

this framework a construct model should not have 4 main problems i.e. construct excess, construct overload, construct redundancy and construct deficit.

The definition of risk according to oxford is a noun defined as “A situation involving exposure to danger”.

natural disaster is defined as w any property defined to be x impossible to be an instance of both pure and speculative nature or a natural disaster entering in the nature of speculative risk and it is unlikely that debt payable enters the nature of risk pure.

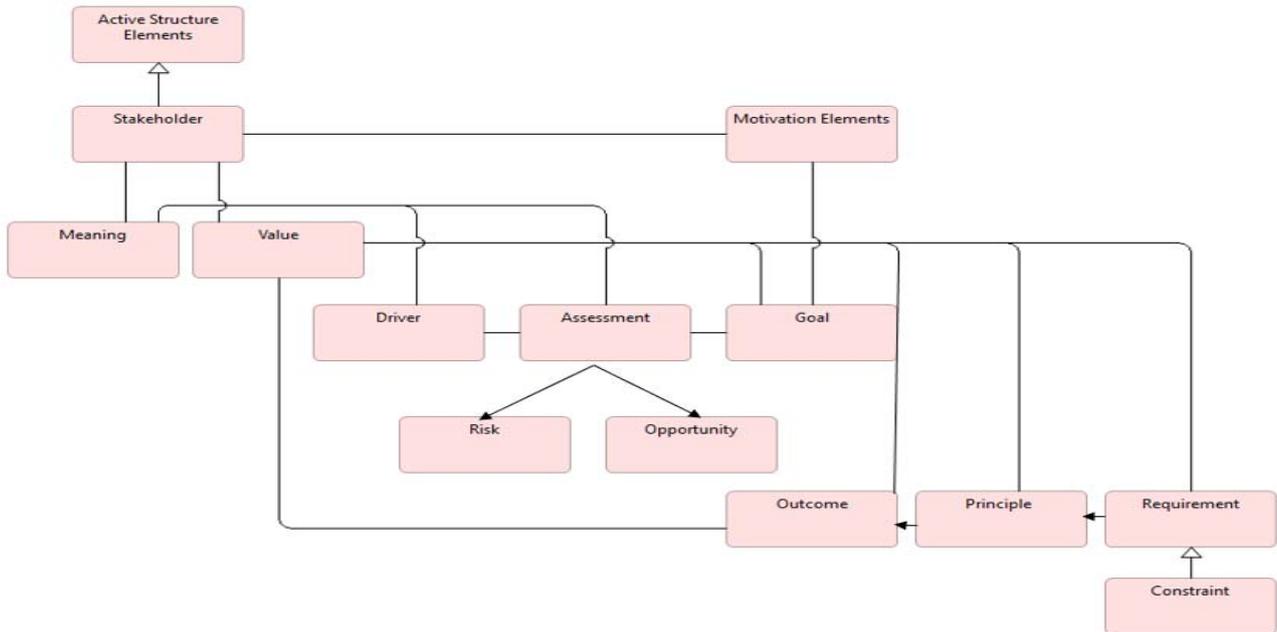


Fig. 5. Metamodel Risk and Opportunity on Motivation Element

Risk also uncertainty about future events. risk is defined as an unpleasant (harmful) consequence of an action or action. If we solve the risk problem with the Unified Foundational Ontology, risk classified as universal term, when risk such as characteristic in temporary condition in object.

Risk affects assets where assets are valuable to the company. Based on research published Jose, et al 2012, the risk is always there even if it is detected or not by the organization. Areas that are vulnerable to risk exposure must be addressed in order to achieve company profits such as business risk, market risk, credit risk, operational risk, IT risk and so on.

The risk of influence on assets affected by individuals or organizations. Risks are added to complement the pre-existing extension specialization of assessment extensions. Assessment is a trigger for risk analysis. However, these elements have not been explicitly represented. Risk represents a valuable asset value for a company. The risk of representing each valuable asset object can be either business actor or business object (agentive object and non agentive object). So the problem found in this interpretation is clear that there is a problem of construct redundancy.

The composite situation of risk is an opportunity, where opportunity also have same characterization with risk. It's occur in temporary condition in some certain object. The definition of Opportunity according to Oxford dictionary is a time or set of circumstances that makes it possible to do something.

Risk and opportunity classsified into anti-rigid universal. Risk is purely and speculative. Example of pure risk is natural disaster and example of speculative risk is debt payable. Pure and speculative is the nature of risk, then a

Beside that, Opportunity defines as improving business value, influenced by external influences, for example: external influences are the nature of the opportunity where the defined opportunity is w, the external and internal influences are unlikely to be an instance of an opportunity so that it will allow external influences to belong only to the opportunity.

Risks and Opportunities are classified as a Universal Moment. We can the formula about moment universal.

$$\text{MomentUniversal}(U) = \text{def Universal}(U) \wedge \forall x (x::U \rightarrow \text{Moment}(x)) \quad (1)$$

x is an instance of U or x has a character that is part of U. Budget risk is a category of risk. object budget risk is an instance of universal risk. When it is said that risk identification in budget risk or monitoring and reporting on budget risk. We can say that budget risk is an example of universal risk. Risk identification and monitoring and reporting are done specifically on risk

Opportunity is based on external conditions. External conditions will change based on certain-for example: new technological developments the development of new technology x is an instance of universal Opportunity Technology U.

Risks and Opportunities are Non-Agentable Objects. In line with the nature of risk as a noun, which is the object of risk is Non-Agentive Object. Risk does not affect ther individuals. The risk is attached to a particular object or element

Risks can be attached to physical objects and social objects. Social objects: describe objects that affect certain communities such as corporate regulation and public law..

Social objects are performed by social entities such as presidents or managers.

criteria on [2]. The development of risk and opportunity notation includes:

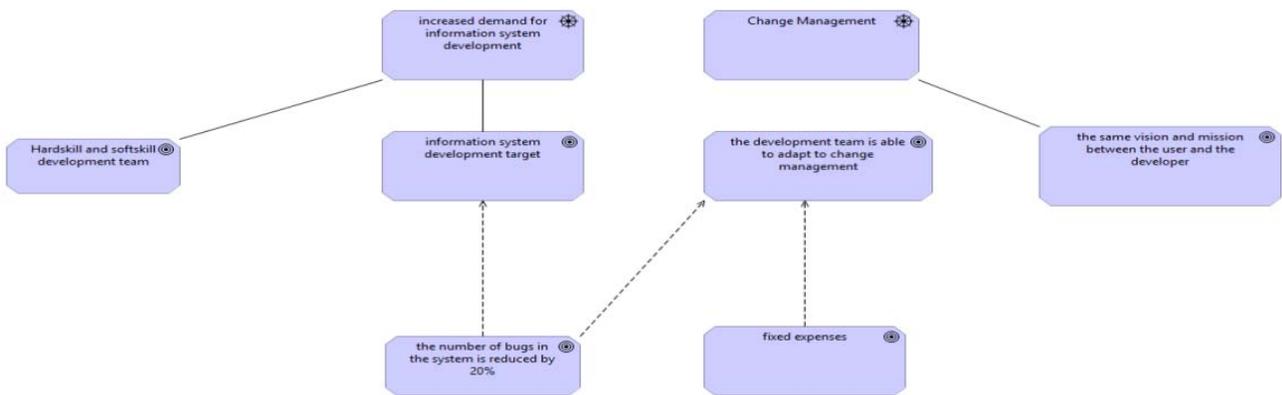


Fig. 6. Information System Development's case modeled without the risk and opportunity concept.

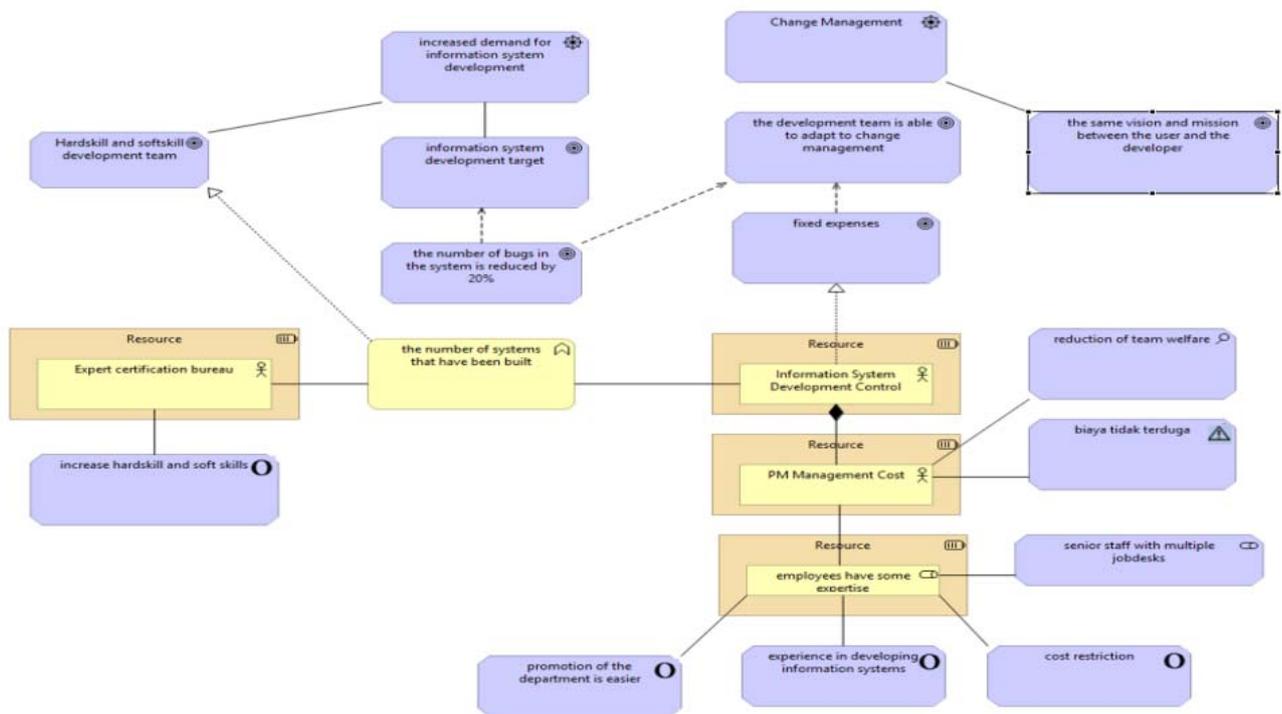


Fig. 7. Information System Development's case modeled with the risk and opportunity concept.

Opportunity is a noun which is also an object. Where this object is passive (Non-Agentive) that will change with other influences. Opportunity is a social object.

Figure 4 shows the risk and opportunity concept in UFO represents a object which may be trigger by action of assessment. The metamodel proposed here defines one relation from assessment, namely one that already existed in the extention.

The metamodel also introduce a controls relation between assessment and structure element, where assessment associated with the meaning and value who control by stakeholder. The realized relation between risk, opportunity and assessment is understood as being available for organization (e.g., by an risk assessment).

Enterprise architecture modeling is done with the development of risk notation and opportunity based on

Table 1. Concrete syntax and definition for risk and opportunity

Modeling Element	Definition	Concrete Syntax
Risk	A situation involving exposure to danger	
Opportunity	A time or set of circumstances that makes it possible to do something.	

D. Output Step four:

In order to see the reliability of the proposed extension model, a case study is provided by comparing the modeling of enterprise architecture without the use of extensions proposed and using the proposed extension.

The result of the comparison extension usage is shown in Fig. 6 and Fig. 7. Where the addition of extensions in the proposed model detailed the process that can be done by the architect.

E. Output Step five :

The evaluation process is done by doing ontology mapping and checking the concept of construct risk and opportunity model. Unified Foundational Ontology (UFO) is directing and evaluating results and processes during the creation of risk elements and opportunities.

IV. DISCUSSION

In this paper, we perform ontological analysis of the archimate extensions of risk and opportunity and associated notions of both the elements. We have employed a comprehensive foundational ontology that incorporates concepts to deal with objects, relation, moment, etc.

Modeling construct risks and opportunities can be used to complement the company's needs. Companies are required to always think risk-based thinking so that the process of handling.

We have been able to clarify that the risk and opportunity element represent a universal form, where the characteristic of both elements will change based on moment. Our well-founded recommendations should lead to a language that allows improved enterprise capacities.

the result of ontological mapping is used to ensure that the construct model is free of the 4 major problems avoided from Unified Foundational Ontology. For starters the metamodel mapping is done on the basic concept of Archimate. Risk and opportunity are used as a form of assessment where the main objective of the assessment is the company's objectives. Both of these elements will realize the form of assessment by bringing special symbols. Where only the scope of the assessment done then the

limitations of the definition of the process. Risks and opportunities used by the company as a mindset of process considerations that can be done company.

V. CONCLUSIONS

From our research we have shown that it is able to represent the key aspect of real-world case, the first case describes an enterprise architecture model without the use of risk elements and opportunities. we show that without the risk and opportunity construct the EA mode is not able to capture the key aspect of information system's development. The EA model without the risk and opportunity is focused mostly on the operational aspect of losing the focus company for mitigate the risk and improve the opportunity.

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