

Analysis of Inter-organizational Business Capability Modeling Initiatives

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1. Introduction

- Motivation
- Fundamentals
- Research Questions & Approach

2. Case Study

3. Literature Review

4. Business Capability Modeling

5. Limitation & Future Work

Motivation – Why Inter-organizational Business Capability Modeling?

Business Capability Management

- Role and structure of IT is constantly changing
- Companies need to adapt to changes to stay competitive (Koc, 2015)



Resulting Problems:

- Unstructured IT architecture
- Difficulties to reasonably align business to IT (Koc, 2015)
- Unused possibilities for optimizations



***Inter-organizational
Business Capability
Modeling***

Collaboration

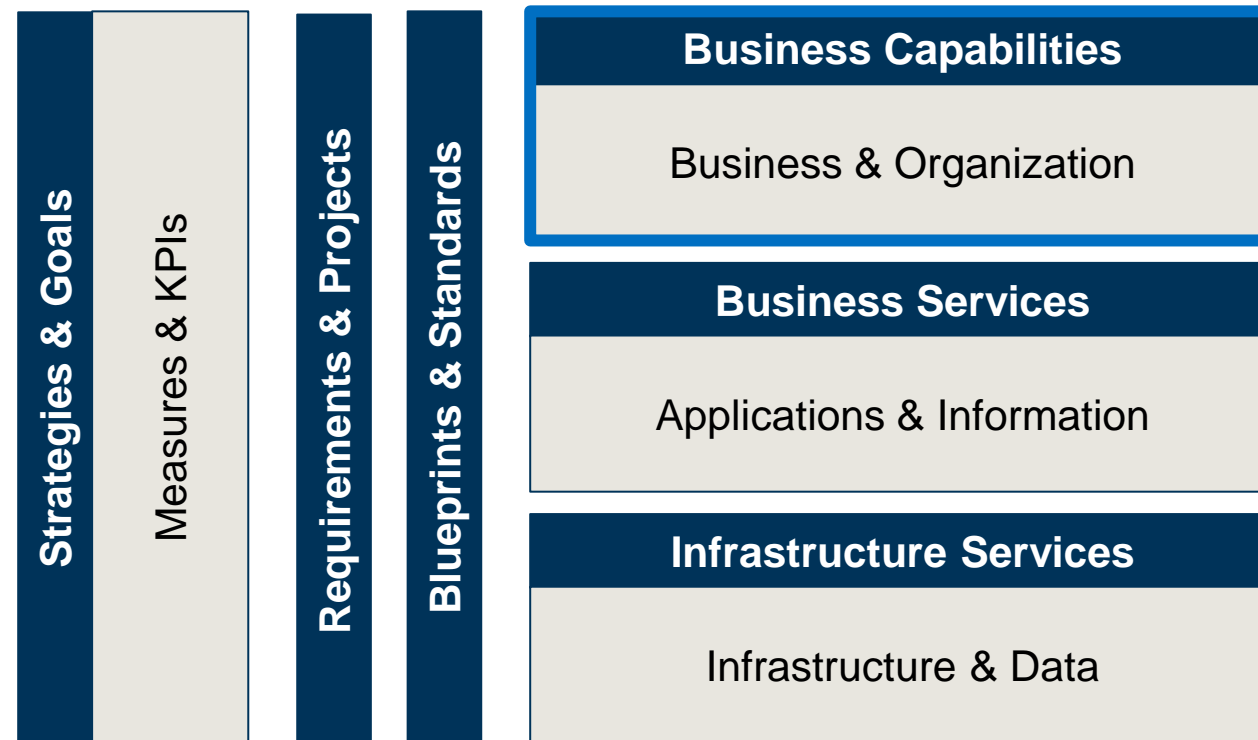
- Inter-organizational collaboration trend since decades (Moore, 1996)
- Various reasons for collaboration (Pouwels, 2017)
- Only effective with proper government structure (Pouwels, 2017)
- Collaboration in Enterprise Architecture Management (Lachenmaier, 2016)



Fundamentals - Business Capabilities (BCs)

Business Capability:

“A particular ability that a business may possess or exchange to achieve a specific purpose.” (TOGAF)



Buckl 2011

Fundamentals - Business Capabilities (BCs)



Abstraction of roles & people, processes, technology, and information (Klinkmüller, 2010)



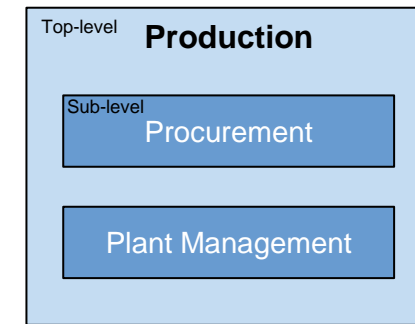
Mutually exclusive and collectively exhaustive (Bondel, 2018)



Vertical hierarchy (Freitag, 2011)



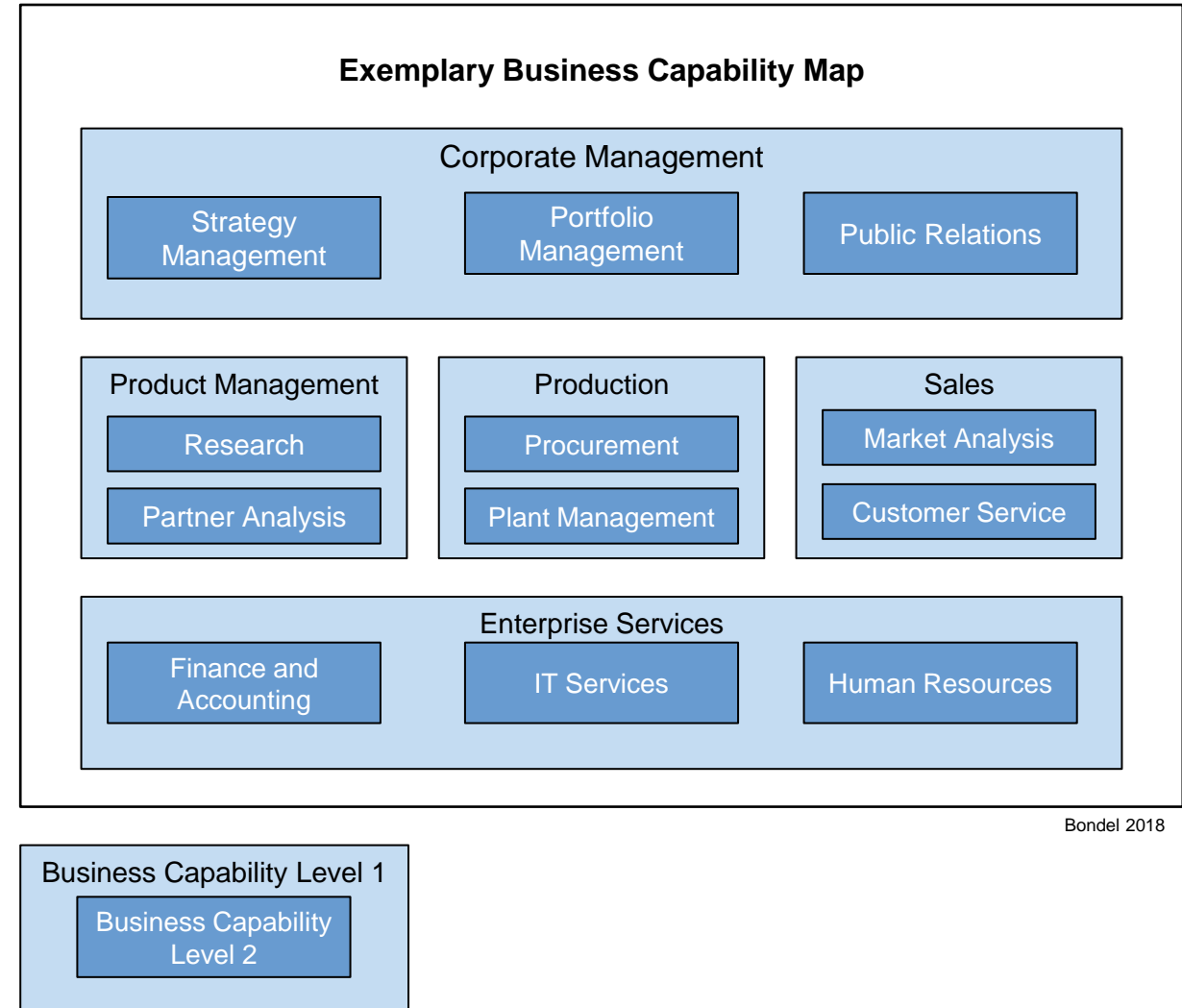
Defined in business terms (Ulrich, 2011)

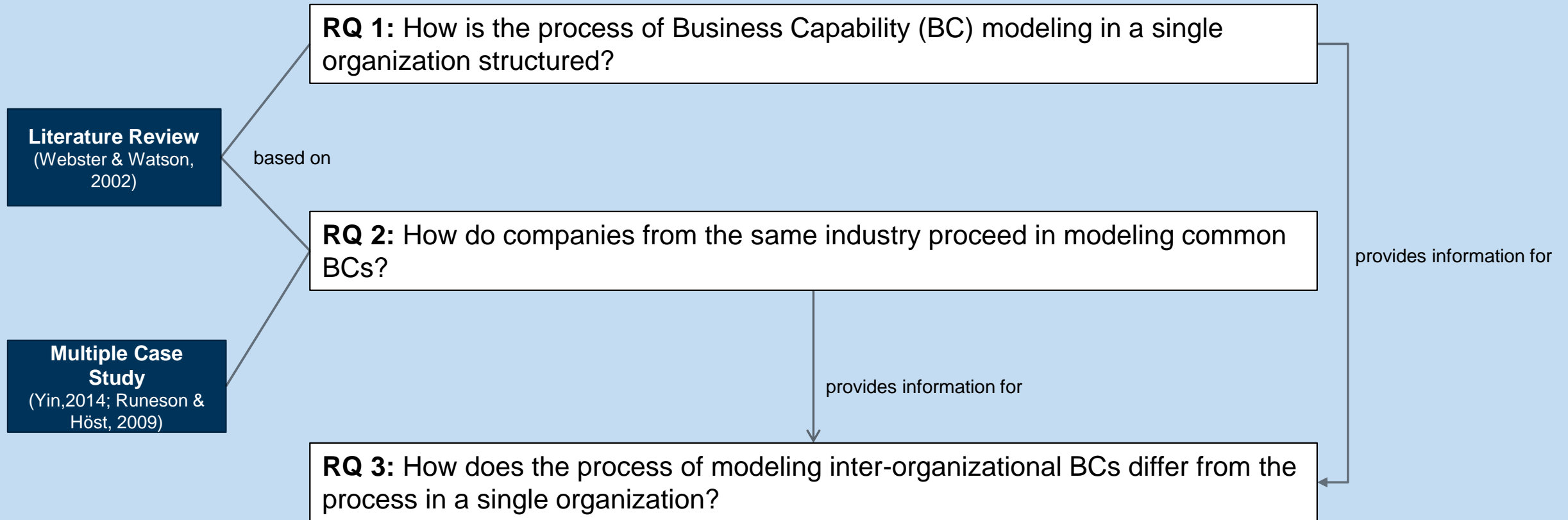


(Bondel, 2018)

Fundamentals - Business Capability Map (BCM)

- Visual representation of an organization's business capabilities
- Vertical hierarchy
- Usually grouped in logical categories
- Facilitates business analysis





1. Introduction

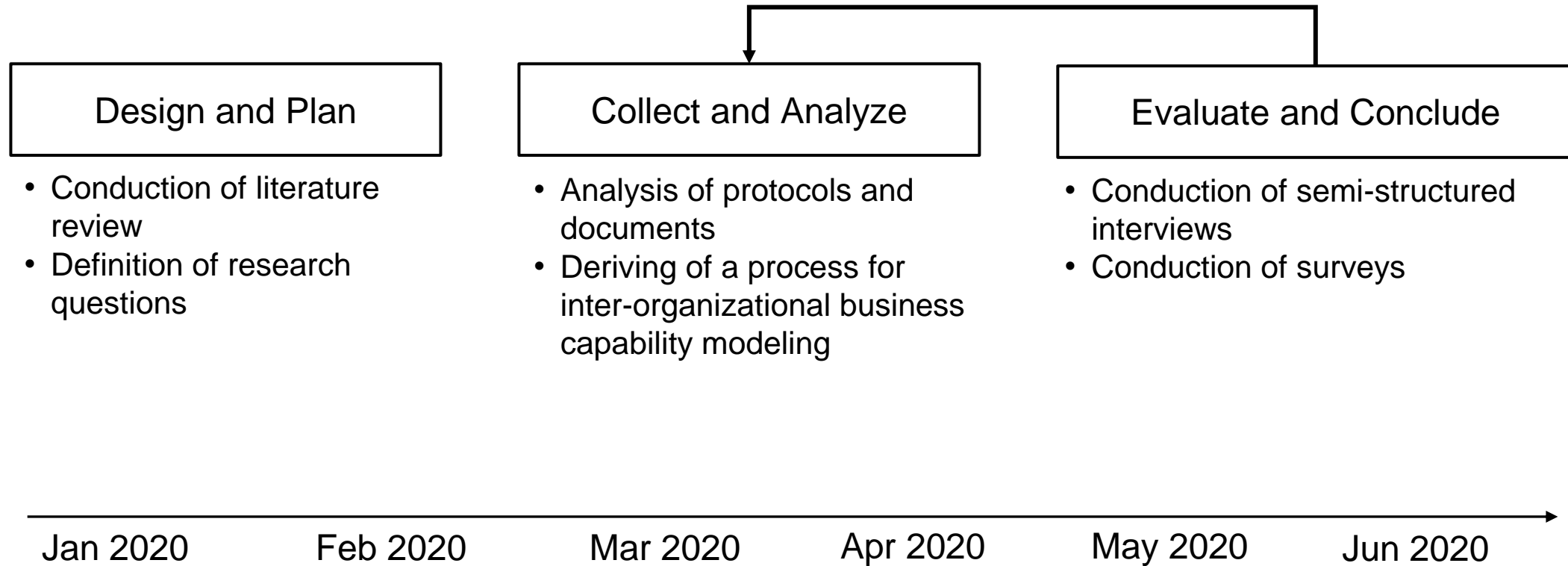
2. Case Study

- Case Study Design
- Involved Organizations

3. Literature Review

4. Business Capability Modeling

5. Limitation & Future Work



Case Study – Involved Organizations

	Case Study 1	Case Study 2	Case Study 3	Case Study 4
Industry	Broadcasting	Broadcasting	Gambling	Banking & Finance
Source of Information	Documents, protocols, semi-structured interviews	Documents, protocols	Semi-structured interview	Semi-structured interview
Collaboration Form	Working group	Community of practice	Working group	Community of practice
Collaboration Goal	Basis for further collaboration projects	Develop reference architecture	Identify synergies & create taxonomies	Develop reference architecture
Companies involved	13	4	10	>30
Meeting Structure	Physical	Virtual & physical	Physical	Virtual
Modeling Team Composition	<ul style="list-style-type: none"> Enterprise Architect Head of department Project Manager Portfolio Manager 	<ul style="list-style-type: none"> Enterprise Architect 	<ul style="list-style-type: none"> Enterprise Architect Business leader Head of department 	<ul style="list-style-type: none"> Enterprise Architect Project Manager

Outline

1. Introduction

2. Case Study

3. Literature Review

- RQ1: BC modeling in a single organization
- RQ2: BC modeling with multiple organizations

4. Business Capability Modeling

5. Limitation & Future Work

RQ1: How does the process of Business Capability (BC) modeling in a single organization look like?

TUM

Research Approach: Literature review

Search Query (Abstract – Keywords – Title) :
("business capabilit*" OR "capability-based" OR "capability-driven")
AND
("definition" OR "creation" OR "planning" OR "modelling" OR "development" OR "design*")

Database	Relevant Results
IEEE Xplore	5
AISel	1
ADM DL	1
Scopus	5
EBSCOhost	2
ScienceDirect	0
	14

After forward & backward search: 26

RQ2: How do companies from the same industry proceed in modeling common BC's?

Research Approach : Literature review

Search Query (Abstract – Keywords – Title) :

((“collaborative”) OR ((“cross” OR “inter”) AND (“compan*” OR “enterprise” OR “organization”)))

AND

(“business capabilit*” OR “capability-based” OR “capability driven”)

AND

(“definition” OR “creation” OR “planning” OR “modelling” OR “development” OR “design* ”)

- Initial results: **1**
- Results after forward & backward search: **6** papers mentioning **BCs** in an **inter-organizational** context



Case Study Analysis



But: They don't address inter-organizational BC modeling

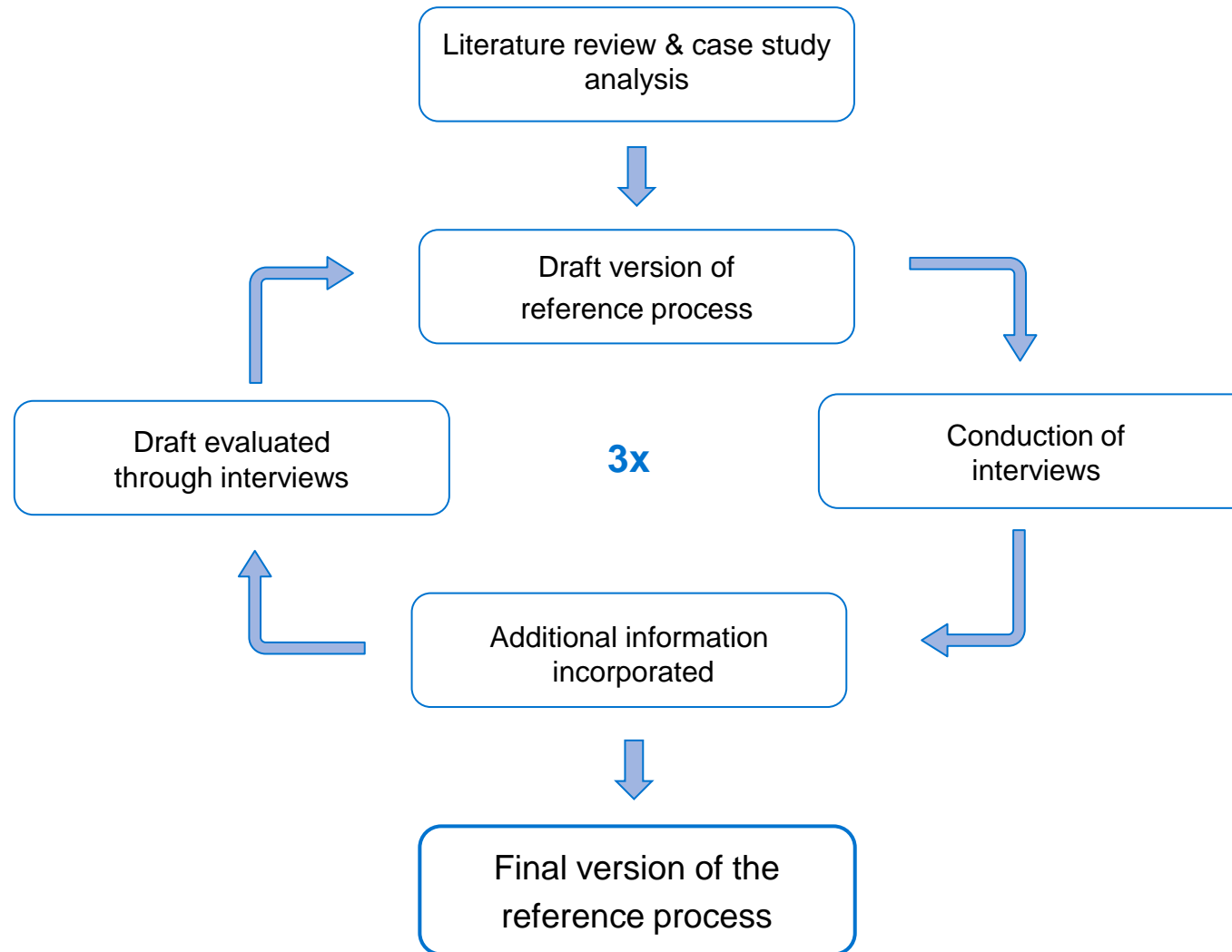
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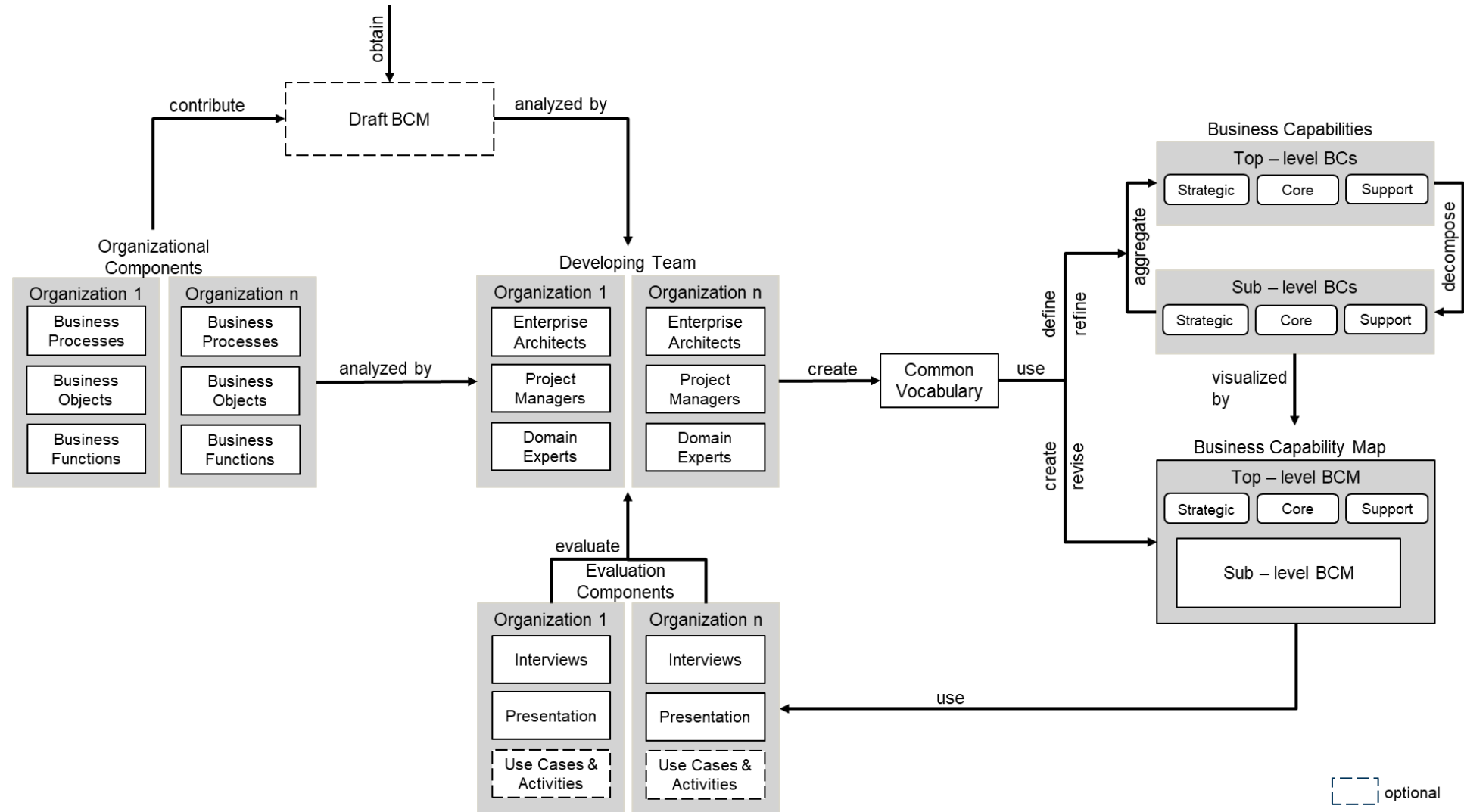
RQ1: How does the process of Business Capability (BC) modeling in a single organization look like?

	Process											
	Use draft capability model	Analyze business processes / functions	Analyze visions & goals	Analyze concepts	Analyze rules	Analyze resources	Analyze responsibilities / roles	Model relations (BC → BC / BE)	Set up Key-performance indicators	Analyze application context	Create BCM	Capability evaluation and refinement
Author	<i>Brits et al. (2007)</i>	X	X	X	X	X	X	X				X
	<i>Bondel et al. (2018)</i>	X				X	X	X			X	X
	<i>Espana et al. (2015)</i>		X	X	X			X	X	X		
	<i>Zdravkovic et al. (2013)</i>	X	X	X		X		X	X	X		
	<i>Beimborn & Martin (2005)</i>	X	X					X	X		X	
	<i>Wißotzki (2015)</i>	X		X		X	X	X		X		X
	<i>Ulrich & Rosen (2011)</i>	X			X						X	X

RQ2: How do companies from the same industry proceed in modeling common BC's?



RQ2: How do companies from the same industry proceed in modeling common BC's?



RQ3: How does the process of modeling inter-organizational BC's differ from the process in a single organization?

	Single Organization	Multiple Organizations
Use draft model	✓	✓
Analyze business processes/ functions	✓	✓
Analyze vision & goals	✓	-
Analyze concepts	✓	-
Analyze business rules	✓	-
Analyze resources	✓	-
Analyze responsibilities / roles	✓	-

	Single Organization	Multiple Organizations
Model relations	✓	✓
Set up KPIs	✓	-
Analyze context	✓	-
Define common vocabulary	-	✓
Create BCM	✓	✓
Capability evaluation & refinement	✓	✓
Degree of granularity	High	Low

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Limitation



Interview results are subjective



Limited to 4 case studies



General limitations of case studies: Validity, generalizability, reliability (Runeson & Höst, 2009)

Future Work



More case studies



Composition and size of the teams



How is consensus reached in discussions with multiple organizations



Use-cases of the BCM



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- *"A Process Approach for Capability Identification and Management"*, M. Wißotzki, 2015
- *"Strategies for capability modelling analysis based on initial experience"*, Espana, 2015
- *"Reporting from the Implementation of a Business Capability Map as Business-IT Alignment Tool"*, Bondel et al. 2018
- *"Capability oriented Modeling of the firm"*, Beimborn, 2005
- *"Business Capability Maps: Current Practices and Use Cases for Enterprise Architecture Management"*, Khosroshahi, 2018
- *"Conceptual framework for Modeling Business Capabilities"*, Brits et al. , 2007
- *"Methods in Designing and Developing Capabilities: A Systematic Mapping Study"*, Koc, 2015
- *"Modeling Business Capabilities and Context Dependent Delivery by Cloud Services"*, Zdravkovic, 2013
- *"The Business Capability Map: The "Rosetta Stone" of Business/IT Alignment"*, Ulrich, 2011
- *"From Business Process Models to Capability Models"*, Koç, Sandkuhl, 2015
- *"Inter-organizational cooperation and organizational innovativeness"*, Pouwels, 2017
- *"Enterprise Architecture Management in dynamischen Wertschöpfungsnetzwerken"*, Lachenmaier, 2016
- *"The Death of Competition: Leadership and Strategy in the Age of Business Ecosystems"*, Moore, 1996
- *"Modeling Business Capabilities and Context Dependent Delivery by Cloud Services"*, Zdravkovic, 2013
- *"Business Capabilities as configuration elements of value added networks"*, Fleischer et al., 2007
- *"Guidelines for conducting and reporting case study research in software engineering"*, Runeson & Höst, 2009

Backup slides



Case Study Results - Identification of BCs

	Case Study 1	Case Study 2	Case Study 3	Case Study 4
Draft model:	External Draft	External & internal drafts	Internal draft	Internal draft
BC identified using:	Business Processes	Draft	Organization chart, business functions, drafts	Draft

Related Work – Inter-organizational BC modeling

Title	Author
<i>Enterprise Architecture for Business Network Planning : a Capability-Based Approach</i>	Bakhtiyari et al., 2015
<i>Business Capabilities as configuration elements of value added networks</i>	Fleischer et al., 2007
<i>Enterprise Architecture Management in dynamischen Wertschöpfungsnetzwerken – Empfehlungen zur Interoperabilität</i>	Lachenmaier et al., 2018
<i>Towards a Cross-Border Reference Architecture for the Once-Only Principle in Europe: an enterprise modelling approach</i>	Tepandi et al., 2019
<i>An Empirical Research of The Forming Process of Firm Inter-organizational E-business Capability</i>	Jiang & Zhao, 2010
<i>Design and Evaluation of an Approach to Generate Cross-Domain Value Scenarios in the Context of the Industrial Internet of Things: A Capability-Based Approach</i>	Weber et al., 2019

Zdravkovic: Context framework – context categories and measurable properties



Context Category	Relevance	Availability	Feature	Time	Location
Subjects Organization Customers Partners Competitors	What is the subject doing?	Is subject available?	Characteristic or quantity of subject?	When does subject perform process?	Where is subject located?
Objects Infrastructure Artefact Service	What is the object doing?	Is object available?	Characteristic or quantity of object?	When is object used?	Where is object located?
Environment Regulations Standards Weather	What is the influence of environment?	Is environment concept available?	Characteristic or quantity of environment?	When does environment concept applicable?	Where is environment concept located?

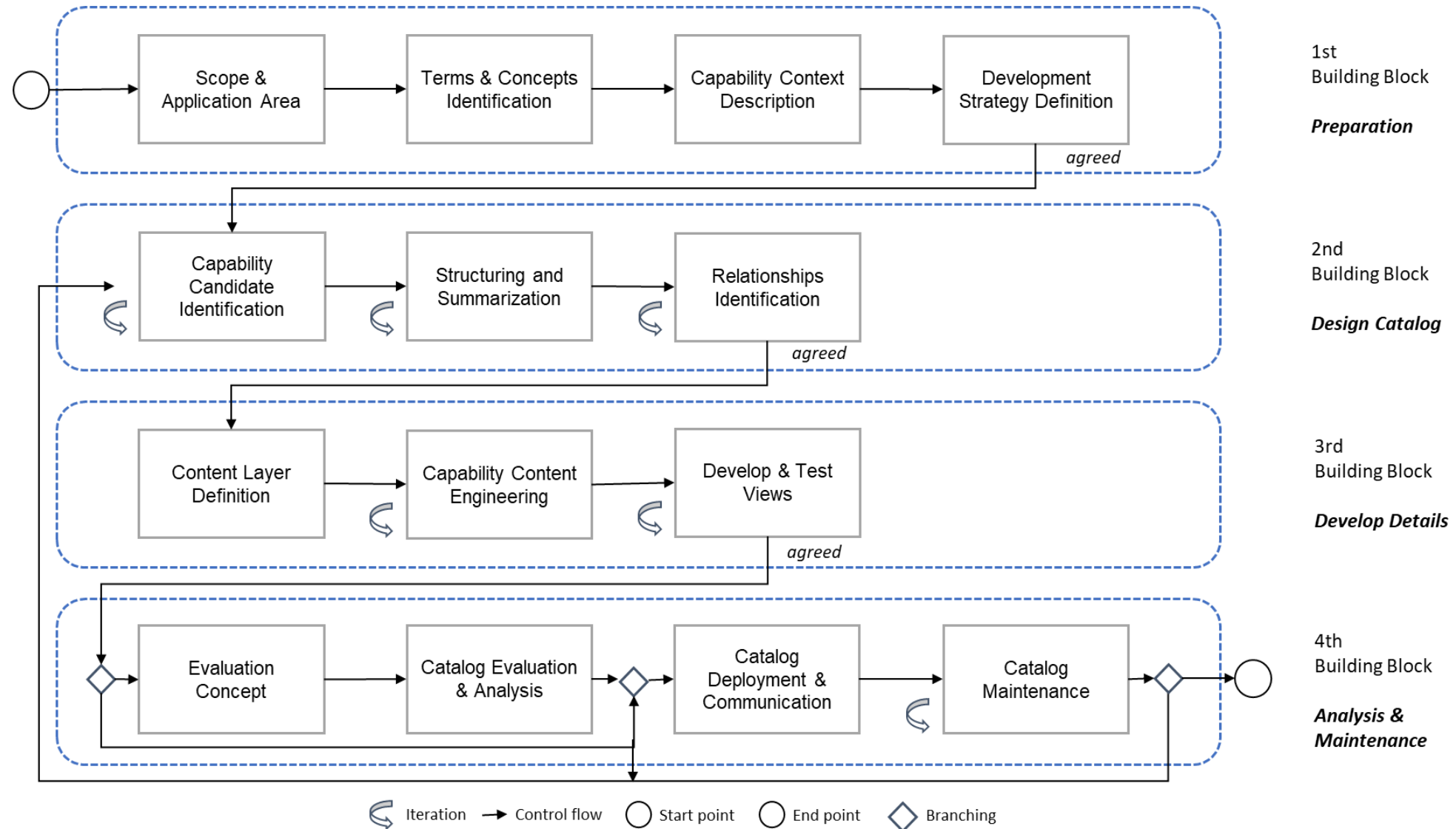
“Modeling Business Capabilities and Context Dependent Delivery by Cloud Services”,
Zdravkovic, 2013



Context Type	Relevance	Availability	Feature	Time	Location
Subjects					
Weather data provider	Provides weather data	Yes, as cloud service	Date of last update	Every day	Not relevant
Pricing data provider	Provides pricing data	Yes, as cloud service	Date of last update	Every day	Not relevant
Objects					
BEMS	For data input & output	No	Not relevant	Not relevant	At the building site
Sensors	For building environment, weather	No	Sensor reading	Every 15 min	At the building site

	<i>Elements of guidance</i>	<i>Business Processes</i>	<i>Resources</i>	<i>Technology</i>	<i>People</i>	<i>Objects</i>
<i>External Environmental Knowledge</i>						Industry Foresight & Customer Insight
<i>Ends</i>						Vision, Goals, and Objectives
<i>Internal Environmental Knowledge</i>						Entity-Relationship Diagrams, Functional Decomposition Diagrams, Flow Charts, Prototypes
<i>Means</i>						Mission, Strategy, and Tactics

Wißotzki – The Capability Management Cycle



RQ2: How do companies from the same industry proceed in modeling common BC's? – Literature Example

Fleischer et al. : „Business Capabilities as configuration elements of value-added networks”

1. Derive BCs from value-added performance (products, services) of one company
2. Form Core & Support Business Capability Chain
3. Generate BCM covering all BCs of a node for the planned value-added performance
4. Compare BCM to the BCM of the potential nodes
5. ...



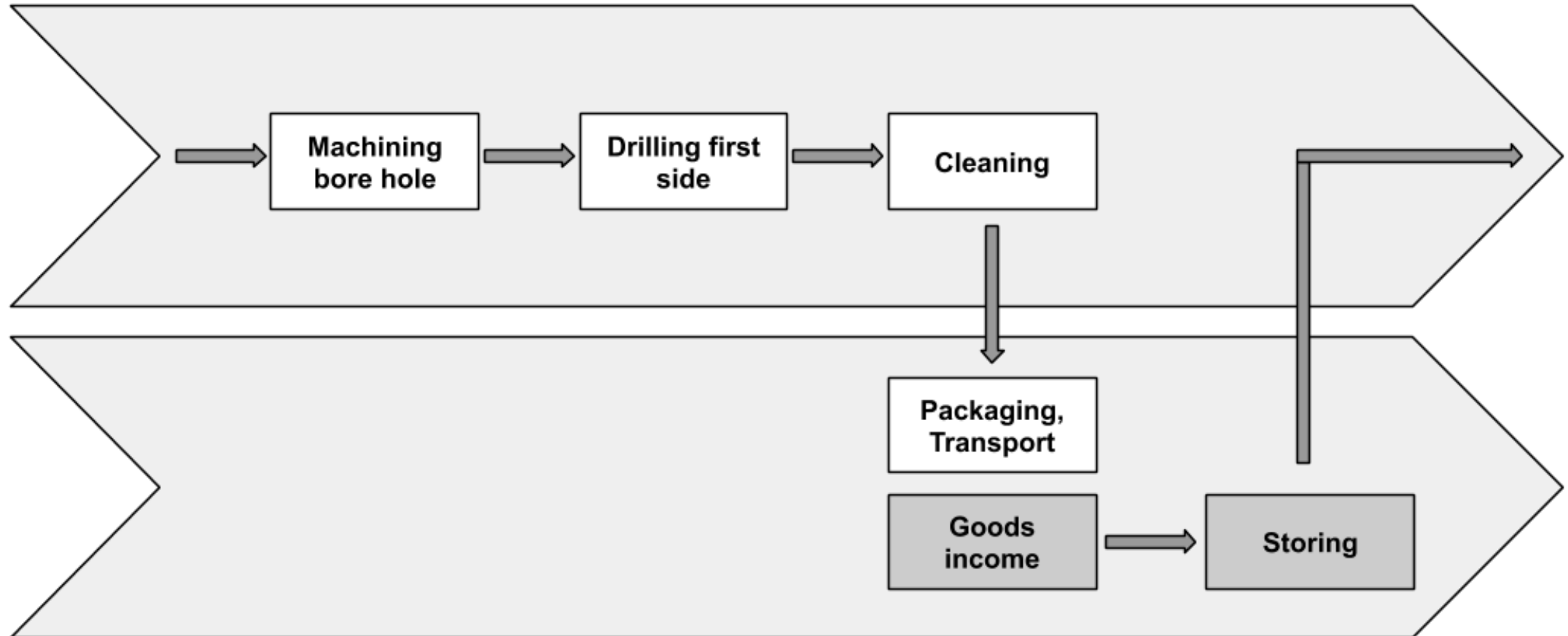
No horizontal collaboration



BC modeling and BCM from only one organization's point of view

RQ2: How do companies from the same industry proceed in modeling common BC's? – Literature Example, Fleischer et al. 2007

Core Business Capability Chain



Support Business Capability Chain

