A Situating Method for Improving the Utility of Information Products

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Abstract: Information is driving enterprises and ecosystems forward. The availability of relevant, useful and timely information is important for discussions, decision-making, and action. Enterprise architecture is a field that provides frameworks, methods and stakeholder-oriented models as information enablers. However, stakeholder-based frameworks and methods may not identify and capture sufficient details about stakeholders' work practices, pains and relationships between stakeholders. This paper presents a work-oriented approach with method parts and constructs that aim to improve the design, documentation, relevance, enactment, intention to use, use, and evaluation of information products, particularly in enterprise architecture. The explicit incorporation of detailed situational factors, relationships and roles, and actors' work practices can improve relevance, effectiveness and other use-qualities of information products such as enterprise models. The method parts are designed to extend and be infused into enterprise architecture methods and frameworks, which can be ISO 42010-based.

1 INTRODUCTION

The availability of relevant, useful and timely information is vital for most enterprises and ecosystems with collaborating enterprises. How and what information is designed, produced and consumed are key considerations for any information-dependent organisation.

Enterprise architecture (EA) is a field that works with architectural knowledge and descriptions to manage complexity, solve business and IT problems, and improve communication and cooperation, aiming at enabling stakeholders to work together in an integrated and coherent fashion. A central part of EA is the design and use of information products such as models, maps, diagrams, and documents.

It may be tempting to let one profession, such as EA architects define one single way to represent, analyse or use enterprise information or a single source of truth. However, there is a risk that a narrow, single-sided representation may miss incorporating essential aspects that are highly relevant to other professionals in their work practices (Bueger & Gadinger, 2015; Nicolini, 2012; Ulwick, 2016) (Clark et al., 2018) (Tell & Henkel, 2018).

In EA frameworks and methods, it is common to organise architecture descriptions and artefacts according to stakeholders and their concerns (TheOpenGroup, 2018). EA practices have been codified in international standards such as ISO 42010 Architecture description (ISO/IEC & IEEE, 2022) and ISO/IEC 19540 Unified Architecture Framework (UAF) (ISO/IEC, 2022).

In ISO 42010, the concept of viewpoint is used to represent and frame one or more concerns, which is something of interest, relevance or importance to a stakeholder, such as developmental, technological, business, operational, organisational, political, economic, legal, ecological and social influences.

Unfortunately, this practice provides few details on why, how, and when an information product and model should be used (ISO/IEC, 2022) (TheOpenGroup, 2018). Details about what stakeholders do, their questions, and their information needs are missing or scarce, as are the roles and relationships between stakeholders and their' work. An exception is the Zachman Framework which

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provides some information from the perspectives of a select set of stakeholders (Zachman, 2008).

A lack of consideration of details and relationships may impair the design and evaluation of the use of information products and cause unbalanced evaluations when not all stakeholder voices are heard.

Furthermore, research has shown that architectural languages and work products tend to favour the perspective of architects and not the (work) perspectives of non-architects (Malavolta et al., 2012) (Khosroshahi et al., 2018). This suggests a need to adjust the perspective and languages according to the situation in which information products are used.

This paper presents a work-oriented approach (WOA) to information products with WOA method chunks and constructs that can be used to identify, clarify and document actors' varying perspectives on information products in different situations, roles and relationships. They aim to contribute to enterprise architecture to improve the design, documentation, relevance, enactment, intention to use, , use and evaluation of situated information products, such as models or related artefacts such as algorithms.

The WOA offers an opportunity to shift the focus from stakeholder's concerns to the work that actors do, from designing and evaluating the qualities of an information product to evaluating the qualities of the use of an information product and from a single architect and producer focus to multi perspectives based on roles and relationships that consider all participants views in their own words.

The WOA method chunks and constructs enable the identification and documentation of detailed situational factors, relationships and roles, and work practices, which can improve relevance, effectiveness, user satisfaction, and other salient qualities of information products.

The WOA method chunks identify information that can be used to situate information products for specific situations. The WOA method chunks are designed according to the principles of situational method engineering (Henderson-Sellers et al., 2014).

They are designed to complement and enrich existing EA methods to improve information production and consumption and do not aim to provide a complete method for enterprise or enterprise modelling, or stakeholder analysis.

The WOA method chunks can be reconfigured to situate other artefacts not related to information products, but this is outside the scope of this paper.

The WOA constructs build upon knowledge from the fields of work practices and jobs to be done (Bueger & Gadinger, 2015; Nicolini, 2012; Ulwick, 2016), situational analysis (Clark et al., 2018), situational method engineering (Henderson-Sellers et al., 2014), and ISO 42010 (ISO/IEC & IEEE, 2022).

The novel contribution of WOA method chunks is that they extend and enrich existing EA methods with situational method engineering. The WOA constructs Situation and Accommodation viewpoints add situational and relational knowledge, while the Interested party, Information product, and Work viewpoints add knowledge at the desired level of specificity about stakeholders and the work they do that involves information products through work statements. The Frame viewpoint introduces framing, the possibility to look at information products through different and possibly novel lenses.

The WOA address primarily the life cycles of method parts and not the life cycles of the systems. The focus is on using information products (at both type and instance levels) by actors.

The structure of the paper is as follows. Related work and the design science research approach taken with problem identification is described in section 2 and 3, while the WOA method chunks are presented and demonstrated in section 4. Section 5 presents the WOA Constructs. Sections 6 and 7 conclude with a discussion and summary.

2 RELATED WORK

The field of *enterprise architecture* (EA) includes a large number of frameworks and methods, such as TOGAF (TheOpenGroup, 2018), Zachman enterprise ontology for EA (Sowa & Zachman, 1992; Zachman, 2008), and the ISO 42010 (ISO/IEC & IEEE, 2022) standard that codifies existing EA practices.

The *Unified Architecture Framework (UAF), ISO/IEC 19540:2022* (ISO/IEC, 2022), is an example of a standard based on ISO 42010 that aims to unify Architecture Frameworks. The core concepts in UAF are based upon the DoDAF 2.0.2 Domain Metamodel (DM2) and the MODAF ontological data exchange mechanism (MODEM), Canada's Architecture Framework (DNDAF) and the NATO Architecture Framework (NAF) v 4.

UAF contains many viewpoints with complex dependencies, where each viewpoint is documented with stakeholders and their concerns, as exemplified in the Strategic Taxonomy:

- *Stakeholders*: PMs, Enterprise Architects, and Executives.
- *Concerns*: capability needs.
- *Definition*: shows the taxonomy of capabilities.
- *Recommended Implementation*: SysML Block Definition Diagram.

The *analysis of stakeholders* is a commonly used practice, not only in EA (TheOpenGroup, 2018), systems engineering (Incose, 2022), and business modelling, where actors are attributed as having a stake in the game (Friedman & Miles, 2002; Stéphanie Missonier & Loufrani-Fedida, 2014) or can affect, be affected by, or perceive itself to be affected by a decision or activity (ISO/IEC, 2015). Typically, stakeholders are identified with their interests, needs, and powers to influence decisions and then categorised and related to each other.

Adjacent to EA, we find the practice of *enterprise modelling* (EM), where integrated enterprise models are designed by someone with a purpose and a target audience in mind and a focus on a particular aspect of the enterprise (Stirna & Persson, 2018).

The development of *Use Cases* focuses on capturing the use of systems and artefacts such as information products and identification of functions and functional requirements (Stirna & Persson, 2018). However, using information products is only one part of a stakeholder's real work.

The design of the method chunks and related constructs is informed by ISO/ 42010 standard, which *codifies* existing EA practices, *situational method engineering* that addresses the creation of development methods for specific situations (Henderson-Sellers et al., 2014) and *collaborative engineering* (Randrup, 2014).

3 RESEARCH APPROACH

This paper presents results from the second iteration of a research effort that uses a design science research methodology, which is carried out to change the state of affairs by designing and evaluating innovative artefacts. The applied research method follows the steps outlined by Peffers (Peffers et al., 2007).

In the first iteration, problems were identified based on a case study (Tell & Henkel, 2018), which led to the development of solution methods chunks and constructs. In this second major iteration, the overall problem addressed is:

The differences in perception and use across work practices may hamper the utility of information products over time. However, at the same time, a single and focused definition of an information product may miss incorporating essential aspects needed in different work practices.

This paper brings forward the following observations that raise problems with a potential impact on using information products in EA.

Availability of relevant information: The documentation of EA viewpoints and models (ISO/IEC, 2022) (TheOpenGroup, 2018) provides little to no documentation of why a stakeholder wants to use views and models, thus limiting detailed evaluation of how an information product is or was used in stakeholder's actual work.

Documentation of how a model can or should be used is primarily found in adjacent EA methods. Although, this documentation can be argued to focus primarily on the architect's production perspective.

Although the Zachman ontology defines stakeholder perspectives, these do not provide concrete details of what the perspective holders do. Furthermore, the set of perspectives appears not to be extendable within the ontology.

A lack of details can impair evaluations of an information product's *relative advantage* compared to other information products, which is argued in the Diffusion of Innovation Theory (Dearing & Cox, 2018) and the User Acceptance of Information Technology model (Venkatesh et al., 2003) to be important for the use of information products.

Although a *stakeholder analysis* can be elaborate, it often focuses on interests and powers to influence, leading to a potential need for documented details about actual work practices and relationships.

A lack of details about "*who says what about whom and what?*" may impair the analysis of stakeholders' work and their information needs.

The development of *use cases* focuses on using systems and information products. However, it cannot be easy to understand information needs if details of the stakeholder's work are not documented.

Being *vague* about what an information product is supposed to contribute can impair its usage, as identified in a case study (Tell & Henkel, 2018).

Stakeholders may use different *languages* that may impair the consumption of information products. An example is when architectural languages and work products tend to favour the perspective of architects and not the (work) perspectives of non-architects (Malavolta et al., 2012) (Khosroshahi et al., 2018).

Documentation of stakeholders' concerns provides the rationale for using viewpoints. However, in viewpoint documentation, concerns are often *imprecisely* documented with one or a few words, such as "Executives" and "Capability needs" (ISO/IEC, 2022).

Concerns should be derived from stakeholders' prior knowledge, experiences, responsibilities, needs, requirements, expectations, etcetera. However, the documentation of where the concerns are derived

from, the *grounding,* is often largely or altogether missing (ISO/IEC, 2022) (TheOpenGroup, 2018).

An EA framework is typically designed at a point in time for intended use in varying fields and situations. The *generic* nature may pose a problem later when the framework is applied to a *specific* field, organisation, and situation.

It is often the case that stakeholders participate in the *facilitated* development and evaluation of information products in EA (TheOpenGroup, 2018) and enterprise modelling (Stirna & Persson, 2018). However, a question can be raised if such facilitation ensures that the stakeholders have expressed sufficient details about their own work and information needs since a facilitator *mediates the knowledge* capture.

In organisations with *work specialisations*, it is clear that stakeholders have different interests and do different work, and they exchange information in constellations, *roles and relationships*. A lack of due consideration for the differences between stakeholders' work may impair the design of relevant information products, and the evaluation of fit between roles stakeholders play in relationships.

Traditional EA frameworks such as TOGAF do not specifically include *documentation* of roles and relationships involving stakeholders. However, this may not be needed if architects are responsible for ensuring that all stakeholder concerns are covered and for producing information for consumer stakeholders.

The ISO 42010 standard includes aspects of *correspondence* between architecture description elements but does not include rich relationships between stakeholders, their roles and concerns.

The Zachman framework comes with a pre-constructed set of perspectives similar to work practices and *reification-relations* between perspectives. However, the reification relations only partially represent rich relationships.

Asymmetries: Actors with specialised work practices inevitably raise the possibility of asymmetrical situations with potential problems. Examples include an architect (or business analyst) producing a model for a stakeholder, where the architect and not the stakeholder have defined the consuming stakeholder's work, when a producer claims (self-reporting) that a consumer is satisfied hoping that the consumer will buy and use it but the consumer reports other experiences, or when some actors' voices are absent.

4 WOA METHOD CHUNKS

The solution artefacts presented in this paper are the five (5) WOA method chunks that create, use and modify seven (7) WOA constructs (see section 5) and method parts such as an information product, model or method part where an information product participates such as an algorithm.

The WOA method chunks are developed based on situational method engineering principles (Henderson-Sellers et al., 2014) and experiences from situating information products (Tell et al., 2016). A method chunk can be infused into methods that construct new method parts and/or tailor existing methods parts, such as an EA development method or extend an existing EA framework,

The method chunks "Locate", "Frame, "Characterise" *anchor and frame* situational method engineering and can be executed early in a process, such as in project initiation (Commission & Informatics, 2016), in defining a design brief, or in the preliminary phase of an architecture development method (TheOpenGroup, 2018). The "Situate" activity uses the results from the "Locate", "Frame, and "Characterise" activities as input to the construction, situation and/or tailoring of method parts. The "Evaluation" activity performs evaluations of method parts at any time.

4.1 WOA Locate

In the Locate method chunk, information about the situation to focus on, where information (products) is invented, produced and/or consumed, is located and documented. A situation often involves a problem, opportunity, challenge, dilemma or paradox to address. This information anchors situational method engineering, the use of information products and evaluations in relevant contexts and situations.

Goal: The step aims at anchoring the situational method engineering by identifying and representing the situation to focus on and outer contexts.

Activities:

- Identify and describe shortly the situation-in-focus.
- Analyse the situation-in-focus to identify an initial set of actors, actants, roles and relationships.
- Analyse the situation-in-focus to identify an initial set of artefact, such as information products.
- Identify and describe shortly the project that works to transform or evaluate the situation-in-focus.
- Identify the outer contexts of the situation-in-focus.
- Identify the outer contexts of the project.

Results: New or updated SME Brief with:

- Initial or updated Frame and Situation View

Guidelines:
- Select and use suitable techniques for identifying contexts, such as Stakeholder Analysis (Friedman & Miles, 2002; Stephanie Missonier & Loufrani-Fedida, 2014) or "Frame Innovation" (Dorst, 2015).
- Select and use suitable techniques for understanding the situation-in-focus from fields such as creative problem-solving and design.

4.2 WOA Frame

In the Frame method chunk, information about factors influencing how the situations-in-focus, situational method engineering, use of information products, and evaluations are interpreted, approached and worked on.

The method chunk supports active work with frames (Schön, 1983) and enables a situational and constructionist approach with the notion that reality is not objective but rather socially constructed.

Goal: The step aims to identify and represent factors and frames that influence the situational method engineering, enactment, intention to use, use of information products, and evaluations.

Activities:
- Identify contextual, situational, and frame factors.

Results: Updated SME Brief with:
- Updated Frame View with Identified factors.

Guidelines:
- Select a suitable technique for analysing frames, such as "Frame Innovation" (Dorst, 2015).
- The 27 factors identified by Bekkers referenced in "Situational Method Engineering" (Henderson-Sellers et al., 2014) can inform this step.

4.3 WOA Characterise

In the Characterise method chunk, the situation-in-focus is detailed by identifying and characterising relevant work practices in which actors and information products participate.

Goal: The step aims to identify and characterise relevant work practices in the situation-in-focus, at the desired level of detail, with participating actors and information products, roles, and relationships between the work practices.

Activities:
- Identify and describe relevant work practices and represent them each as a work-to-be-done.
- Identify and describe roles that work practices play.
- Identify and describe relationships between roles.
- Identify and describe actors and information products that participate in work practices.
- Identify aspects of relationships and fit between work practices' roles as accommodations.
- Identify and describe shortly alternative methods parts that could participate in work practices.

Results: Updated SME Brief with:
- New or updated Situation, Work, Accommodation, Interested Party, and Information Product Views.

Guidelines:
- Adding more or fewer work statements regulates the desired level of detail.
- Narrow down a potentially large set of work practices, originating from each participant's own world-view of their work situation, into a reasonable and practicable set of work practices that can be used for the situational method engineering.

4.4 WOA Situate

In the Situate method chunk, method parts are constructed or tailored. A method part can be situated or be prepared to be situated in a later tailoring step.

The method parts are constructed based on situational factors captured in the SME brief, embedded knowledge in the method base and method construction guidelines, and the knowledge embodied in method engineers (Henderson-Sellers et al., 2014) to improve qualities such as intention-to-use (Venkatesh et al., 2003) and actual use.

Goal: This step aims at constructing situated method parts based on situational factors, as represented by the SME brief.

Activities:
- Construct and situate method parts.
- Identify and analyse alternative method parts.

Results:
- Constructed method parts.

Guidelines:
- The book "Situational Method Engineering" provides guidelines (Henderson-Sellers et al., 2014) for constructing methods and/or method parts.

Example:

An example of a type of information product that can be situated is the capability map construct with the general capability pattern (Tell & Henkel, 2022). The pattern can be instantiated to define capability maps suited to practices where actors are interested in different capabilities, such as competitive advantage, sustainability, risk, processual or human capabilities.

4.5 WOA Evaluate

In the Evaluate method chunk, method parts (at type or instance levels) are evaluated against the identified situational factors, actor's work practices, roles, and

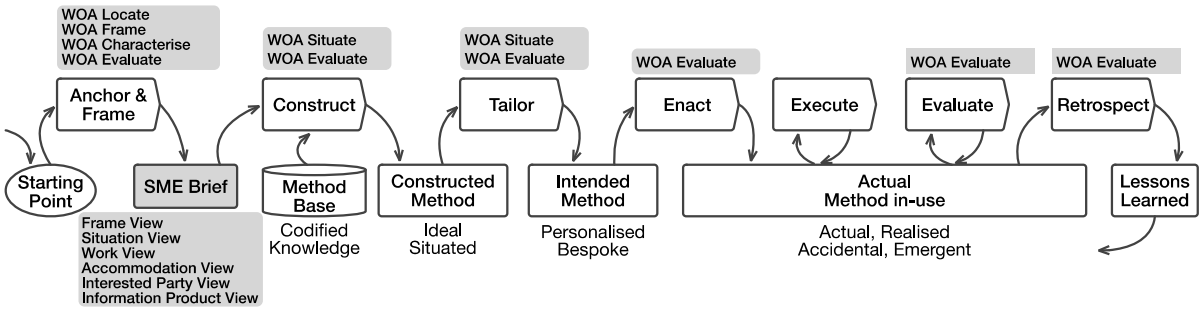

Figure 1: Illustration of the Wireframe method with infused WOA method chunks.

relationships as captured in the SME Brief, which is also evaluated.

Evaluations form a natural part of quality assurance processes and development methods such as design science research (Peffers et al., 2007), agile build-measure-learn cycles (Reis, 2011), quality management (ISO/IEC, 2015), design (Dorst, 2015), and project management (Commission & Informatics, 2016).

An evaluation can be performed at different *times*, such as ex-ante to create baselines, during use and ex-post, for different *reasons*, such as formative for improvements or summative, according to a *paradigm* such as artificial (abstract) or naturalistic (concrete) (Venable et al., 2016).

The WOA recognises a wide range of qualities relevant to method parts that can be evaluated:

- *Inherent* qualities, without reference to contexts.
- *Internal* and *Internal in-use* qualities, as stated internally by own role and work practice.
- *External* and *External in-use* qualities as stated externally in other work practices in a relationship.
- *Qualities of Alternative* methods parts that are feasible with relative (dis)advantages.

Goal: This step aims to evaluate method parts and to develop insights and ideas for improvements.

Activities:

- Prepare evaluation, select the method part(s) to be evaluated, and establish purpose and plan.
- Select the evaluation approach(es), quality model(s), and measures and add them to the plan.
- Execute evaluation according to plan.
  - Evaluate the qualities of the SME Brief.
  - Evaluate the qualities of constructed, tailored, intended, alternative or actual method parts.
- Record evaluation results, findings, feedback from participants, and ideas for improvement.

Results:

- Descriptions of evaluation results, findings, conclusions, and ideas for improvements.

Guidelines:

- Select the quality models that are relevant to the SME effort, such as those found in business models (Stirna & Persson, 2018), services (Kang & James, 2004), software products (Miguel et al., 2014) and EA models (Rumapea & Sitohang, 2017).
- Actors from all roles should participate to ensure a balanced evaluation.
- Alternative method parts with potentially higher relative advantages should be evaluated, such as a less complicated and desirable information product.

4.6 Demonstration

The method chunks can be applied to a varied set of situations. To demonstrate applications of WOA, an explanatory tool and frame of reference, the *wireframe method* has been developed based on a generic situational method construction method (Henderson-Sellers et al., 2014). It provides a simple guide for where the WOA method chunks can or should be positioned. The wireframe method consists of seven (7) activities (see Figure 1).

Anchor and Frame

In the Anchor and Frame activity, key situational factors that influence and instruct the situational method construction activities are identified and documented in the SME Brief.

Construct

In the Construct activity, (new) method parts are constructed based on an SME Brief and a *Method Base,* which contains codified knowledge and method parts from different domains that can be assembled, configured and potentially situated into an ideal *Constructed Method*. Examples of pre-fabricated methods are the TOGAF Architecture Development Method (ADM) which has been constructed to be used by different enterprises and architecture frameworks and the Zachman ontology.

Tailor

In the Tailor activity, a constructed method and its method parts are adjusted and adapted to a particular

target usage scenario into a personalised and bespoke *Intended Method* based on an adapted SME Brief. Examples of tailoring are found in the TOGAF ADM Preliminary Phase, in the customisation of the UAF framework and in the Zachman ontology, which is used as a basis for creating EA frameworks.

Enact

In the Enact(ment) activity, the intended method is introduced and transitioned (ISO/IEC, 2008) into the target environment and organisation (Henderson-Sellers et al., 2014). This step provides an opportunity to address participants' acceptance of new method parts, as well as coherence between work practices.

Execute

In the Execute activity, the intended method is realised. An example is TOGAF ADM phase A-H.

Evaluate

In the Evaluate activity, method parts are evaluated.

Retrospect

In the retrospect activity, participants can discuss the utility of using method parts, learn, and capture lessons learned.

Infusion of WOA method chunks

The 'WOA Locate", 'WOA Frame', and 'WOA Characterise' strengthen the Anchor and Frame activity. The 'WOA Situate' strengthen the construction of new method parts and the tailoring of existing ones. The 'WOA Evaluate' can be infused into all activities to evaluate how the method parts fit with the SME Brief and to offer a space where actors can discuss, deliberate, and form intentions and commitments to use method parts.

5 WOA CONSTRUCTS

The WOA methods chunks deliver results in the form of WOA constructs that are governed by viewpoints, which are "set of conventions for the creation, interpretation and use of an architecture view to frame one or more concerns" (ISO/IEC & IEEE, 2022).

Each of the constructs serves as a representation of captured knowledge and can be expressed as models, textual stories, diagrams, or canvases.

5.1 WOA Viewpoints

The main result is the **Situational Method Engineering Brief (SME Brief)** which contains information that informs and instructs situational method engineering, documentation, evaluation activities, and the use of information products. An SME Brief can be included in a design brief or a project charter. The SME Brief contains views and information governed by the following WOA viewpoints but can also contain other information that is needed for SME activities.

The **Work Viewpoint** establishes conventions for representing work practices (Bueger & Gadinger, 2015; Nicolini, 2012; Ulwick, 2016) (Clark et al., 2018) (Tell & Henkel, 2018) as a 'work-to-be-done'.

Examples of work practice aspects include:

- Work done and ways of working.
- Jobs to be done (Ulwick, 2016)
- Actors, stakeholders, artefacts and information products participate in a thematic role.
- Questions asked, and decisions to make.
- Goals, objectives, results, and outcomes.
- An actor is using an artefact or system.
- As a Manager, I am experiencing a problem or pain (Osterwalder et al., 2015).
- An actor has information needs (Incose, 2022).

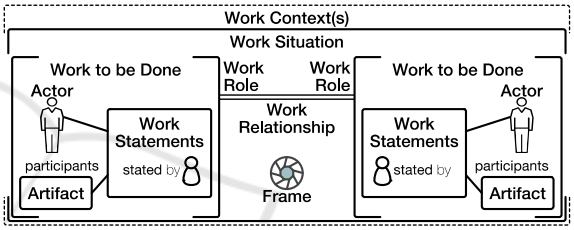

Figure 2 Illustration of WOA constructs.

A **'work statement'** represents details about a situation-in-focus, role, relationship, work practice, actor or information product.

Examples include: *"The decision X is based on report Z", and in template form, "When ... actor ... feel ... because ... therefore ... [stated by]".*

A set of work statements forms a linearisation of a *concept and fact model* that approximates a small part of the world. Therefore, work statements can be expressed both in model form and as text sentences in work stories or work canvases (Group, 2019).

Work statements can be formulated using (domain-specific) languages, such as a language defined using the Semantics of Business Vocabulary and Business Rules (Group, 2019) to improve accuracy and consistency across WOA applications.

Level of Detail: More or fewer work statements regulate the desired level of detail and accuracy.

State by: A work statement references the actor who stated it, which can be a different actor than an actor represented in the work statement.

Organisation: A more extensive set of work statements can be organised according to underlying ideas, such as aspects and themes, to simplify understanding, design and evaluation.

The **Frame Viewpoint** establishes conventions for representing frames with situational and frame factors and points of view that influence situational method construction, tailoring, execution and evaluation. Factors are associated with:

- Situation-in-focus and contexts surrounding the situation-in-focus.
- Situational method engineering project that addresses the situation-in-focus and contexts surrounding the project.

Examples of frame aspects include:

- Assumptions, hypotheses, choices, constraints, belief systems, conceptualisation, themes, reference points upon which information is judged, principles for organising facts, what to focus on, questions to be asked, influencing factors and forces of change.

The **Situation Viewpoint** establishes conventions for representing a situation-in-focus with roles and relationships as a 'work situation', 'work roles' and 'work relationships' where each 'work role' is associated with a 'work-to-be-done'.

Two *archetypical* situations and relationships can be found related to information products:

- <*Producer, Consumer*>, an information product, is produced by an actor and consumed by an actor.
- <*Creator,* <*Producer, Consumer*>>, a new type of information product, model or algorithm is invented to benefit actors in both the producer and consumer roles. An example is when an inventor creates a new kind of algorithm for analysts, which is used to produce an information product based on collected data and the execution of the algorithm, to be sent to an expert in support of the expert's improved decision-making process.

The **Accommodation Viewpoint** establishes conventions for representing aspects of the coherence between work practices within a relationship as the 'accommodation' construct.

Examples of relationship aspects include:

- *FIT*. How well a work-to-be-done with participating actors and information products fit each other, such as how information product features satisfy information needs and how an actor's pain is relieved by an information product's pain reliever.
- *Assurance*. How a FIT is justified through claims, argumentation and evidence.
- *Effectuation*. How values and artefacts are transitioned between roles through interventions.

The **Interested party Viewpoint** establishes conventions for representing aspects of actors that participate in work practices or have stated a work statement. *Examples of actor aspects include:*

- Persona aspects (Negru & Buraga, 2012).
- Importance & influence (Friedman & Miles, 2002).

The **Information Product Viewpoint** establishes conventions for representing aspects of information products that participate in work practices.

Examples of information product aspects include:

- Features, functions, and affordances (Tell, 2020)
- Pain relievers, gain creators, and value propositions (Osterwalder et al., 2015).

5.2 Integration with ISO 42010

The WOA constructs can be integrated with EA frameworks based on ISO 42010 by extending an ISO 42010-based Architecture Description with the content of the SME Brief and by adding situated information products and models to a framework.

An ISO 42010 concern can be considered a simplification or condensation of work statements. In the other direction, work statements make visible that which is embedded in a concern and enable the design and evaluation of information products and their features against *specific* and *concrete* actions, pains/gains, information needs, questions, and decisions (Tell, 2020).

Furthermore, the Situation and Accommodation views add information about situations, roles and relationships not explicitly covered by ISO 42010.

6 DISCUSSION

This section presents an informed argument for the WOA method chunks and WOA constructs. As formulated by Hevner et al. (Hevner et al., 2004), the informed argument is a type of lightweight evaluation where the researcher argues for their solutions.

The *availability of relevant information* is improved by the small and focused WOA method chunks that can complement and be infused into existing (EA) methods. Thereby lowering the barriers to method application and improving facilitating conditions for and actual use of information products.

The generally designed WOA constructs extend the ISO 42010 standard, thereby increasing the possibility of WOA being *applied to a wide range* of frameworks and methods.

The WOA constructs and the SME Brief enable the *retainment* of detailed relevant work-oriented documentation over methods and information product life cycles so that they do not disappear after

a framework has been constructed. This enduring information can be used to increase the understanding of EA artefacts and how they are supposed to be used throughout the life cycle of architecting.

The *relevance of work practices and relationships* to information design, production, consumption, and evaluation is well-known in many fields. WOA makes the differences between practices and roles visible by including situations, roles, relationships, practices, and accommodations. Examples of fields include: Jobs to be done (Christensen et al., 2016) (Ulwick, 2016), Situational Analysis and grounded research (Clark et al., 2018), work practices (Adler & Pouliot, 2011), Diffusion of Innovation (Dearing & Cox, 2018), User Acceptance of Information Technology (Venkatesh et al., 2003), REA (Gailly et al., 2008; Geerts & McCarthy, 2002; McCarthy et al., 2016)(ISO/IEC, 2007)(Ito & Vymetal, 2013), and value proposition design (Osterwalder et al., 2015).

When roles and work situations are made explicit, it becomes possible to analyse questions such as, is the information product co-created with the consumer, or is the production mediated by a business analyst? If the information product is complicated, or if its relative advantage is not clear, then the consumer may report problems or non-intention to use (Khosroshahi et al., 2018) (Venkatesh et al., 2003). If the information product is new, the rate of enactment, spread and adaptation may take time (Dearing & Cox, 2018).

The desired or necessary levels of *precision* can, in WOA, be regulated through the number and expressiveness of work statements, which enables design and evaluation to be more precise and relevant.

The open-ended nature of work statements can be used to capture the source and *grounding* of needs, concerns, expectations, goals, and requirements. Furthermore, research methods such as grounded theory are supported by organising work statements in aspects such as thick descriptions and insights.

Language and *mediated knowledge* problems can be identified and addressed through the representation of *who made a work statement* about an actor's work practice in a relationship and the use of domains specific work statement languages. Furthermore, the active voice and engagement of all roles are supported since actors should be involved in specifying their own work and needs (Incose, 2022).

WOA provides an opportunity to identify and analyse the effects of *asymmetrical situations* through captured knowledge about work situations, roles, relationships and work statements stated by actors.

WOA offers the possibility to *situate* and adapt information products to specific situations. Thereby enabling the design of relevant information products that match actors' *specific* information needs and increase the intention to use and utility of use. Furthermore, preparing *generic* information products to be situated for *specific* situations later bridges the generic-specific gap and promises to improve the utility of pre-fabricate and methods.

WOA aims not to replace adjacent theories and practices but to complement and enrich them by explicitly adding detailed WOA parts.

WOA supports the development of *use cases*. Here, the use of information products is considered as insights derived from work statements that provide a *thick description* of what happens in work practices. The definition of use or functional requirements is argued to be enriched by clarifying why, when, and how an information product should be used and which questions should be answered.

7 SUMMARY

This paper presents a novel work-oriented method and constructs resulting from a design science research effort. The main contributions of this research and the paper are the WOA method chunks and constructs that enable the capture and representation of detailed situational factors, relational aspects, and work practices, which are argued to improve the design, documentation, relevance, enactment, intention to use, use and evaluation of information products in the field of EA.

The WOA method chunks and constructs can extend ISO 42010-based enterprise architecture methods and frameworks by enriching the identification and specification of concerns with detailed work practices and adding work situations, roles, relationships, and accommodations.

The WOA method chunks and constructs provide a rich foundation for designing situated information products that are considered relevant and fit better with specific information needs, thus increasing the intention to use and utility in their use.

The solution artefacts open up future research about which factors, aspects, and details contribute to multi-perspective situations and how they can be evaluated as part of the construction, tailoring, enactment, and use of EA frameworks and methods.

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