What does DEMO do? A qualitative analysis about DEMO in practice: founders, modellers and beneficiaries

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Abstract. Our goal in this exploratory study is to gain insights about the actual use of DEMO. As we aim at understanding how the use of DEMO influences its context of use and is influenced by it, the study is based on a qualitative approach. 13 stakeholders acquainted with DEMO were interviewed. As DEMO is an artefact, design science literature is relevant to reflect upon the observation of DEMO in practice. We investigated and analysed the views of DEMO founders, DEMO modellers and DEMO beneficiaries about DEMO definition, purpose and scope, results, ease and context of use. We used a subset of criteria of progress for information systems design theories to observe DEMO. Interview results are then exposed and analysed.

Keywords: DEMO in practice, qualitative interviews, design science evaluation criteria, artefact observation

1 Introduction: motivations and research questions

In this paper we are concerned about the investigation of DEMO (Design and Engineering Methodology for Organisations [1]) in practice, from various types of stakeholder's points of view. "In practice" refers to the actual use of DEMO in defined contexts, as opposed to the intended use of DEMO modeller or the expected use of DEMO founders, which are out of the scope of this paper. Sometimes called "a methodology" [1–3] or a "method" [2] in the literature, "a formal language and definitely a way of thinking" by its users, "a way of thinking, a way of understanding" by a DEMO founder, DEMO offers a set of axioms, thinking patterns and graphical models that allow its users to produce concise models of organizational processes. The application of DEMO seemed to be very promising in some projects. For example, DEMO is said to have helped to "construct and analyse more models in a shorter period of time" [3] p10. Therefore, we were curious about the performance of DEMO in practice. In addition, we had access to DEMO practitioners who would agree to have the projects where DEMO was applied investigated by researchers.

Our motivation in this paper is exploratory: we investigate the actual use of DEMO from stakeholders' perspective to know how DEMO is seen from field people. The study is based on a qualitative approach: we collected data with 13 semi-structured

interviews and analysed them using an interpretive approach. This paper reports about this analysis. The questions addressed in this paper are the following. From stakeholders' point of view: What is DEMO? What is DEMO useful for and not useful for? Who are DEMO beneficiaries? What are the results of using DEMO? Is DEMO easy to use? What parts of DEMO are useful?

The original contributions of this paper are the insights we gained about DEMO in practice from stakeholders who have been acquainted with DEMO for years. The paper is structured as follows: in the introduction, we motivated our study and defined the questions to be addressed. Section 2 is a short literature review about already existing investigations concerning the actual use of DEMO. In section 3, we present the research design. It includes the research approach, the theoretical basis for data collection and analysis and facts about the actual data collection. Section 4 presents the actual data analysis. Section 5 presents some research contributions and bias and the conclusion.

2 Previous investigations concerning the use of DEMO

In [4], we performed a literature review investigating whether DEMO had been evaluated in practice. We found two papers dealing with a partial evaluation of DEMO in practice across several cases: "The first one [27] focuses on the adoption of DEMO by DEMO professionals in practice in order to improve this adoption. The second one [11] investigates DEMO as a means of reflecting upon the Language/ Action Perspective; the DEMO related part of this paper aims at finding out how the actual application of DEMO differs from its intended application". Both studies only took into account DEMO professionals views. So, as far as we know, no study has been performed yet with the goal of exploring the use of DEMO in practice by a variety of stakeholder types. In [4], the research effort was focussed on the interpretive research approach and on the relevance of investigating design sciences to observe a method. Definitions of observation criteria and details about papers [27] and [11] were given. Besides, preliminary promising results of the interviews were given whereas the complete analysis of the interviews had not been performed at that time. Alternatively, the current paper is focused on interviews analysis: the coding process is partly exposed and interviews analysis results are reported upon.

3 Research design

3.1 An interpretive approach for exploring the use of an artefact.

As we are aware that DEMO stakeholders have their own assumptions, beliefs and perceptions and that they construct realities through social interaction, we used a qualitative research approach to "capture data on the perceptions of local participants"[5] p7. To produce "an understanding of the context of the information system, and the process whereby the information system influences and is influenced

by the context" [6] p4-5, we followed Walsham in adopting an interpretive approach for exploring the use of DEMO [4] p6.

This approach consists in interviewing stakeholders with an interview guideline structure based on the criteria of progress for Information Systems (IS) design theories proposed by Aier and Fischer [4, 7]. This approach is purposely not DEMO specific. Indeed, whether DEMO being viewed as a method, a methodology, a way of thinking or a modelling language, we consider DEMO as being an artefact that is designed, performed and evaluated by human people. DEMO was created and originally applied in the context of information system engineering or reengineering. Later, it has been used for organisational analysis purposes. For these reasons, we found it relevant to explore the design science literature to define the interview guideline's themes. In order to produce results that are "credible, dependable and replicable in qualitative terms" [5] p5, we expose the way we worked to perform the study in the following paragraphs.

3.2 Theoretical basis for data collection.

A priori conceptual framework, theme, items and questions elaboration

In this study, the only instrumentation employed to collect data are interviews about DEMO. We elaborated a conceptual framework in which we gathered themes we wanted to study. They come from a literature review about design science artefacts and method evaluation, from some stakeholders feed-back about DEMO and from a brainstorming with fellow researchers. This a priori conceptual framework (**Fig. 1**) is our "map of the territory to be investigated" [5], p20.

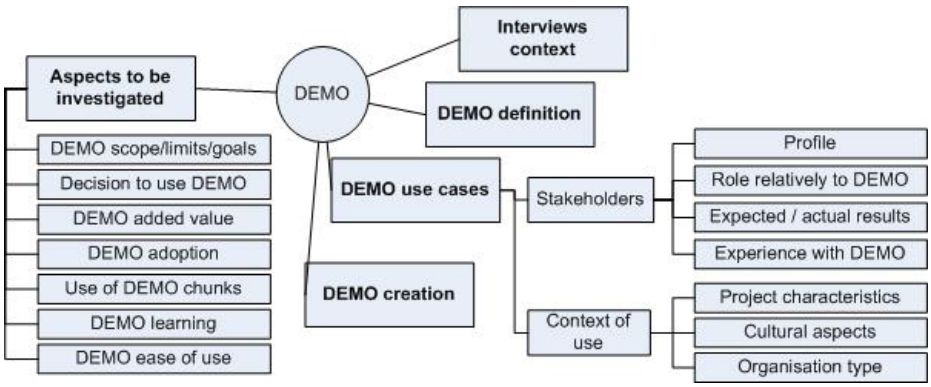

Fig. 1. A priori conceptual framework: research themes to be investigated

For each theme, we created a set of items – about 95 in total: 85% concerning the practical use of DEMO and 15% aiming at investigated the creation of DEMO by its founders (context, goals). The latter ones are almost not reported about in this paper because it is focussed on the actual use of DEMO. For each item, we formulated a set

of questions both to cover various aspects of the item and various ways of considering the question from stakeholders' perspective. As for themes definition, these questions were elaborated with fellow researchers and come from their experience and a design science literature review. In particular in [4] we reflected upon Aier and Fischer's criteria of progress for information systems theories [7]. To reflect upon criteria of progress for design theories, they investigated artefact evaluation criteria in design science literature. We applied the results of their reflection the other way round: we used some of their criteria of progress for information systems theories as themes of the interview guideline[1] to observe an artefact: DEMO. Due to space limitation, we do not explain here the details of the reasoning. Resulting interview themes are the following: usefulness and efficiency, simplicity – which includes the ease of use, broadness of purpose and scope and external consistency. We consider the "broad purpose and scope" as being "the capacity of adapting the artefact to different purposes and scopes without its usefulness decreasing" [7] p154. Following [7], we considered that the external consistency of an artefact corresponds to the notion of "fidelity with real world phenomena" proposed by March and Smith's [8].

In order to capture the experience of the individuals with DEMO during the interviews, interviewers tried to avoid "leading the witness" by asking open questions of several types (how, what, when, who, what for, etc.)

Actual data collection through semi-structured interviews.

Interviewees sampling. We wanted to interview multiple stakeholder types: DEMO founders, DEMO professionals and modellers (who produce DEMO models) and DEMO beneficiaries (people involved in projects where DEMO was applied, e.g. project managers). We then used a purposive snowball sampling technique [5] p30. As a result, we interviewed 13 persons. They were free to accept or refuse the interview; there was no obligation from their organisations. One interviewee only had to ask for the authorization to be interviewed from his organization. All interviewees enthusiastically agreed to have their projects investigated by researchers.

Interviews setup. Interviews were conducted individually and took place either at the interviewee workplace or in a conference room. One was performed by Skype. All interviewees agreed to be audio-recorded and almost all to be cited. During interviews, we freely added, adapted or removed questions according to the already provided information and to interviewee's knowledge [9]. Interviewers endeavoured to provide a friendly listening without giving their own opinions so as to encourage interviewee to speak freely and to have less bias in the answers [10]. One of the interviewers, Niek, is a Dutch DEMO expert. He is at the board of the enterprise institute which promotes DEMO. The second interviewer, Céline, is a French business analyst whose knowledge about DEMO could be summarised in a few short lines. Céline usually played the part of the main interviewer and Niek acted as a

[1] Available at www.ee-team.eu/repository/celine-decosse/Guideline_What-does-DEMO-do.pdf

"shadow" interviewer: he observed, asked additional questions and took notes. For practical reasons, interviews were performed in English.

Collected data. Right after each interview, interviewers wrote down "interview highlights" notes about what had been said or the interviewee's reactions to specific subjects. Average time of interviews is one hour an thirty minutes. Twenty hours of recordings have been collected and transcribed by the interviewers. Interviews took place from May to July, 2012.

3.3 Theoretical basis for data analysis.

This paragraph exposes the method we applied to get from pages of transcriptions to the final conclusions. Interview transcripts were coded two times by the same researcher, after all interviews have been conducted. Due to the fact that coding is a selection process, coding is considered as a part of the analysis [5] p72. We used qualitative data analysis methods proposed by Miles, Huberman and Saldaña [5] p7.

An inductive mode for the first cycle coding.

First cycle coding goal is to summarize segments of data [5]. During this process, we followed an inductive approach: although we kept in mind the conceptual framework [5] p21 that we had defined keep our research effort focused, we endeavoured to pay attention to recurring elements, elements related to roles and interactions between people, motivations or social rules [5] p19 or pieces of text that may help us to have "an overview of the context under study: its social arrangement, its ways of working, its explicit and implicit rules" [5] p9 and [11]. Indeed, observing DEMO in practice includes observing the context of use of DEMO. The inductive mode allows the emergence of unexpected themes. About 150 codes emerged.

Second cycle coding: pattern codes.

Pattern coding is a way of grouping first cycle codes into a smaller number of categories, themes or constructs. Pattern codes usually consist of four, often interrelated, summarizers: categories or themes, causes/explanations, relationship among people, theoretical constructs [5] p86-87. To define the pattern codes, we mainly grouped the already existing codes by similarities, moved and merged sub-codes and created new codes to gather sub-codes in.

3.4 Interviewees' profiles

13 people have been interviewed, from whom 12 are Dutch speaking males and one is a Portuguese male. 12 interviewees were aged between 42 and 62 when interviewed. A DEMO founder (Jan Dietz) was 67. Interviewee's level of English was either good enough to allow them to answer question with nuances and details or, most often, fluent. All research participants have a technical or scientific background or current position: civil engineering (9), mathematics, information technology or

systems. They are independent consultants (5), DEMO professionals (9) or acquainted with DEMO (3), researchers (6) or managers (6), professor in information systems (4) – these sets are overlapping. 4 interviewees are members of the enterprise engineering institute board. Several interviewees (3) have founded their own company. Interviewees' level of education varies between 4 to at least 8 years for researchers. To sum up, interviewees are all highly educated, have high competence profiles, are used to making decisions, are acquainted with modelling and are interested in having strategic views. Some of them participated in the foundation and definition of DEMO. We cited them as "a founder" whereas other interviewees are cited as X1 to X11.

4 Data analysis

This sections reports about the interviews analysis. We do not mention stakeholder's types unless theirs views diverge. Indeed, for the themes we chose to explore in this paper, stakeholders views tend to converge and if they diverge, the stakeholder type is usually not a discriminant. Besides, we indicate when stakeholders views converge, are not contradictory, or diverge. First or all, interviewees and projects are presented.

4.1 Projects in which DEMO was applied

Whereas interviewees mentioned about 20 situations in which DEMO have been applied, most of them focused on only two projects during the interviews: VISI and Air France KML Cargo Information Technology (IT) merge. VISI stands for "creating conditions (V) for the introduction (I) of standardization (S) of ICT (I)." VISI concerns the ground, road and water building sector or the sector that performs infrastructure projects for the transport by road or water. VISI development project with DEMO took place from 1998 to 2004 and resulted in the VISI standard, an IT supported framework aiming at improving communication between construction project partners by regulating the exchanges between parties. In Air France KML Cargo IT merge project, DEMO intervention lasted six weeks, from April to June 2008 [2]. DEMO was used to analyse Air France Cargo ICT and KLM cargo ICT in order to allow a co-operation between those ICT systems.

4.2 What are interviewees talking about when they say "DEMO"?

It seems that DEMO professionals, including a founder, consider DEMO as a way of thinking and as a way of modelling an organisation with a modelling language whose constructs are based on the psi-theory. Then, when answering "a way of thinking" to the question "What is DEMO?", they may actually refer to the "psi-theory" [1]. Some non-DEMO professionals who worked on the VISI project say that they tend not to distinguish precisely between the added-value of DEMO and the added-value of the VISI project results. As some of them have not been in contact with DEMO for 8 years, their contribution to our study is more precious regarding the

overall experience they had with DEMO than regarding DEMO or DEMO scope definitions.

4.3 DEMO definition – Convergence and divergence

DEMO is a way of thinking that comes with a way of modelling – Convergence

Interviewees' opinions converge about DEMO being "a way of thinking that comes with a way of modelling. The following quotes were issued by stakeholders of various stakeholder types: DEMO is "a formal language and definitely a way of thinking, yes!", "It is a very good tool, a way of thinking to produce the VISI standard", "It is actually a way of thinking. Not more", "I've never known the distinction between the methods and the methodologies but I think it's a way of thinking". Besides, interviewees think that applying the way of thinking without using the modelling is still using DEMO. Interviewees did not express precisely the relationship and limits between DEMO and the psi-theory – they were not asked to; however it seems, for interviews who spontaneously mentioned the psi-theory, that they see it as DEMO underlying theory and part or all of its way of thinking.

Is DEMO a method? – Divergence

DEMO was not designed to be a method. A DEMO founder explains: "it was not my idea in fact to develop a methodology. […] But the main thing I developed (…) is the psi-theory, a theory about the operation and construction of organisations. "Methodology" is just a word to indicate that (…) DEMO has an underlying theory, whereas a method normally does not need to be founded on a theory."

With the "5 ways" method definition: DEMO is seen as a method – or not. To explain why they see DEMO as a method or not, several interviewees refer to the view of Seligman et al. [12] on information systems methodologies, for whom methodologies are characterised with "5 ways": the "way of thinking", the "way of working" (how to do things), the "way of controlling" (how to manage things), the "way of modelling" and the "way of supporting" (tools). Interviewees who refer to Seligmann et al. method definition either do it to explain that DEMO is a methodology because it has a way of thinking (X8), or on the contrary argue that DEMO cannot be called a method because of the lack of way of working, "the poor tooling" and some weaknesses in the way of modelling. A DEMO founder said: "for the way of working, the way of project management and also supporting.... well, there is much of improvement to be done".

Without the "5 ways" method definition: DEMO is a method – or not. Interviewees who do not refer to Seligmann et al. method definition say: "DEMO is a method with a built-in language inside but it could have been used with another language, it's mainly a method", "I see DEMO as a powerful method of modelling transactions and

information, not as a language" or explain that DEMO is "a descriptive methodology" whose use has edge effects: "people working with DEMO start talking a language about the ontological, infological levels or actor roles".

4.4 DEMO purpose and scope – Convergences and divergences

Various subjects where interviewee's views converge.

DEMO, a power-free business modelling tool. Interviewees converge in thinking that DEMO has a huge value for organisational analysis and modelling. X10 and X3 add: "DEMO has nothing to do with power; it has to do with analytical thinking." They meant that DEMO models and way of thinking do not reflect – respectively take into account – an organisation's power distribution, whether being a formal one (organization chart) on an actual one (who decides in practice).

DEMO is suited when people need a high-level view of an organisation. X4 says that DEMO can be used "in situations where people have lost the oversight." For X3, DEMO "shows the big picture" and DEMO models are appropriate for designing domain models. As such, DEMO can be used as an instrument for business/IT alignment. For a DEMO founder, DEMO bridges information systems and organisational sciences. Other interviewees support this view when explaining how successful DEMO is to analyse a business in order to design or re-design its IT or non-IT implementations.

DEMO is valuable in case of organisational change and enterprise transformation. A DEMO founder says: "DEMO is applicable for any enterprise change. Transformation is used for big changes. It is for any." X3 explains how they used DEMO for this: "We built scenarios and we mapped them back to the DEMO model: "This transaction is performed by three different departments with three different tools but this is actually the same transaction", which is from the change perspective or from the organisational perspective a very very valuable information." X5 experienced that, as an organisational analysis tool, DEMO can help in providing informed governance for complex enterprise transformations.

DEMO does not help in scoping the problem area. Interviewees are unanimous: DEMO enables its users to have a specific view on an area of concern, however, the scope of this area – the problem area – has to be determined beforehand, even if, as X9 stated, "DEMO allows you to decompose the process and the decomposition of course is important to find yourself a new concentration target focus, part of the problem that you need to solve".

Various limits of DEMO: what is DEMO not useful for (but not meant at). For interviewees, DEMO suffers from a lack of bridges towards various types of implementation: X6 says that although DEMO is a good analysis tool, it does not help

in developing IT systems in terms of code generation. X1 explains that whereas DEMO applies to systems, it does not take into account the physical situation (e.g. localisation) of the system. X3 underlines that "DEMO completely lacks political thinking. It's not suited for that, which is a large part of what happens in an organisation. I think it's both a lack and strength actually." X5 suggests to create a DEMO add-on bearing prescriptive recommendations to evaluate alternative organisational implementation solutions for a DEMO model for cases such as e.g. "Do we put these actor roles in a shared service centre, outsource them or let them still be part of the same organisations?". He also advises to combine DEMO with the notion of quality of service.

Is DEMO prescriptive or descriptive? – Convergence and divergence

Interviewees' answers to this question depend both on whether they consider DEMO as a modeling language or as a tool for analyzing organizations and on the meaning they assign to the terms "prescriptive" and "descriptive".

As a way of modelling, DEMO is seen as prescriptive… or not – Divergence. An interviewee explains: "No it is not prescriptive, it is descriptive but there is a very strict recipe for the description, and that is a key difference." Some other interviewees see DEMO as being prescriptive because of (a) the novelty of DEMO's way of thinking for them: DEMO "forces" its new users to look at their scope of interest with constructs that are unusual for them (an interviewee mentioned "a prescriptive way of thinking"). The idea of seeing DEMO as being prescriptive because of its novelty is supported by the fact that the more interviewees are used to working with DEMO, the less they tend to see DEMO as being prescriptive; (b) the formality of its constructs: DEMO modelling constructs are coercive and then perceived as prescriptive and (c) of the distinction axiom: once the scope of interest has been defined by the modeller, DEMO tries to enforce, through the distinction axiom, the selection of elements to be modelled within this scope [1].

DEMO, a normative (but not prescriptive) tool for thinking up organizations DEMO - Convergence. A DEMO founder explains "DEMO doesn't solve things. It is basically a way of thinking, expressed in models. […] It does not tell you what you should do, it helps you in making decisions" because the models provide a better understanding of the world: "by looking at the world in some way, by some theory, I do not change the world, I see it differently. You could say it is somehow normative because you now understand organizations as networks of actors and transactions. (…) So it is not prescriptive in the way that I tell the organization: now you have to do it in this way". Two interviewees pointed out that although DEMO is actually descriptive, it has a high potential as a prescriptive approach for organizational and IT implementations.

4.5 DEMO beneficiaries are architects, not implementers – Convergence

Interviewees mentioned enterprise architects, domain architects, business architects as DEMO beneficiaries; X8 recalls that the construction diagram has been taught to

quality assurance people. Interviewees converge in thinking that IT implementation oriented people as projects architects may not understand DEMO. Several interviewees suggest that having an engineering background may help; one of them explains: "People with a financial background (…) don't see a design problem when it hits them. So [DEMO modellers] are all mathematicians, of the engineering type, biologists by background." Another one says: "DEMO is really suited for business architects, not management. I am an exception."

4.6 DEMO use outcomes, added-value and conditions to achieve them – Convergence

Our research participants consider DEMO as a tool to reflect upon the communication between responsible parts of a business process. By offering a set of models, DEMO allows its users to model their business processes in terms of transactions and responsibilities. According to interviewees, using DEMO seem to (a) quickly provide a mental or graphical picture of an organisation's business processes (composed by one or several DEMO models) which displays transactions and responsibilities and (b) be actually useful for analysing organisations and supporting decision making related to organizational purposes (this is DEMO added-value). Points (a) and (b) are detailed below.

DEMO models quickly provide a picture of an organisation

A simple picture of business processes with transactions and responsibilities. Interviewees converge: DEMO is not only about describing a situation, but also changing the way people are looking at the organisation: "It is constantly in the back of your mind when you are looking at things". Almost all interviewees spontaneously mentioned the words "responsibilities" and "transaction"; some also used the terms "act" and "fact". X1 explains: "Based on the transactions, coordination and production acts, you have precise definitions of authority, responsibility, competence and delegation." For X2, DEMO allows to "concentrate on the interface [between transactions], so the story became very simple."

As many models as modellers? Interviewees converge in saying that two DEMO models of a given situation designed by two modellers would usually not be identical. The cause is modellers' different ways of analysing things as being essential or not. Still, no interviewee suggested that those models would be inconsistent.

DEMO has a good return on modelling effort (RoME). All interviewees praised DEMO about its RoME. X3 declares: "RoME is one of the reasons why I liked very much DEMO, because it was very very efficient to get highly complicated matters clear." X10 thinks that without DEMO, people working on the project would have used more time to define roles.

DEMO supports organisation analysis and decision making related to organizational purposes.

Positive experiences with DEMO. All interviewees would use DEMO again in their project in case they would have to do the project again. X11 is enthusiastic: "I think it is marvellous. I work smarter and not harder as a DEMO added value and focus on things that are worth managing." Many interviewees use the phrase "it works" to express how practical they thought DEMO was, e.g.: "so I saw that it worked and how fast it worked." X4 explains the success of his project: "For me DEMO was the key and I identified at least 2 or 3 elements that I am 90% sure that we would not have done without it."

DEMO added value depends on project goals. When being asked about DEMO added value, all interviewees were prolix. Here are the main points that interviewees mentioned. They are not independent from each other. DEMO helps in defining responsibilities without assigning them: "first, define; then, assign". The construction model is very often mentioned as being "the most outstanding benefit of DEMO". "If you don't use DEMO (…), it will be a complete different picture with all kinds of roles that are nearly close to the actual way of working" (X11). "DEMO enables you to pinpoint what is exactly happening and […] also makes sure that your model is consistent" (X4). X5 explains that, together with the existence of the construction model, the consistency between all DEMO models definitions is the source of DEMO added value. Indeed, it ensures the completeness and the consistency of the DEMO models produced on a project. About the completeness, X4 says: "DEMO brings out new facts. You see, after 4 years, this fact (…) had not been identified in the hundreds of meetings and all the ARIS drawings they had." For X1, "DEMO is computable. It means that I can handle large organisations as easily as small. DEMO gives the capability of systematically deriving the map of authorities and responsibilities that have to be fulfilled to generate the acts that are associated with this. This is the basis for human department organisational design." X11 says that DEMO "brings you to the core of your business" and "allows distinguishing between what you have to manage and what you don't have to manage." Modelling with DEMO "brings clarity", "helps you get rid of non-relevant things". Interviewees are very positive about DEMO models being "concise". A DEMO founder claims that "DEMO brings proper knowledge to support decisions to change an organisation".

Tentative explanation of DEMO users' satisfaction and DEMO added value. Due to many quotes from the interviewees, we think that DEMO added value and interviewees' positive experiences with DEMO may be explained by two main factors: DEMO's RoME and DEMO's fidelity with real world phenomena. For the latter point, various interviewees express the fact that DEMO reflects their real world: "DEMO is an abstraction; you can fit the real things in it" (X7). X3 says that DEMO allows to model "what is actually going on, (…) all the tricks, the non-official way, the way things really work, to get them on the table whereas most modelling is done based on procedure manuals but it is not the way it works." Many interviewees also

spontaneously state that DEMO models are stable in the time. X6 adds: "And they are very stable, but they are easy to expand, to change." We explain this "fidelity with real world phenomena" by the theories (Habermas' and psi-theories) on which DEMO relies: "Jan Dietz [a DEMO founder] put in the middle of his model the human, the human who can decide. He put the human role as a main factor, at the centre." (X11)

Conditions for successfully applying DEMO in a project.

Management strongly supports the use of DEMO and the project. If usual conditions of success of projects have their importance, the support from the management is especially seen as "crucial" when working with DEMO. We explain it because of DEMO bringing transparency about how the organisation works (there might be people who do not want it), because this transparency may lead to decisions towards changes in the organization (those decisions are subject of resistance to change) and because resistance to change can also occur towards DEMO unusual way of thinking.

Management wants transparency. A DEMO specific condition is that management has to want transparency [2]. X5 explains: "DEMO makes things totally transparent, and in some cultures that is not what they wish." X3 suggests that DEMO may not be applied in organisations where people have a power-oriented mind-set. Besides, DEMO modellers should have access to people who are knowledgeable about how the organisation works.

A DEMO expert works on the DEMO modelling project. Interviewees converge about this point: "training and advice from an experienced person is a prerequisite." Besides, people working with this expert "must be very aware of the conceptual basis of DEMO […]. It should wise that they have followed a course on that." (X2)

4.7 DEMO ease of use – Convergence and divergence

For our interviewees, DEMO is easy to use when you know it well. X1 said: "Because of my training with DEMO, that way of reasoning is implicit in my mind".

Skills and competencies to model with DEMO – Convergence.

Interviewees converge in saying that, as DEMO is an abstraction, a certain level of abstraction capacity is useful. Besides, having experience with enterprise organisation is an asset, whether this experience is in one organisation or in several ones as for external DEMO consultants. For interviewers, it is primordial modellers are "well trained in DEMO", "DEMO professionals"; and that people working with them "understand some of the principle foundations of the approach". Working with DEMO also requires rigor, preciseness. The soft skills that interviewees mention are social capabilities, "open-mindedness" and communication capabilities, analysis capacities "to filter out what is really happening" and being to rephrase the models in

natural language according to the capacity of abstraction of their interlocutors, namely when "presenting the models to the business".

Risks of mistakes when using DEMO and how to mitigate them – Convergence.

Modelling risks with DEMO are: to produce a model that is not complete if you forget a transaction (a DEMO founder), to identify a transaction that is not essential, to identify something as a transaction whereas the thing is not a transaction (X6) or whereas the thing is part of another transaction (X8) and to employ the theory in the wrong way when you think you have understood it and you actually have not (X2). For a DEMO founder, DEMO trainings teach to avoid these traps. But for X8, it is not only a matter of training, but also "a matter of doing. If you say for instance that "proposal" is a transaction, then I would say no. I would say it is only a request and promise. And if you say "proposal" is an end result, then you are building a system for proposals. (...). That is wrong with huge consequences."

(Dis)ease of learning – Divergence.

X2's following quote sums up well interviewees' points of view: "my experience is that some people understand it in a few hours and some people never understand it." X3 shares his experience: "We explained the model to the executive level people, who very quickly understood it, because they understood the decision making responsibility concept which is native to the construction model." Two DEMO consultants admitted to lead business process analysis workshops by applying DEMO way of thinking without mentioning it, "not to bother people". A DEMO founder says: "I would say, from my experience in teaching it, that it is not really difficult if I think of people who are able to abstract and have sufficient experience in organisations and know the world." Still, an interviewee, otherwise enthusiastic about DEMO, admitted: "The way how Jan Dietz [a DEMO founder] brought DEMO to VISI was very complicated. (…) DEMO way of thinking is complicated. Then you have a very small group of people who can use DEMO." For another person: "there are parts of DEMO that are really not easy to understand." Another one, although knowing DEMO well, mentions an "obscure terminology".

4.8 DEMO models usage: not all models are used each time – Convergence

If some interviewees would advise to use all types of DEMO models, most of them express that they "have been using parts of DEMO", e.g. the construction model is always produced, the fact and process model sometimes. A DEMO founder says: "If you only want to talk about the organisation in the sense of assignment of people or organisational functions to actor roles, then it is most of the time sufficient to have the construction model, often combined with the process model. (…) The action and state model only really are necessary if you are going to develop or select applications."

5 Summary

Research bias. This paper mainly reflects the views of highly educated Dutch people with an engineering or information systems background. None of them is from the "Y generation", who is supposed to learn and think a bit differently. Besides, for several interviewees, 4 to 8 years elapsed since they have been in contact with DEMO for the last time; their projects' success (§4.1) may also give a positive flavour to everything related to them, especially years after. Furthermore, interviewees who are DEMO consultants may have an interest in praising DEMO. Interviewer's profiles and their degree of knowledge of DEMO may also impact the study, even if a well-defined research method is supposed to mitigate this risk. Interviewees mainly referred to two projects during the interviews (Air France KML Cargo IT merge and VISI). Still, some interviewees had experience with several DEMO projects and their views reflect their overall experience with DEMO. The findings of this qualitative analysis are restricted to the contexts mentioned by the interviewees and would require further investigation so that we could generalize them to any DEMO project.

Research contribution about DEMO. As most of our research participants are DEMO professionals or have been acquainted with DEMO for a long time, we expect that their views can provide a fair picture of how the use of DEMO in practice is actually seen by DEMO experienced field people. Besides, in many cases, the investigation of apparent interviewees' divergences showed that these divergences often come from a difference of interpretation of some words – e.g. "method", or from the scope of interviewees' answers – e.g. for DEMO being descriptive or prescriptive. Having disclaimed these apparent divergences, we may say that interviewees' views usually converge or complete each other's. Still, some divergences actually appeared, namely about the way DEMO is taught to its newcomers. Interviewees are very positive about DEMO being effective in fulfilling its purposes and these purposes seem to be relevant to the business. This can be related to how Aier and Fischer define the "usefulness of an artefact" [13] and the "utility of a design theory" [7] p158: "the artefact's ability to fulfil its purpose if the purpose itself is useful. The purpose of an artefact is only useful if it is relevant for business." Interviewees praise DEMO's RoME. Still, strong conditions are required so that DEMO can be effective: learning DEMO requires a strong investment, not every organisation is ready for transparency and every project does not benefit from the support of the management. Besides, current DEMO tooling and DEMO way of working would require improvements.

Conclusion. During interviews performance and analysis, we experienced that Aier and Fischer's criteria [7] are interdependent when used to observe an artefact – e.g. the perception of an artefact's ease of use depends on the artefact's user profile and, in turn, this profile notion refers to the scope of the artefact's scope of application. Interviews seem to be a relevant means to gather research material about DEMO in practice. Further work should be performed to determine whether it would be the case with other artefacts and under which conditions. We do not know either the

importance of the information about the use of an artefact in practice that could not be collected with interviews.

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