

Organization Implementation Fundamentals: a Case Study Validation in the Youthcare Sector

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Abstract. Changes in the business environment and healthcare sector - such as changing laws and regulations, and the continuous shifting of responsibilities in the cooperation - are forcing enterprises to be agile. To effectively enable such changes of enterprises in the Healthcare sector, Capgemini is constantly exploring better ways of *a*) continuously optimizing business processes and *b*) building and maintaining inherently flexible information systems. In 2014-H1 an existing Solution for youthcare was evaluated by Capgemini and Leiden University to find out its flexibility towards organizational and process change, using *a*) previously proposed Organization Implementation Variables (OIVs) and *b*) DEMO as way of thinking and modeling for the essence of any enterprise. Based upon significantly improved definitions of these OIVs, we were able to find 70% of the proposed variables in the youthcare practice. A part of these OIVs were also supported in the Solution as ICT parameters, and now it became clear to what extent this solution was indeed flexible with respect to the foreseen changes, also given the Dutch decentralization laws (3D).

Keywords: DEMO, Organization Implementation Variables, Agile Enterprise Engineering, case study, Solutions, youthcare

1 Situation

In order to respond to changes in the business environment and healthcare sector, enterprises want to be more agile. Oosterhout (2010) summarizes several definitions of agility as “the ability of an organization to swiftly change businesses and business processes beyond the normal level of flexibility to effectively manage highly uncertain and unexpected but potentially consequential internal and external events, based on the capabilities to sense, respond and learn.” Enterprises are under pressure due to factors such as changing laws and regulations, and the continuous shifting of responsibilities in cooperation. For instance, the so-called “three decentralizations” (3D) are “taking place”, which means that the responsibilities of Provincial and National Government of the Netherlands with regards to healthcare and youthcare are moving to the municipalities, at the same time cutting budgets.

Enterprises need to be agile in their products, services and its Quality of Service, but especially agile in the way the enterprises are implemented in organization and ICT. Examples of choices in organization implementation are e.g., splitting or joining responsibilities, order of working or segregation of duties. Examples of choices in ICT implementation are e.g., platforms & devices, programming frameworks or infrastructure.

For such agility, enterprises want capabilities for continuously optimizing business processes, and information systems that support the ever-changing business (processes) (called Solutions). For that they need a Body of Knowledge (BoK) on organization and process design, which contains all factors important for agility. Also enterprises need Solutions that can follow them over time, and which they preferably can share with other enterprises in the same branch - to strengthen continuity and enable cost sharing.

This makes it important for Capgemini to invest in such a Body of Knowledge, and in concepts which create flexibility in such Solutions. This fits Capgemini's ambition to put its customers in the driving seat for steering business agility. Also Capgemini continuously builds its portfolio of Solutions, usable by many different customers. In order for Capgemini to scale up in creating such Solutions, it is important to make this knowledge - on elements that have to be flexible in its Solutions - explicit.

Op 't Land and Krouwel (2013) state that such agility of organizations concerns several levels:

- the *context* on which the organizations have to react (e.g. laws, regulations, competitors); this is the occasion for the agility, which cannot directly be influenced by the organization, but the organization can choose on which of these trends to (re)act;
- the *function* of the organization: its products and services, and the quality with which it is delivered; agility here means to enable fast starting / stopping with a product or service, or delivering it with a different Quality of Service (QoS), or delivering in other areas/regions;
- the *construction* of the organization on its *essential* ("ontological") level, which deals with actors entering into and complying with commitments, modeled according to DEMO; agility here is about fast discerning of new or obsolete roles and responsibilities, given a intended change in function;
- the *construction* of the organization on its *organization implementation* level, which deals with the dimensions in which organizational implementation choices are made; agility is here about fast changing the so-called Organization Implementation Variables (OIVs), e.g., splitting or joining responsibilities, order of working or segregation of duties;
- the *construction* of the organization on the level of its *implementation with (a/o ICT) means*, which deals with the dimensions in which ICT and other means implementation choices are made; agility is here about fast changing the ICT implementation variables, e.g., channels, equipment, external data sources.

Op 't Land and Krouwel (2013) focus purely on the implementation variables, proposing some 25 implementation variables, based upon literature study and the verification with a fictitious case study. However, up to now these variables have not been validated in a real life enterprise.

Our research aims at reviewing and validating the organization implementation variables (not the IT variables) in a real life enterprise, using a case study at a dutch youthcare organization.

At the time of this case study, the municipalities and provinces in the Netherlands were jointly responsible for the Dutch youthcare. In 2015, the three decentralizations (3D) has moved the responsibility to the municipalities. These responsibilities are defined in the law on youth care. Goal of this law is to guide the provision of help to children, youth, and their caretakers. There are around 100 official organizations in the youth care that support in carrying out those responsibilities. Currently, Capgemini is developing a Solution (hereafter: the Youthcare Solution) in cooperation with an organization in the youth care, which makes this, together with the '3D', an interesting case to investigate.

2 Task

As we said, the goals of our research were to *a)* test the Organization Implementation Variables for completeness and occurrence in a real life enterprise, and *b)* test an existing solution for youthcare developed by Capgemini on organizational implementation flexibility.

Current research (Dietz (2008)) shows that a meaningful distinction can be made between the essence of an organization and the implementation choices that have to be made. For instance, when an organization rents cars, the essence of its processes contains the starting and stopping of a rental, the pick-up and return of the car, and the payment of the rental. These processes can be implemented in several ways. For instance, on splitting / joining of responsibilities: contracting the car rental, issuing the car and receiving the payment for the rental can be done by the same employee, or by different employees. Or on order of working: payment can be made before picking up the car, or after. Or as an example on segregation of duties: "receiving the payment for the rental has to be done by a different employee than the employee who contracted the car rental".

The methods for modeling the essence and the implementation of organization differ in maturity. With his method the Design and Engineering Methodology for Organizations (DEMO), Dietz has provided a Way of Thinking and a Way of Modeling for this essence of an organization. This has been studied extensively for more than 25 years and applied in many cases (Dumay (2004), Mulder et al. (2005)). Op 't Land and Krouwel (2013) - also based on experience in differences between organizations from the same branch which are differently implemented (Krouwel and Op 't Land (2012)) - have proposed 25 concrete Organization Implementation Variables (OIVs) in which choices have to be made when implementing an enterprise. These variables are the elements within an organization (e.g., in the business processes, organization structure, resources)

that can change over time or could be different for “similar” companies. When these variables are known while (re-)designing the implementation of an organization, they can be taken into account (e.g., in the software). These OIVs have been postulated based upon experience, literature research, and a thought experiment on a fictitious car rental company. In this stage, the OIVs have to be tested whether they appear in practice indeed, and if in practice new OIVs appear. In order to be able to test the occurrence of the variables in a real life enterprise, they need to be clear, complete and distinctive. The variables proposed by Op’t Land and Krouwel (2013), were not defined and only illustrated by using one example. Therefore, the OIVs need to be operationalized, i.e., made sufficiently unambiguous that a traceable conclusion can be drawn, and that any observer with the same operationalization of the OIVs will draw the same conclusions from the validations.

The Youthcare Solution is a web-application that is currently being developed by Cappgemini for an organization in the dutch youthcare sector. It has the potential to be used by different organizations working in youthcare. In order to be able to reuse the solution for multiple enterprises in the same branch, assessing the flexibility of the solution is important.

Our research has been done by a full-time researcher from Leiden University during half a year. The researcher was supported by Subject Matter Experts (SMEs), the lead architect, systems developers, DEMO experts and business analysts. The SME provided information about context of and trends in the youthcare sector, and about the case organization and its context. The lead architect and the systems developers provided the researcher with all information on the Youthcare Solution, such as the Request for Proposal and user stories. DEMO experts helped the researcher with creating a DEMO model of the youthcare sector. The variables were defined with the help of an expert group of business analysts on organization implementation.

3 Approach

We designed our approach, starting from specifying the Ways of Thinking, Modeling and Working, until the deliverables to be produced and the steps to be taken. First we will elaborate the Generic Systems Development Process (GSDP) to see how function, essence and implementation depend on one another for any system, especially for enterprises. Then we will introduce DEMO as the Way of Modeling of the essence of an enterprise. Finally, we define the deliverables and describe the steps to be taken in our approach.

3.1 Enterprises and GSDP

Following the Enterprise Engineering paradigm (Dietz (editor), Dietz and Hoogerworst (2013)), we consider enterprises - goal oriented cooperatives - as essentially social systems, of which the elements are human beings in their role of social individuals, bestowed with appropriate authority and bearing the corresponding

responsibility. The operating principle of enterprises is that these human beings enter into and comply with commitments regarding the products (services) that they create (deliver). To operate an enterprise, it should be implemented by people and (amongst other ICT-) means.

In order to perform optimally and to implement changes successfully, enterprises must operate as a unified and integrated whole. Unity and integration can only be achieved through deliberate Enterprise Development (comprising design, engineering, and implementation) and Governance, together called Enterprise Engineering. (Dietz (editor), postulate 2)

The Generic System Development Process (GSDP) is a conceptual framework for such design, engineering, and implementation of systems of any kind (Dietz and Hoogervorst (2013), Dietz and Hoogervorst (2015)), which we will now briefly introduce. Any development process concerns two systems, the Object System (OS), the system to be developed, and the Using System (US), the system that is going to use the services of the Object System. The GSDP consists of three phases (see figure 1):

1. The design phase: consists of function design and construction design. Function design starts from the construction of the US and ends with the function of the OS (a black-box model is created). The construction design starts from the specified function of the OS and ends with the construction of the OS (starting with the highest level white-box model of the OS).
The highest level white-box model, also called the ontological model, shows the essence of an enterprise that is only dependent on the products and services to be delivered. In the ontological model actor roles deliver services by executing transactions. By Implementation is meant the assigning of people and means—in GSDP called together “technology”—to actor roles and transactions. The ontological model does not depend on any such implementation choices.
2. The engineering phase: here a series of constructional models are produced. Engineering (in the narrow meaning of the word) starts from the ontological model and ends with the implementation model.
3. The implementation phase: the assignment of technology to the constructional elements in the implementation model. After this, the system can be put into operation immediately.

By technology we understand the means by which a system is implemented. A wide range of means is available, including human beings and organizational entities, ICT artifacts (e.g., phone, email, computer programs) and mechanical means. By implementation we mean assigning technological means to constructional elements such as actor roles, transaction kinds and information links. The organization implementation variables (OIVs) are the dimensions of freedom in which implementation choices are made. One set of OIV key-value pairs in which each OIV gets assigned one specific value, we call a Technological Alternative. The IOTA-theory, Implementing Organizations with Technological Alternatives, explains that an organization can be implemented using technological means,

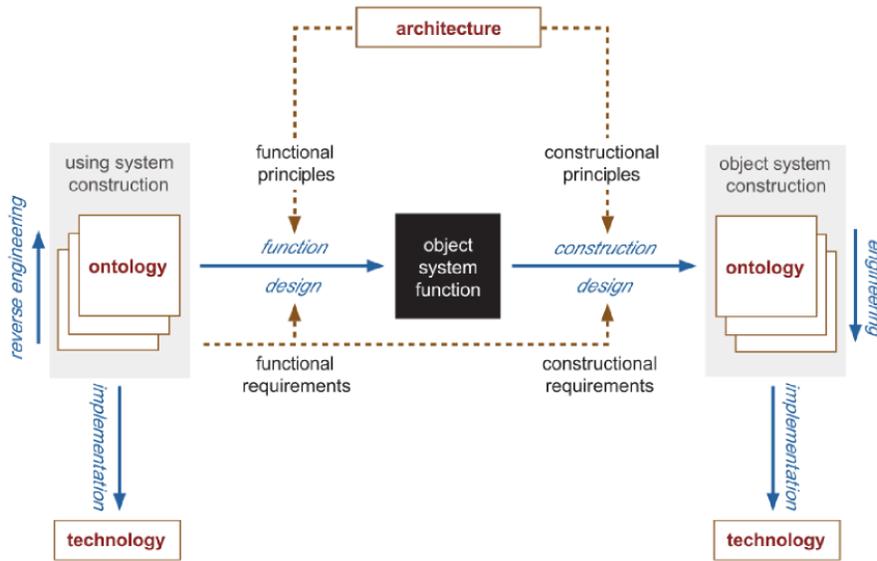


Fig. 1. The Generic Systems Development Process

choosing between several Technological Alternatives. For example the actor role “baker” is in Technological Alternative A assigned to 3 people of the functionary type “cook” with white hats in the kitchen; and in Technological Alternative B assigned to 5 people of the functionary type “transporter boy”, which all have a transportable oven at the back of their scooter.

3.2 DEMO

DEMO is a methodology used to construct the ontology of an organization (Dietz (2008)), focusing on the humans working in an organization and their communication. DEMO is based upon the PSI-theory (Performance in Social Interaction). It explains that the humans in an organization enter into and comply with commitments regarding the production of products through communication. Main concepts of the DEMO methodology (Dietz (2006)) include:

- Transactions: these are the interaction patterns between parties involved, shaped in transactions, each delivering a specific result. Each transaction has one executor, and can have one or more initiators.
- Actor role: an elementary chunk of authority, responsibility, and competence. Actor roles have to be implemented by organizations and people, and by other means.
- Production and coordination acts and facts: an actor can perform two kinds of acts: production acts (P-acts) and coordination acts (C-acts). By performing P-acts, actors contribute to bringing about the goods or services

that are delivered by an organization. By performing C-acts actors enter into and comply with commitments towards each other regarding the performance of P-acts. The result of a P-act and a C-act is a P-fact and a C-fact respectively.

According to DEMO, a complete, so-called essential model of an organization consists of four aspect models: Construction Model (CM), Process Model (PM), Action Model (AM), and Fact Model (FM). The CM specifies the composition, the environment and the structure of the organization. It contains the identified transaction types, the associated actor roles as well as the information links between actor roles and transaction banks (the conceptual containers of the process history). The PM details each transaction type according to the universal transaction pattern. In addition, it shows the structure of the identified business processes, which are trees of transactions. The AM specifies the imperatively formulated business rules that serve as guidelines for the actors in dealing with their agenda. The FM specifies the object classes, the fact types and the declarative formulations of the business rules.

For the CM, we will briefly introduce its concepts and representation (figure 2). A CM shows the network of identified transaction types and the corresponding actor roles. E.g., transaction type T01 delivers a business service to actor role A00; A00 is called its initiator and A01 its executor. The executor of a transaction is marked by a small black diamond on the edge of the actor role box. The solid line between A00 and T01 is the initiator link; the solid line between A01 and T01 is the executor link. By the

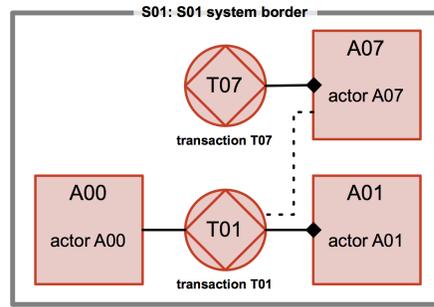


Fig. 2. Typical DEMO Construction Model

Figure 2 also shows that some other actor role (A07) needs to have access to the history of transactions T01 (production facts as well as coordination facts (e.g., status requested, promised, stated, accepted)).

3.3 Deliverables

Deliverables of this research are *a)* operationalized OIVs, including *b)* whether it has been found in the youthcare sector, and *c)* whether it has been found in the Youthcare Solution. The operationalized OIVs are shown in a list with for each OIV its name, a definition, one or two examples and the relationship with other variables; for some OIVs complemented with a counter example and guidelines for observation. All OIVs are shown in a table, with per variable an indication of whether it has been found in the youthcare sector, and whether this variable was also parameterizable in the Youthcare Solution. Also new found variables in the youthcare sector or in the Youthcare Solution are added to the list as candidate OIV.

3.4 The steps

The different steps in our research are *a)* operationalizing the OIVs, *b)* a case study validation of the variables in the youthcare section, *c)* a validation of the variables in the Youthcare Solution, and *d)* a flexibility assessment of the Youthcare Solution.

The case study preparation (a) is done by operationalizing the OIVs. Starting point for this step is the variables as proposed by Op 't Land and Krouwel (2013). Each variable was defined, illustrated by examples and related to other variables, and sometimes complemented with counterexamples and guidelines for observation. As far as the definitions that were based upon the essence of an enterprise, the DEMO terminology has been followed. The other parts of the formulation of definitions built upon common business terminology. Examples were formulated using different cases, the Rent-A-Car (RAC) case, the pizzeria case, and own experience. Sometimes a counterexample was given when the definitions had multiple ways to be interpreted. When it became clear in a definition of a variable that had a relationship to an other variable, this relationship was given. First the researcher drafted a proposal for each OIV-disambiguation, then it was reviewed in multiple work sessions with the help of experts on the subject.

The first part (b) of the case study is validating the variables in the youthcare sector (e.g., in its processes). Inputs for this step are the list of operationalized OIVs and publicly available literature of the youthcare sector (e.g., websites, annual reports of different enterprises). The list of OIVs is used as a reference when studying the available literature in order to assess the occurrence of the variables. The findings were proposed and verified with the help of Subject Matter Experts (SMEs).

The second part (c) of the case study is assessing the occurrence of the variables in the Youthcare Solution. Inputs for this step are the list of operationalized OIVs and documentation on the Youthcare Solution (e.g., Software Architecture Document, user stories). The documentation is studied to find out if the OIVs are parameterizable. The findings were validated with the help of SMEs and system developers.

The last part (d) of the case study was a flexibility assessment, in which the results of the previous steps are compared in order to see to what extent the Youthcare Solution already takes variables that exist in the youthcare sector into account (viz. they are parameterizable in the Solution). For example when the variable Employee is found in the youthcare sector and is also a variable in the Youthcare Solution, the Solution can be considered flexible in this aspect.

All steps of the research were done iteratively. The variables were initially defined, but during the process of assessing the variables in the case organization and the Solution, the definition of the variables were also revised.

Figure 3 shows that the research started with the literature study on the topic and then the operationalization of the variables. During the operationalization the literature study on the case was started and the case study was executed. Lastly a report of the research was written.

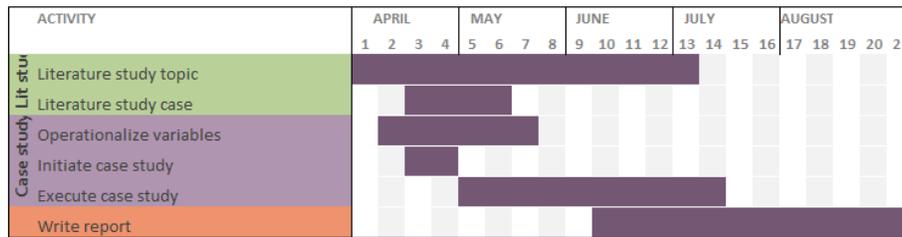


Fig. 3. Global planning research

4 Results

The case study on the youthcare sector and an existing Solution for youthcare was, according to plan, executed in 2014-H1. First, three Organization Implementation Variables are shown with the definition and examples. Second, the construction model of the case organization is shown. Third, examples of the OIVs found in the organization and in the Youthcare Solution are shown. Lastly, all found variables are shown in table 2.

4.1 Organization Implementation Variables

For the OIVs *Employee*, *Separation of duties*, and *Order of working*, the definition, examples, sometimes a counterexample and observation notes are given here.

Employee *Definition:* An employee is a natural person who fulfills one or more functionary types.

Examples: Natural person “Jan van Vliet” is an *employee* of Ahold, who fulfills the *functionary type* “cashier”. Natural person “Sarah” is an *employee* with the *functionary type* “cleaner” who does undeclared work.

Counterexample: Illegal intruder in the organization who performs acts.

Observation notes: An employee does not need to have a legal contract with the organization. He or she can also be hired from another company, or simply perform acts with approval of the organization.

Separation of duties *Definition:* Governance policy according to which no employee should be given responsibility for more than one related function.

Examples: A request for a money transfer in a bank is executed by two employees, one employee approves the transfer, the other employee executes the transfer.

Observation notes: Validate if there are transactions within the organization that are fraud or error sensitive or where consequences of mistakes can be severe.

Order of working *Definition:* The order in which different acts are performed, within its dependency constraints.

Examples: In a mail order company, the packages are first sorted by postal code, after that the packages are loaded into the delivery car.

4.2 DEMO Construction Model

In order to visualize the organization, and to understand the essence of the organization, a DEMO Construction Model is created. Its Organization Construction Diagram (OCD - see figure 4) shows a simplified operation of a part of the youth-care sector. Table 1 names and describes its transactions. This model will help in making the distinction between what is the essence of the case organization (represented in the DEMO Construction Model), and what belongs to the implementation (represented by the Organization Implementation Variables).

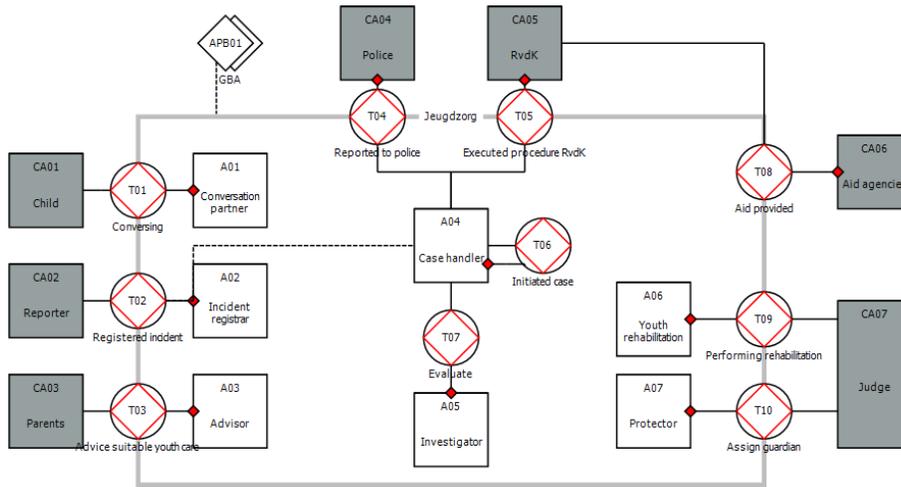


Fig. 4. Construction Model of youthcare sector

4.3 Variables in youthcare sector

The occurrence of the OIVs is tested in some parts of the case organization by investigating the available data. Data sources that are used are two annual reports of two different organizations in the youthcare sector and three different websites of three organizations. In the next analysis we will first show the source text³

³ Note: these texts originate from Dutch websites and annual reports and have been translated here to English

Transaction	Transaction name	Description
T01	Conversing	The children’s helpline
T02	Registered incident	Report an incident which then is registered to the child abuse hotline
T03	Advice suitable youthcare	Here parents and care takers can get non-binding advice about suitable youthcare, or binding advice, where the register can report a suspected incident
T04	Reported to police	Following up from an incident registered with the child abuse hotline, a case may be reported to the police
T05	Executed procedure	When voluntary help is not sufficient, a procedure is started
T06	Initiated case	Case is initiated and procedures are started
T07	Evaluated case	An internal investigation is started regarding a case
T08	Aid provided	Youth rehabilitation when this is ordered by the judge
T09	Performing rehabilitation	Judge can assign a guardian
T10	Assign guardian	Aid is provided to a child/family, ordered by the court, following up from the procedure

Table 1. Transactions from youthcare construction Model

in which the variables have been found, and then mention the considerations for this identification.

“Do you want to work as a volunteer at the children’s helpline? There is a website with all information about volunteering [www.]” (Kindertelefoon (2014)) Here an instance of the variable *V4: employee* (see table 2) is found, namely a volunteer. Also the variable *V15: sourcing* appears here.

“.. Besides talking by phone, we are also specialized in online help via chat” This part explains that the volunteers can be contacted by phone and chat, which are instances of *V16: technical channels*. The DEMO Construction Model (see figure 4) shows no sign of the use of phone or chat, from which can be concluded that technical channels do not belong to the essence of the organization, but to the implementation.

“All volunteers are trained by our trainers which are all trained and certified by our academy”

This states that the volunteers are trained by trainers who are certified by the academy, which indicates the variable *V17: Validation of competences*.

“The children’s helpline is spread across 18 locations. All locations are affiliated with the National Bureau of the children’s helpline”

This text shows that there are 18 locations of the children’s helpline (*V19: work locations*). All locations of the children’s helpline are affiliated with the National Bureau of the children’s helpline which indicates *V11: organizational structure*.

There can also be deducted from this that one office of the children’s helpline is a *V12: organizational unit*.

“Various work groups of managers and supervisors working for the children’s helpline are active.” (van Zant and Waarts (2012))

Managers and work supervisors are instances of *V7: functionary type*.

“The volunteers have phone duty, have chat conversations, hold lectures at schools and administer the site and the forum.”

Tasks of the volunteers, indicates *V22: X-ref functionary type / act type*. There is not a direct link to a functionary type, but it is not clear if the volunteers all have the same functionary type, or if there is a distinction between different volunteers. It appears to be that all volunteers can perform the same tasks, and only the paid employees have a different functionary type.

“A volunteer works on average 6 hours per week”

Here we detected *V6: #FTE*: apparently a volunteer counts for 0.15 FTE.

“The procedure ‘Referring actively’ is an opportunity for the volunteer to directly provide assistance to a child in a highly threatening situation (child abuse, emotional neglect).”

There can be reasoned that a volunteer needs to have knowledge about when to refer a child to a aid agency, so a certain *V2: competence* is needed.

“Some youthcare offices have a central registration or central access which deals with the first contact with the child abuse hotline.” (Jeugdzorg Nederland (2013))

This shows the variable *V1: addressee specificity*, where sometimes the addressee is a youthcare office when there is a central entrance, and sometimes directly to the child abuse hotline.

“The youthcare office in Friesland⁴ is a foundation under managerial responsibility of a general manager and a director.” (Bureau Jeugdzorg Friesland (2014))

This shows that youthcare office Friesland is a foundation, and therefore a *V9: legal entity*. It appears that all youthcare offices are legally a foundation.

Table 2 shows an overview of all variables found in the youthcare sector.

4.4 Variables in Youthcare Solution

The OIVs are also searched for in the Youthcare Solution to test if the variables existent in the case organization, are already supported by their IT system. Data that is used include: requirements document, software architecture document, user stories, datamodel and product description. We will not show the analysis of the documents (due to confidentiality), table 2 shows all variables actually found in the Youthcare Solution. This table shows that not all variables found in the youthcare sector are supported by the Youthcare Solution.

⁴ A province of the Netherlands

#	Variable	Youthcare sector	Youthcare Solution
V1	Addressee specificity	yes	
V2	Competences	yes	
V3	Delegation		yes
V4	Employee	yes	yes
V5	Event location restrictions		
V6	#FTE	yes	
V7	Functionary type	yes	
V8	Language support		yes
V9	Legal entity	yes	
V10	Order of working		
V11	Organization structure	yes	yes
V12	Organizational unit	yes	yes
V13	Rules for assignment of tasks		
V14	Separation of duties		yes
V15	Sourcing	yes	yes
V16	Technical Channels	yes	yes
V17	Validation of competences	yes	
V18	Way of fulfilling actor role		
V19	Work locations	yes	
V20	X-ref employee/functionary type		
V21	X-ref employee/work location		
V22	X-ref functionary type/act type	yes	
V23	X-ref work locations/act type		
V24	X-reference employee/actor role		new
V25	X-ref employee/organizational unit	new	
V26	X-ref actor role/organizational unit	new	
V27	Region	new	

Table 2. Organization Implementation Variables found in youthcare sector and Youthcare Solution

5 Reflection

Our reflection on existing or new Organization Implementation Variables, is structured as follows. First, the results of the case will be discussed starting with the OIVs in general and after that the validation of the OIVs in the youthcare sector and in the Youthcare Solution. Second, a general reflection is given on this research. Lastly some recommendations for future research are shown.

Before this research, the Organization Implementation Variables were not clear or defined. Now the OIVs have been defined and illustrated by one or more examples. Some definitions are straightforward and clearly defined (for example *Functionary type*, *Organization structure*, etc.), but for some variables the definition is not stable enough, and could use some more discussion. For example the variable *Sourcing* has a very general definition. Good examples are needed in order to sharpen the definition. The variable *Employee* is still under

discussion. A question that arises is: can an employee be only under contract of an organization? Also the examples of this variable can be more clear. The variables are now also validated with a real life case study, however preferably multiple case studies are needed in order to get a solid validation of the OIVs. Validation can be used to see if a variable occurred in sector a, also occurs in sector b and sector c. When this is the case, you could conclude that this variable is generally applicable. Validation can also be used to see how often a certain variable occurs (in one case or in multiple cases) to conclude something about the importance of a variable.

The case study validated 16 out of 23 OIVs in either or both the case organization and in the Youthcare Solution. For the Youthcare Solution the OIVs have been validated with the people directly involved. However for the validation in the youthcare sector, it was done using only publicly available documents. Therefore variables regarding performing work (*order of working, way of fulfilling actor role, rules for assignment of tasks, event location restrictions, X-ref work locations/act type, X-ref employee/work location*) may be overlooked, as they are not identifiable in public documentation or the requirements specifications for the Youthcare Solution. Even though some of the variables have not been found in the case organization, it does not mean that they do not exist in this or in another organization. Therefore, other research is necessary for more validation of the variables. Also not all variables found in the youthcare sector are found in Youthcare Solution (and thus not supported by IT). However, this does not mean by definition that the Youthcare Solution is not agile. Variables that were not supported by the solution are variables that regard work routines (*competences, #FTE, validation of competences*), and this is not important for the Youthcare Solution. For the Youthcare Solution 8 out of 23 OIVs were variable indeed. For the variable *delegation* this means that it is easy to change delegations. For the variable *employee* it means that the solution supports having to add or delete an employee from the system.

When using the list with OIVs a consultant or an organization needs to realize that you should always think about what kind of flexibility is wanted and needed in an IT system, and therefore taking into consideration what OIV may be important and what may be not. We have made a first step in what we think should lead to better organization consulting. It should help a consultant in identifying the (in-)flexibilities of an organization and their supporting IT-system.

This research only investigated the OIVs itself, but not the usage of these OIVs. Future research may look into how the OIVs can be applied in an organization in order to really achieve agility. Also, as stated earlier, more case studies at different organizations (and different sectors) are needed to make the results more reliable. The research on the OIVs itself can also be extended: continue research on the organization implementation variables, by making better definitions, come up with more examples, investigate the relationship between the variables, and investigate the external influence on the variables (E.g., regulations).

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