

State of the art on reusable elements for the systematic design of privacy-friendly information systems

<http://bit.do/ipen19>

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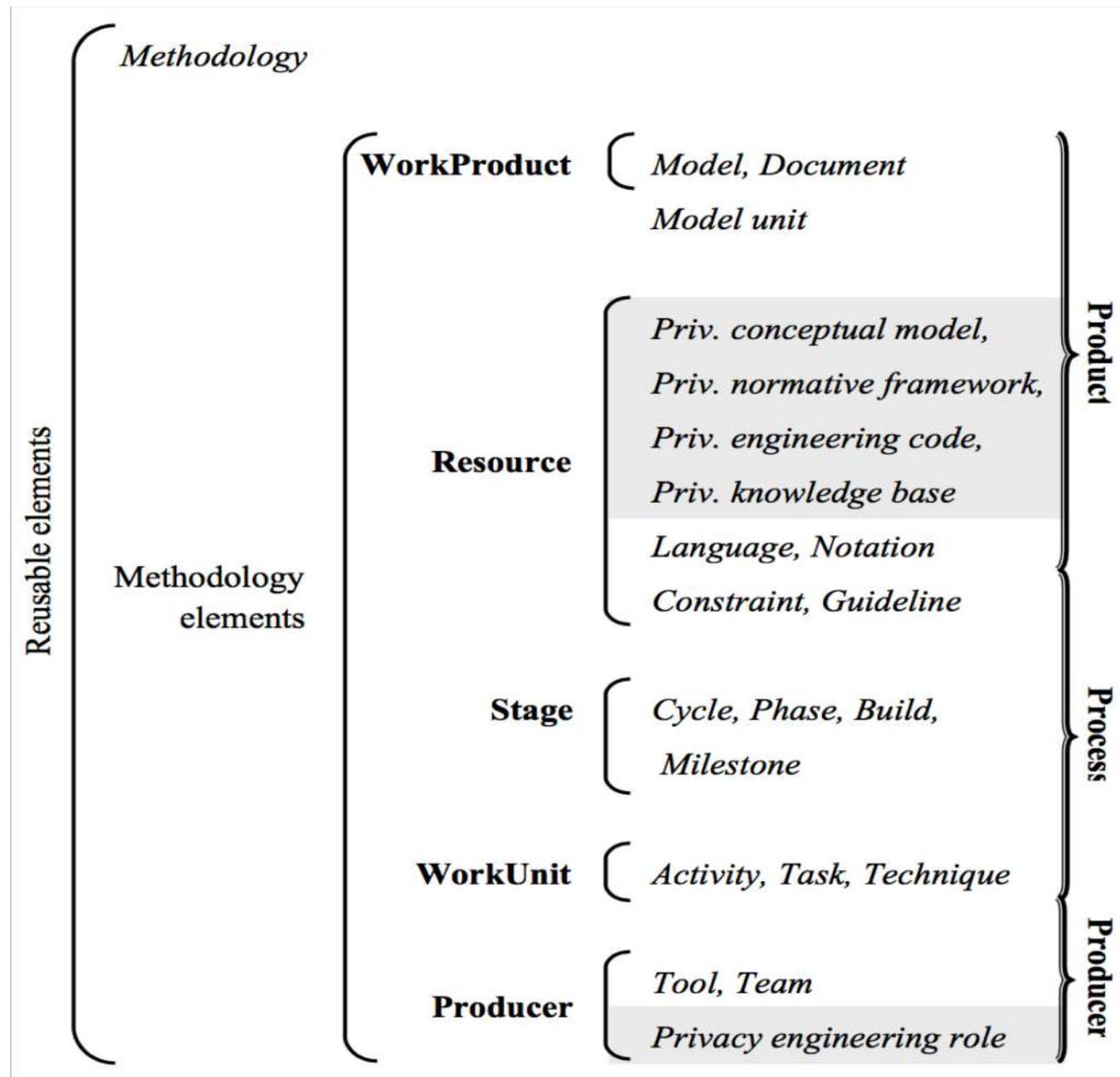
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POLITÉCNICA

Part of the contents of this article are the result of the PDP4E Innovation Action (Methods and tools for GDPR compliance through Privacy and Data Protection Engineering)

Reusable method elements



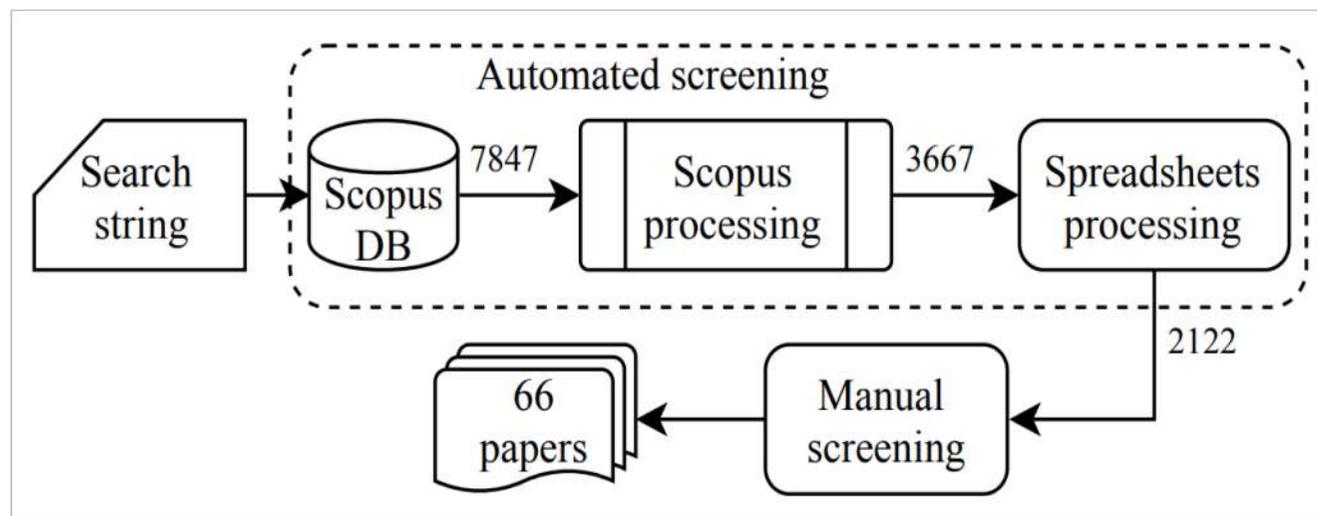
Types of research work

Type of Research	Description
<i>Evaluation Research</i>	<i>“Techniques are implemented in practice and an evaluation of the technique is conducted. That means, it is shown how the technique is implemented in practice (solution implementation) and what are the consequences of the implementation in terms of benefits and drawbacks (implementation evaluation). This also includes to identify problems in the industry.”</i>
<i>Validation Research</i>	<i>“Techniques investigated are novel or a significant update and have not yet been implemented in practice. Techniques used are for example experiments, i.e., work done in the laboratory.”</i>
<i>Solution Proposal</i>	<i>“A solution for a problem is proposed, the solution can be either novel or a significant extension of an existing technique. The potential benefits and the applicability of the solution is shown by a small example or a good line of argumentation.”</i>
<i>Philosophical Papers</i>	<i>“These papers sketch a new way of looking at existing things by structuring the field in the form of a taxonomy or conceptual framework.”</i>
<i>Opinion Papers</i>	<i>“These papers express the personal opinion of somebody, whether a certain technique is good or bad, or how things should be done. They do not rely on related work and research methodologies.”</i>
<i>Experience Papers</i>	<i>“Experience papers explain what and how something has been done in practice. It has to be the personal experience of the author.”</i>

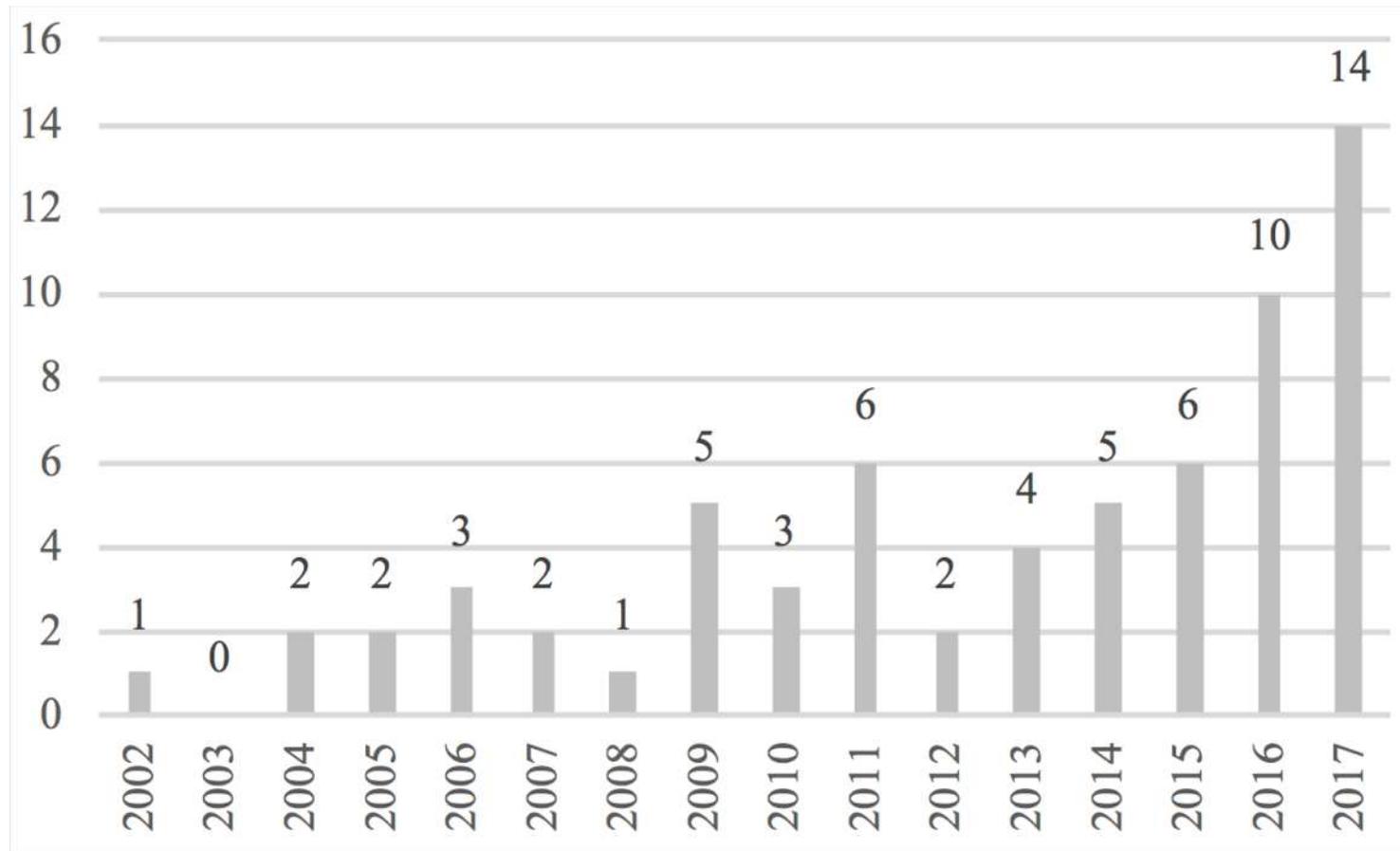


Method

- Research Questions:
 - Which reusable elements have been proposed for the systematic design of privacy-friendly software-based IS?
 - What is the level of maturity of the studies that have been carried out in this context?
 - Which are the institutions where research is performed and the venues for publishing?



Results

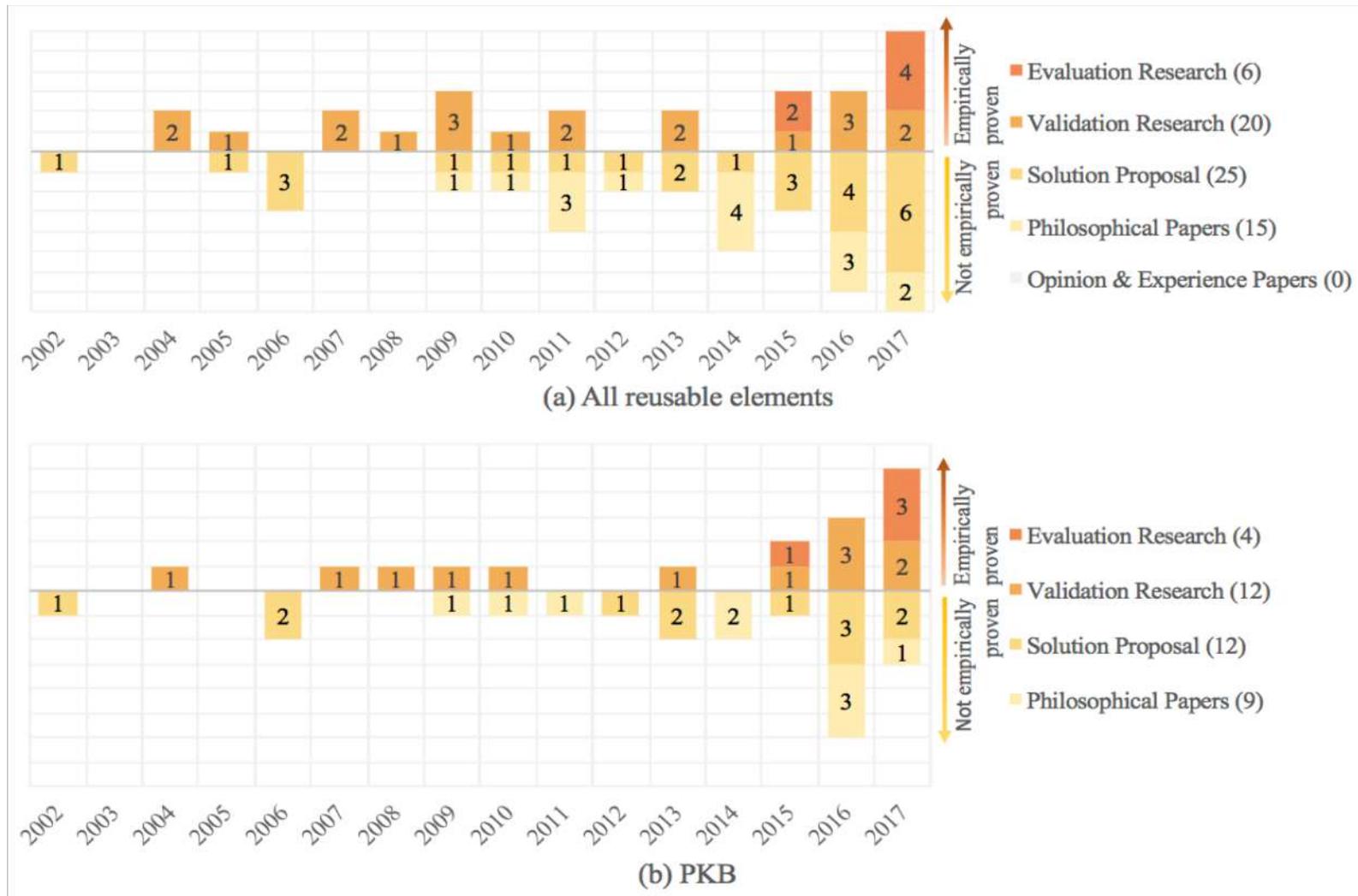


RQ1: Reusable element

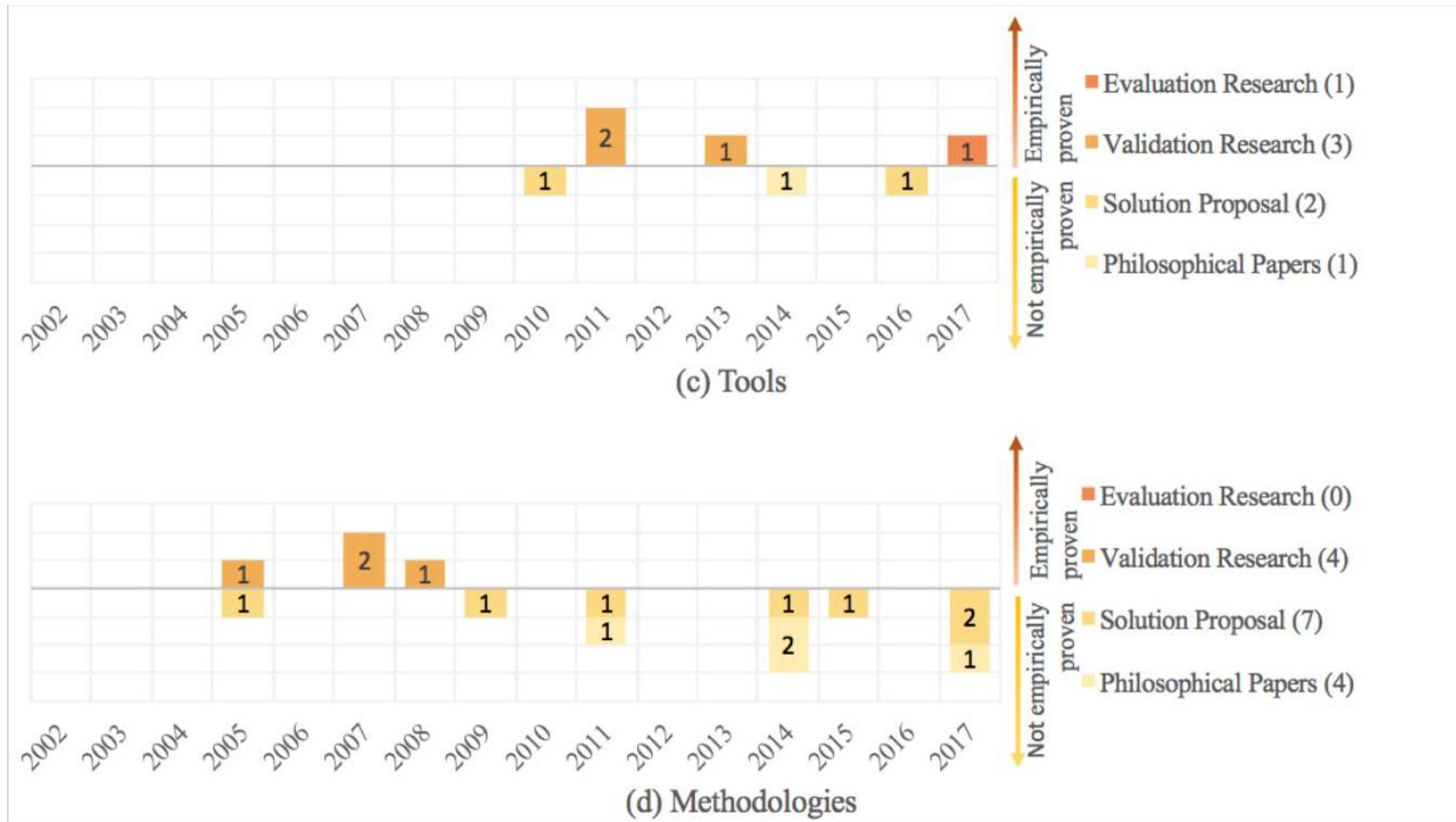
SEMDM Base Type	Reusable Element	# of Instances Found		
Work product	Model	3	Product (46)	
	Document	2		
	Model unit	0		
Resource	Privacy Conceptual Model	1		
	Privacy Normative Framework	0		
	Privacy Engineering Code	0		
	Privacy Knowledge Base	37		
	Language	2		
	Notation	1		
	Constraint	1		
	Guideline	1		
Stage	Cycle	0	Process (5)	
	Phase	0		
	Build	0		
	Milestone	0		
Work unit	Activity	0		
	Task	2		
	Technique	1		
Producer	Tool	7		Producer (7)
	Team	0		
	Privacy engineering role	0		
All individual methodology elements		58		
Methodology		15		
All Reusable Elements		73		



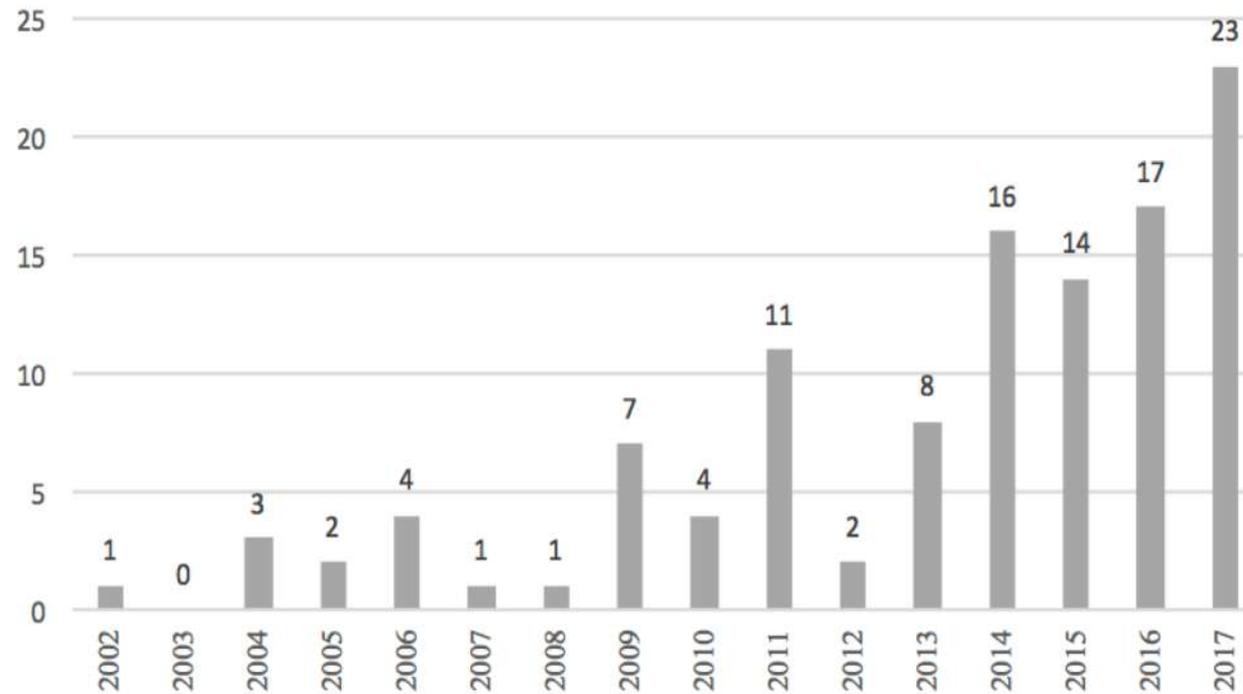
RQ2: Maturity level



RQ2: Maturity level



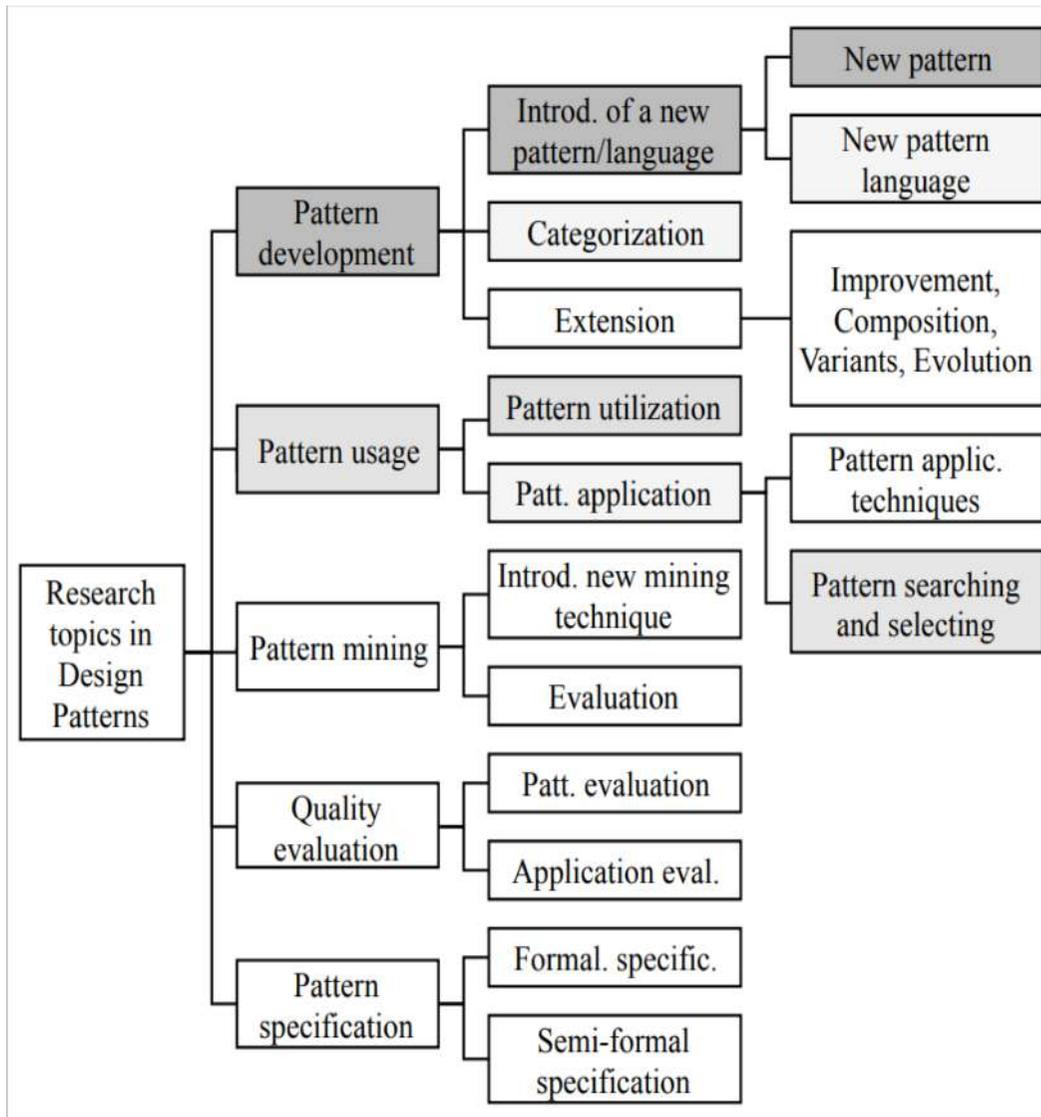
RQ3: Institutions & Venues



(a) Number of contributing institutions



Privacy patterns



- Open questions:
 - Are they being adopted?
 - How effective are they?
 - What is hindering their adoption?
 - Are other approaches needed?



Conclusion

- Emerging phase:
 - Sustained growth
 - Low maturity
 - Solution proposals
 - Lack empirical evidence
- More efforts are needed to move privacy engineering closer to systematic practice



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