A Functional Architecture for the Elicitation, Design and Specification of Business Decisions and Business Logic

Dr. Koen Smit
HU University of Applied Sciences Utrecht
Research chair Digital Ethics

Sam Leewis, M.Sc
HU University of Applied Sciences Utrecht
Research chair Digital Ethics

Dr. Martijn Zoet
Zuyd University of Applied Sciences
Research chair Knowledge Intensive Business Processes

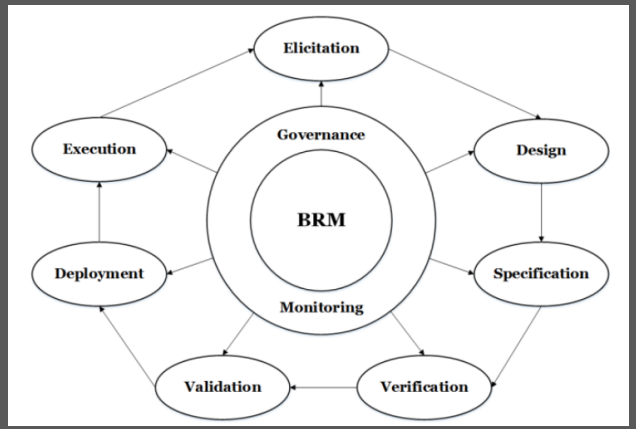
KENNISCENTRUM
ECONOMISCH STERKE &
CREATIEVE STAD
HOGESCHOOL UTRECHT

Introduction

- Body of knowledge on Business Rules Management (BRM) is nascent
- Contributions within this research field predominantly focus on the technical aspects
- One relatively unexplored aspect would be the creation and utilization of functional architectures for BRM technology (tooling)
- Using an inductive approach we derive important functional categories from large sets of requirements from different organizations, to create a functional architecture

Background and Related Work

- BRM is defined as: “*a systematic and controlled approach that supports the capabilities 'elicitation', 'design', 'specification', 'verification', 'validation', 'deployment’, 'execution', 'evaluation' and 'governance' of business decisions and business logic*” [6]
- BRM is often divided by four general areas of focus: 1) analysis and design, 2) testing, 3) execution, and 4) governance. Due to this we focus on the first area in this paper.



Background and Related Work

- In this paper we adhere defined to the following definition of a functional architecture: “a functional architecture comprises a modular decomposition of the functionality of an information system” [21]

  1) a modular decomposition of the product functionality;
  2) a simple notation for easy comprehension by non-specialists;
  3) and applicability in any line of business, offering a uniform method for modeling the functionalities of software products.

- We aim to use functional requirements from organizations to construct a functional architecture that adheres to these design criteria. The organizations selected all utilize user stories, which is the unit of analysis in this study.

Research Method

- Case study research
- Holistic case study approach [29], one context (BRM tooling) and seven cases (organizations that defined functional requirements).
- Our data comprises secondary data, which is third-degree data collection according to the case study research approach.

Data Collection

TABLE II. BREAKDOWN OF FUNCTIONAL REQUIREMENTS RECEIVED FROM THE CASE ORGANIZATIONS

Organization	Total number of functional requirements identified
A	130
B	52
C	126
D	67
E	123
F	38
G	0

- The data collection for this study occurred for eleven months, between November 2016 and September 2017
- selection of the organizations is based on the group of individuals, organizations, information technology, or community which best represents the studied phenomenon [31].
- These are organizations that utilize BRM systems to automate their business decisions and logic to handle large amounts of service requests. For this study, we invited several Dutch executive governmental agencies.

Data Analysis

- Based on the data received, the researchers analysed and structured the functional requirements
- The data analysis
consisted of three rounds of thematic coding, according to Strauss and Corbin’s process of 1) open coding, 2) axial coding, and 3) selective coding [31].
    - Two researchers coded separately from each other thereby increasing the inter-reliability in the coding [32]

Data Analysis

- Examples of coded functional requirements

TABLE I. EXAMPLES OF CODED FUNCTIONAL REQUIREMENTS

ID	Role	Feature	Outcome	Organization	Organization reference	Category
7	Rule Analyst	I want an overview of all relevant sources	So that I can scope the project	A	5.3	Create Overview
13	Rule Analyst	I want to be able to include a source in the analysis environ-ment	So that the source is in the system ready for analysis	B	PR13_UR_A_1	Import Sources

Results

- A total of 536 functional requirements were analysed and registered
- Analysis resulted in 18 functional categories

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Organization	Total number of functional requirements identified
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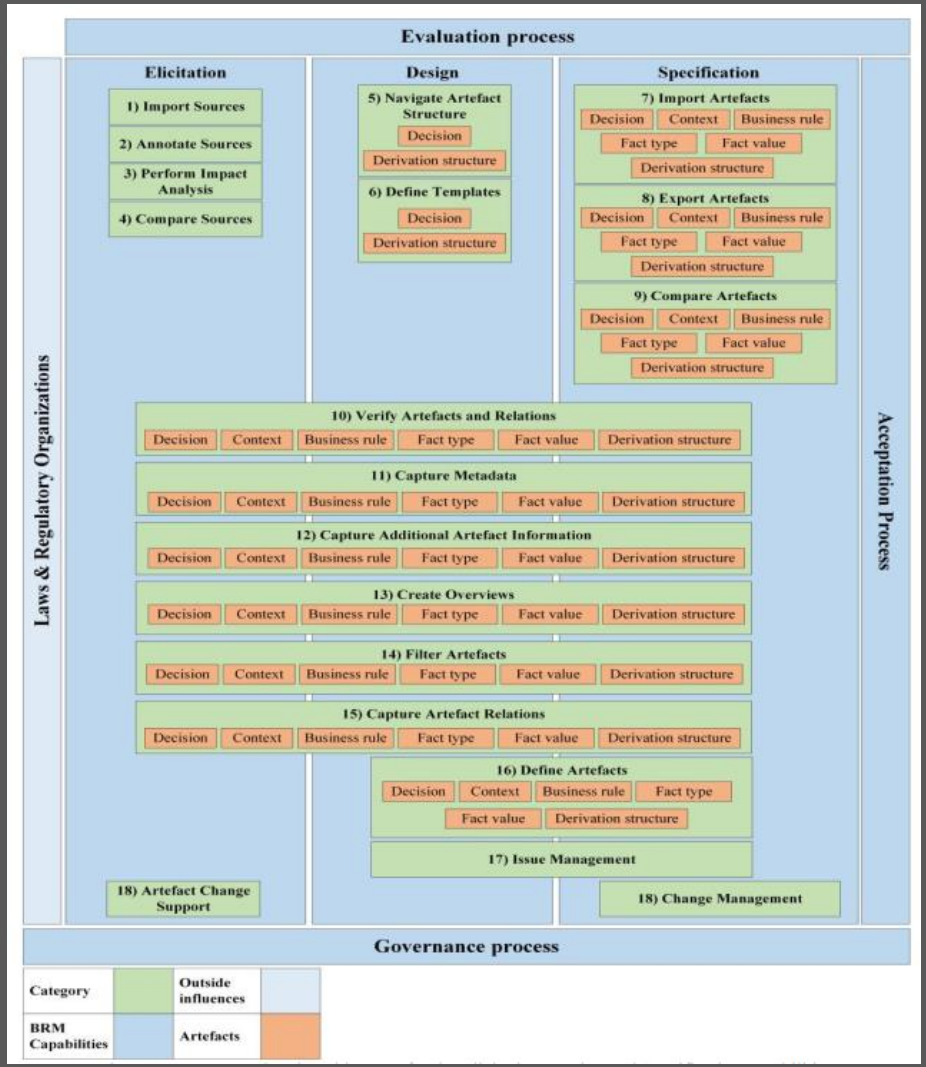
TABLE III. BREAKDOWN OF FUNCTIONAL REQUIREMENTS PER BRM CAPABILITY

Organization/ Capability	Elicitation		Design		Specification		Total
A	0	0.0%	8	1.6%	122	22.7%	130
B	1	0.1%	4	0.8%	47	8.7%	52
C	12	2.2%	52	9.7%	62	11.5%	126
D	20	3.7%	25	4.6%	22	4.2%	67
E	42	7.8%	14	2.7%	67	12.5%	123
F	1	0.1%	7	1.4%	30	5.7%	38
G	0	0%	0	0%	0	0%	0

Results

- Analysis resulted in 18 functional categories
- All categories are described with examples in the paper



Conclusions

- From a theoretical perspective, our study provides a fundament for future research towards (functional) architecture development in the BRM research field.
- From a practical perspective, (governmental) organizations, can use the architectural views per BRM capability presented in this paper as guidance. Organizations that are innovating by applying automating products and services with business decisions and business logic are often searching for guardrails to design their BRM solutions.

Discussion and Future Research

- From a In this study, the conclusions are solely drawn based on data collected from seven Dutch governmental institutions, which limits the generalizability of the results presented.
  - More diverse mix of industries
  - Larger sample sizes to increase generalizability
  - Mixed-method approach to increase validity of the data

References

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Any questions?

- If you have any questions or feedback on this presentation or the paper underlying this presentation, please contact Koen Smit: koen.smit@hu.nl