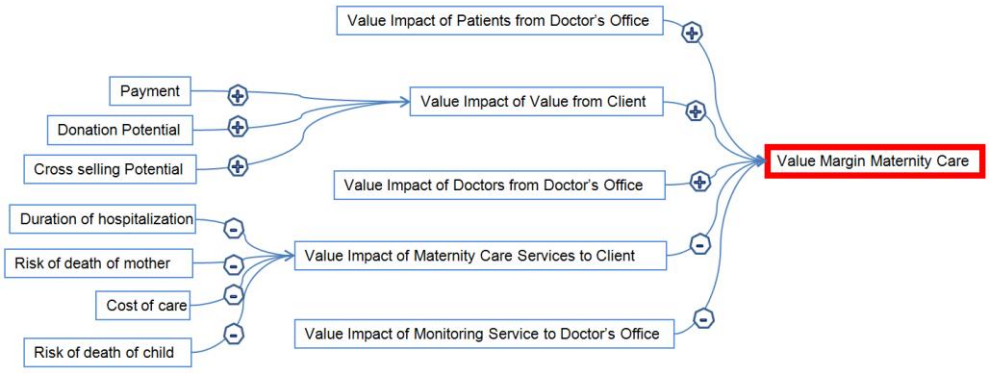


**Fig. 6.** VDML Measurement Dependency Diagram, with Value Margin highlighted

As can be seen in Figure 6, the various Value Propositions that the Hospital provides and receives (see Figure 4) influence the "Maternity Care Value Margin". Underlying the Value Formula structure as shown in Figure 6 is the assumption that exchange of value, between collaborating Parties, has "value impact" on both provider and receiver of Value Proposition. Hence a "Value Margin" can be established, in this example for the Hospital, which is the result of providing and receiving Value Propositions.

## 5 Conclusion and future work

This paper has presented the support for Business Model Innovation with VDML in the NEFFICS platform [7, 8]. The platform has in addition support for open innovation, process innovation and service innovation. The platform is currently being tested and validated in different pilot case scenarios.

Future work is focusing on reflecting the experiences from the platform usage to potential updates to the current VDML standardisation proposal. The approach provides a basis for further development of corresponding executable models and simulation models.

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