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Towards a Framework for Evaluating the Prudence of Enterprise Architecture Debts

EA debt students conference





Agenda

- 1. Motivation
- Related work
- 3. Research Questions
- 4. Methods
- 5. Evaluation







Motivation

Enterprise Architecture debt:

• "(...) metric that depicts the deviation of the currently present state of an enterprise from a hypothetical ideal state." [Hacks et al., 2019]

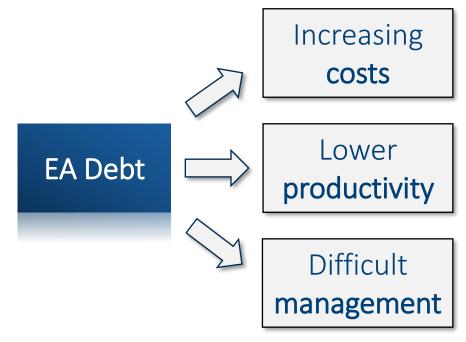




Enterprise Architecture debt:

• "(...) metric that depicts the deviation of the currently present state of an enterprise from a hypothetical ideal state." [Hacks et al., 2019]

• is causing consequences,





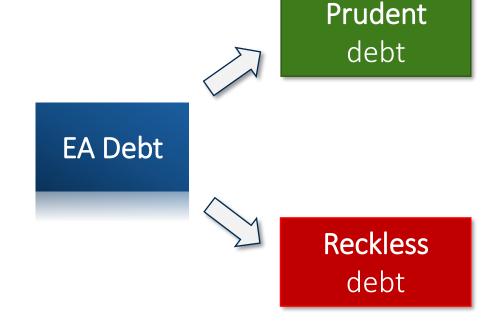


Enterprise Architecture debt:

• "(...) metric that depicts the deviation of the currently present state of an enterprise from a hypothetical ideal state." [Hacks et al., 2019]

• is causing consequences,

• can be divided into reckless and prudent







Reckless **Prudent** "We must ship now "We don't have time for design" and deal with consequences" **Deliberate Inadvertent** "Now we know how "What's Layering?" we should have done it"





	Reckless	Prudent
Deliberate	"We don't have time for design"	"We must ship now and deal with consequences"
Inadvertent	"What's Layering?"	"Now we know how we should have done it"





To date there has been **no systematic work** on **prudence/recklessness** classification in debt.
Although considered important, **no attention** was paid to it.





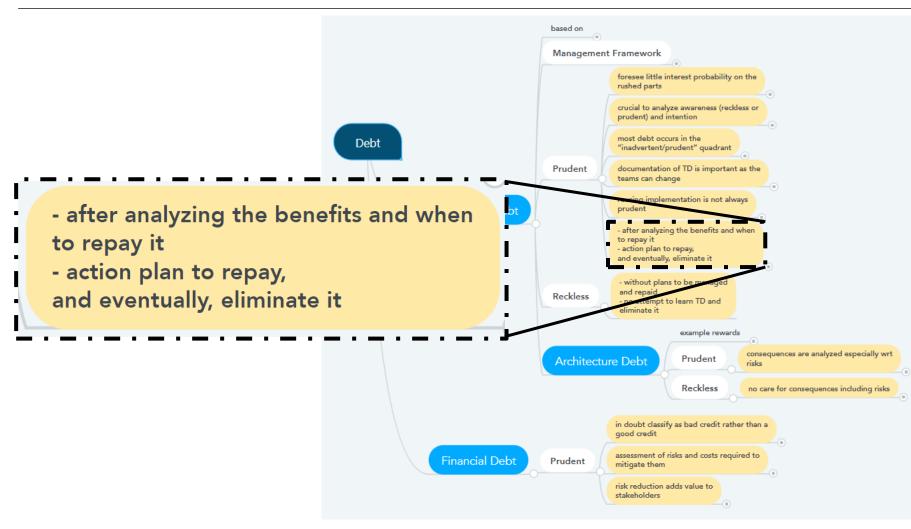
Scientific Literature Review:

- Search String: Full text includes ("prudence" OR "prudent") AND "debt" AND "decision"
- Excluded: SpringerLink, CiteSeerx, Wiley InterScience, El Compendex, dblp

#	Database name	No. retrieved entries
DB1	IEEExplore	40
DB2	ACM Digital Library	55
DB3	Science Direct	57
DB4	Inspec (ISI Web of Science)	6
DB5	Scopus	23
DB6	IET Digital Library	20



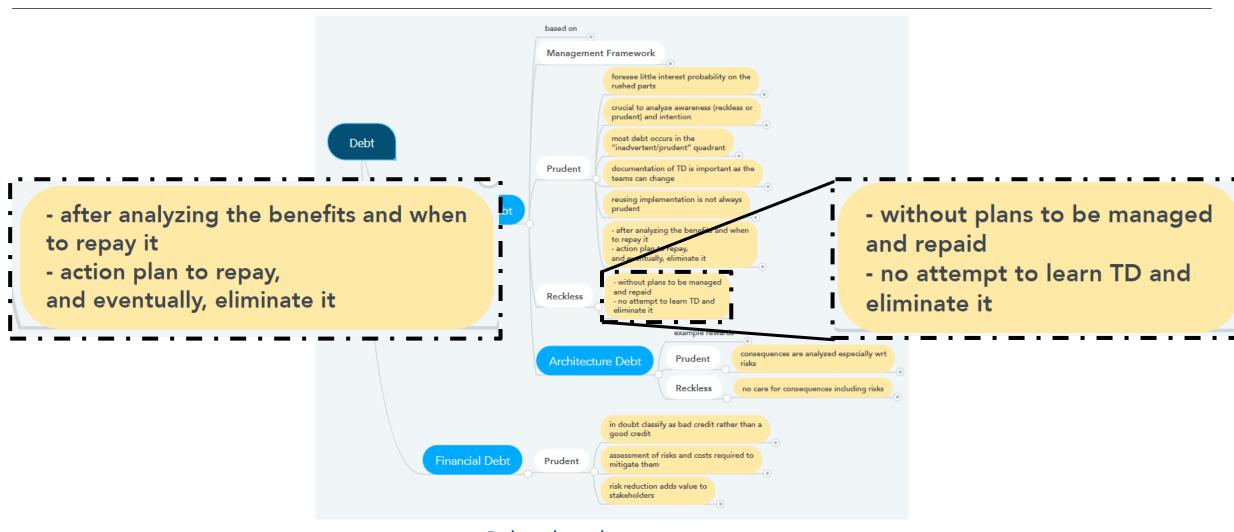




Motivation – **Related work** – RQs – Methods – Evaluation



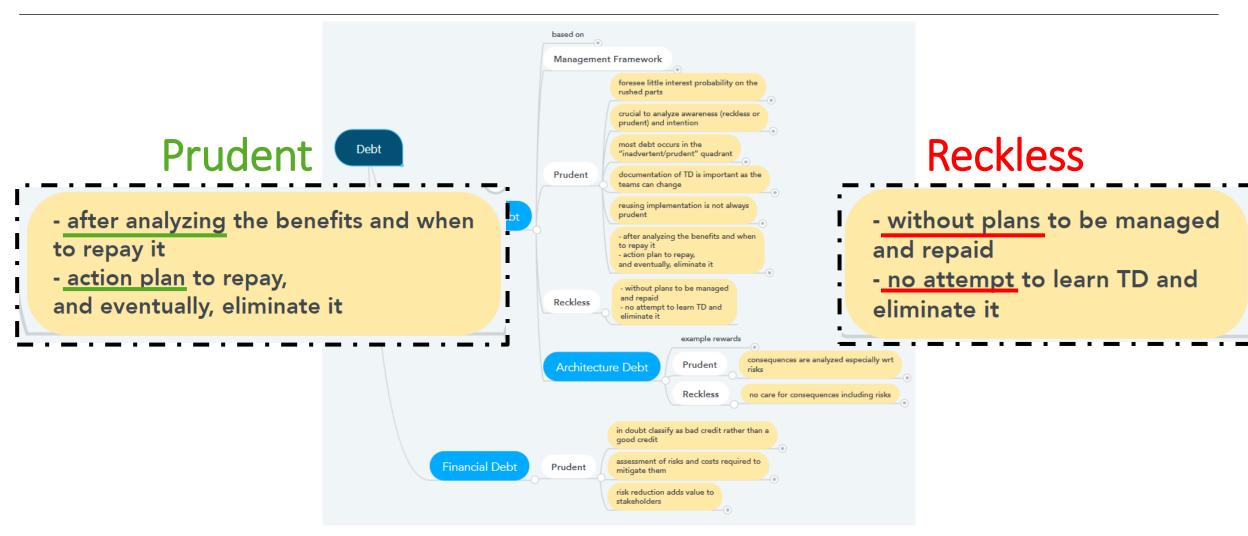




Motivation – **Related work** – RQs – Methods – Evaluation



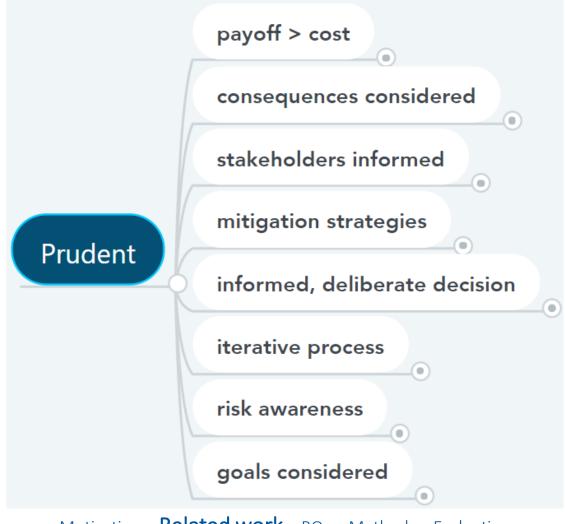




Motivation – **Related work** – RQs – Methods – Evaluation







Motivation – **Related work** – RQs – Methods – Evaluation





RQ How to evaluate the prudence of EA debts in a large-scale enterprise environment?

RQ1 What are the **existing definitions** of **reckless and prudent debt**?

RQ2 Which criteria contribute to debt being reckless or prudent?

RQ3 Which steps should be taken to create a sound judgement?





Debt Context Analysis

- What are the management topics that correspond to the debt?
- What are the management roles affected by the debt?

Debt Collective Assessment

- What are the viewpoints that represent the concerns of the relevant stakeholders?
- What are the assessment approaches (e.g. KPIs) that are suitable for the specific stakeholders?
- What are the gaps among the various feedback from the stakeholders?

Debt Prudence Evaluation

- What are the identified potential consequences for future strategic executions?
- What are the prudence and recklessness of the debt?
- What are the suggested measures?

Debt Documentation





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SITUATION ON THE MARKET

GUIDELINES

company decides to **migrate** the services **from on-premise** data storage **to cloud**

PROBLEM

some **cloud** services are **dependant on on- premise** services

DEBT

reuse of on-premise services





Methods

re-evaluation **Debt Context Analysis Debt Collective Assessment Debt Prudence Evaluation** Management topics: New product Cloud vs On-premise data storage Management roles: Product owner ADM

Debt Documentation





Debt Context Analysis

Management topics:

- New product
 - Cloud vs On-premise data storage

Management roles:

- Product owner
- ADM

Debt Collective Assessment

Viewpoints:

- Security Viewpoint
- Sales Viewpoint

KPIs:

Total Sales Volume

Feedback:

- Product owner
- ADM

Debt Prudence Evaluation

Debt Documentation





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Debt Prudence Evaluation

Consequences:

- Security level
- Cost

Prudence:

- ?

Debt Documentation





Methods

Consequences	On-premise	Cloud
Cost	70.000€	130.000€
Security	20.000€	40.000€
Availability	10.000€	10.000€
Scalability	50.000€	20.000€
Total	150.000€	200.000€





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Debt Prudence Evaluation

Consequences:

- Security level
- Cost

Prudence:

Prudent

Debt Documentation





CHANGE ON THE MARKET

COST

migrating to the **cloud is cheaper than** hiring those people to maintain the **on-premise**

SECURITY

increase is needed due to new, highly confidential data





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Prudence:

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Debt Prudence Evaluation

Consequences:

- Security level
- Cost

Prudence:

• ?

Debt Documentation





Methods

Consequences	On-premise	Cloud
Cost	100.000€	90.000€
Security	60.000€	40.000€
Availability	10.000€	10.000€
Scalability	50.000€	20.000€
Total	220.000€	160.000€





Debt Context Analysis

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Debt Collective Assessment

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Total Sales Volume

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Debt Prudence Evaluation

Consequences:

- Security level
- Cost

Prudence:

Reckless

Debt Documentation





Evaluation

Evaluation topics:

- 1. Proposed **definition**.
- 2. **Methods** for assessment.

Evaluation based on:

- Interview
- Questionnaire



