Future-proofing PhD funding for the VUCA world

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Abstract

This ECS paper outlines the initial design of author's dissertation research, which aims to help PhD program providers to effectively and efficiently evolve their ability to secure funding for their PhD programs as well as specific funding needs of their PhD candidates. The author applies an ontology-based approach to aid the understanding and strategic evolution of funding securing capabilities in line with the disruptively changing funding landscape.

Keywords

VUCA, PhD funding, research funding, funding capability

1. Introduction

As the economic and technology landscape is becoming more and more unpredictable, which has been labeled by the term VUCA (Volatile, Uncertain, Complex, Ambiguous), organizations are exploring approaches to stay in touch with their many stakeholders and environments in which they operate. Continuous redesign of their business capabilities is hence no longer a nice-to-have source of competitive advantage, but became a key ability enabling sustainable market presence for many organizations globally.

PhD programs, as one type of participants in the global marketplace, are facing these challenges in their specific formats. Securing funding for their existence and successful sustainable evolution is a question of vital importance for research institutions offering this form of training for early career researchers. And right now, the national as well as international landscape of available funding resources is evolving at a fast pace and in a disruptive manner.

2. Design problem definition

Following Design Problem is the subject of this dissertation research (defined following a Design Problem definition template as per [1]:

Improve PhD provider's ability to successfully secure future PhD funding in disruptively changing research & education funding landscape

By designing a formal ontology and business architecture based decision-making framework for context-aware future-optimized decisions on (investment in) development of PhD funding securing capabilities

That satisfies requirements of relevant stakeholders (these will be identified by means of exploratory research in the next phase of this research project)

In order to ensure PhD program's longevity, world-class quality, prosperity, attractivity for candidates and maximized quality of provided training and PhD research outcomes.

Specific knowledge questions will be defined in the next stage of the research project to explore key concepts like e. g. those listed below and their aspects relevant for purposes of this research:

- Types of Funding needs
- Types of Funding
- Funding securing capabilities
- Stakeholders
- Dimensions of Funding securing capabilities

Two key concepts will be at the core of the conceptual framework examined in this research:

1. Contractual relation and
2. Funding need to Funding element Mapping,

Both of which are at the metaphorical conceptual and ontological „heart" of the design problem and were hence identified as key concepts for design of the to be developed artifacts.

3. State of the art and approach

This research is building on existing body of knowledge and toolsets in the scientific disciplines of Ontology Engineering and Conceptual Modeling. To ensure high quality foundations of this design research, a decision was made to anchor the Business Architecture model in formal ontological models. Leveraging knowledge of the underlying concepts and their relationships captured in pre-existing high-quality formal ontological models prevents duplication of efforts and enables a more complete and thorough analysis of examined subject matter.

Author is also conducting literature review in the field of PhD funding, where there is a surprising lack of literature relevant and useful for the specific purposes of this specific research project. The topics of PhD research funding, when mentioned, is usually mentioned as a subtopic of a broader theme. And the same is true for research funding capability development, which is usually mentioned in a scientific field specific context and only briefly addressed in relation to a different main theme of a scientific paper or book.

Therefore, additional methods are being used to collect relevant information on this field of research – based on non-academic literature and structured interviews with relevant stakeholders. Author also attended events, where the topic of PhD funding has been discussed – two key events were:

- KreCON conference 2022 KRECon 2022, National Library of Technology, Prague, 10-11. 11. 2022 (10-11 November 2022): Presentations, Video recordings · NTK conferences (Indico) and
- Horizon Europe Proposal Writing RIA-IA IN HOUSE TRAINING at Prague University of Economics and Business

In this research project, we will examine the relationship between the "PhD Program Provider" (an organization offering PhD programs – such as a university) and the "Funding Provider" (e.g. Research Grant agencies, Department of Education, national and international research grant agencies etc.) through the lense of the "Contractual Relation" concept as defined in [2]. As the relationship between the "PhD Program Provider" and the "Funding Provider" is a form of a "Contractual Relation", the existing ontological model of this domain provides an initial set of domains to examine for the specific domain of "Securing PhD Funding".

First a generic "Extended Ontology of Contractual Relations" will be developed. The concept of "Contractual Relation" will be connected to and extended by the notions of Value, Risk and Trust. This will be done by building on multiple already existing ontological models covering these areas. Connecting existing above mentioned ontological models into an "Extended ontology" will help to uncover so far unexamined dimensions on the domain interfaces and hence a more thorough and complete analysis.

Based on this generic ontology, deliverable No. 2 will be developed "Domain specific ontology of Contractual Relations for PhD Funding".

Based on that, an ontology-based conceptual modeling approach will be applied to develop "Business Architecture of PhD Funding" – the key deliverable from this dissertation thesis.

References

[1] R. J. Wieringa, 2014 Design science methodology for information systems and software engineering. Heidelberg: Springer, ISBN 978-3-662-43838-1.

[2] C. Griffo, L. C. Araujo, S. Meira Brasil, M. Lima-Marques, G. Guizzardi, and J. P. A. Almeida, 2023. Modeling the dynamics of contractual relations. *Frontiers in Artificial Intelligence.* 11 April 2023. Vol. 6, p. 1042319. DOI 10.3389/frai.2023.1042319.