

Software Engineering Evolution - The History Told by ICSE

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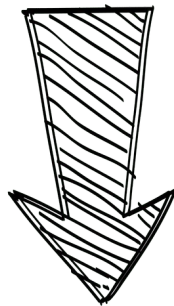
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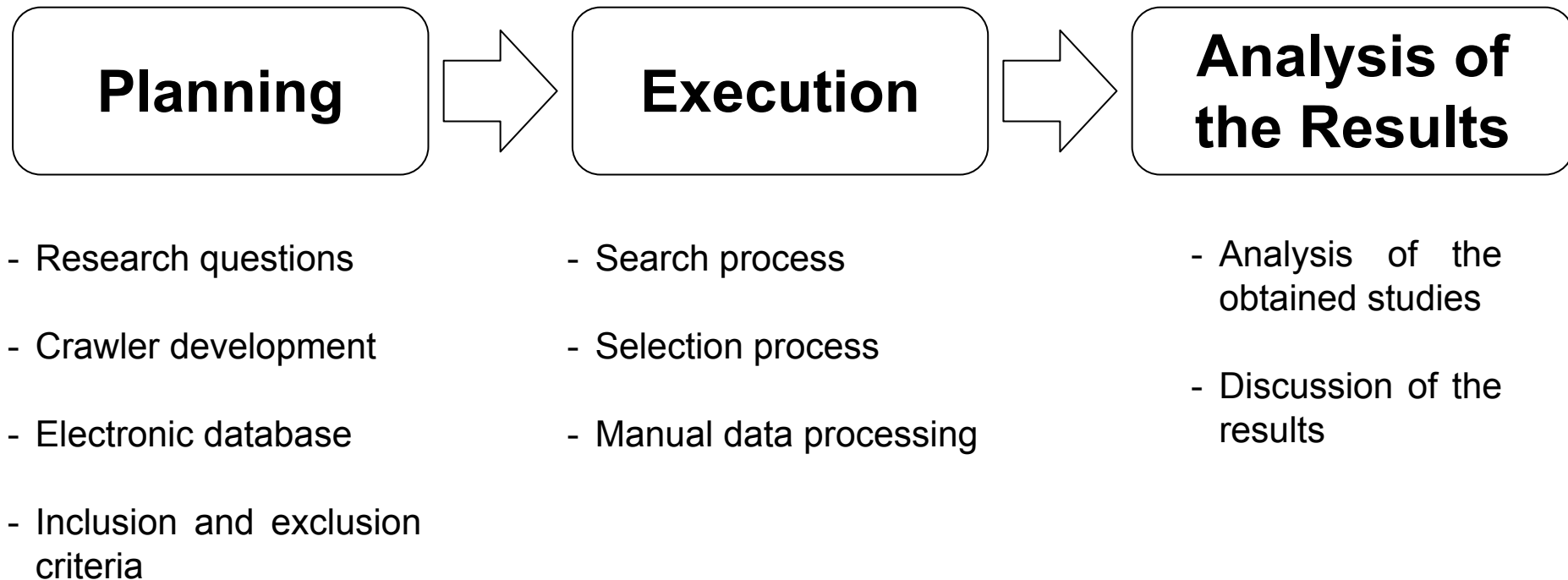
Goal

Analyze the evolution of Software Engineering and identify the key areas considered by researchers over the time



ICSE publications

Method



Method

Planning

- Research questions
- Crawler development
- Electronic database
- Inclusion and exclusion criteria

Execution

- Search process
- Selection process
- Manual data processing

Analysis of the Results

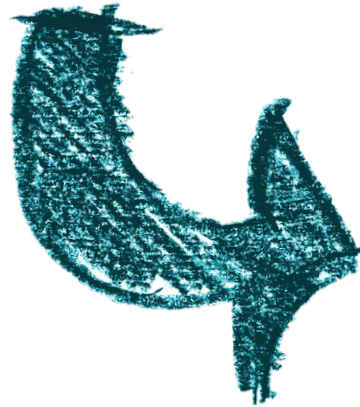
- Analysis of the obtained studies
- Discussion of the results

Research Questions

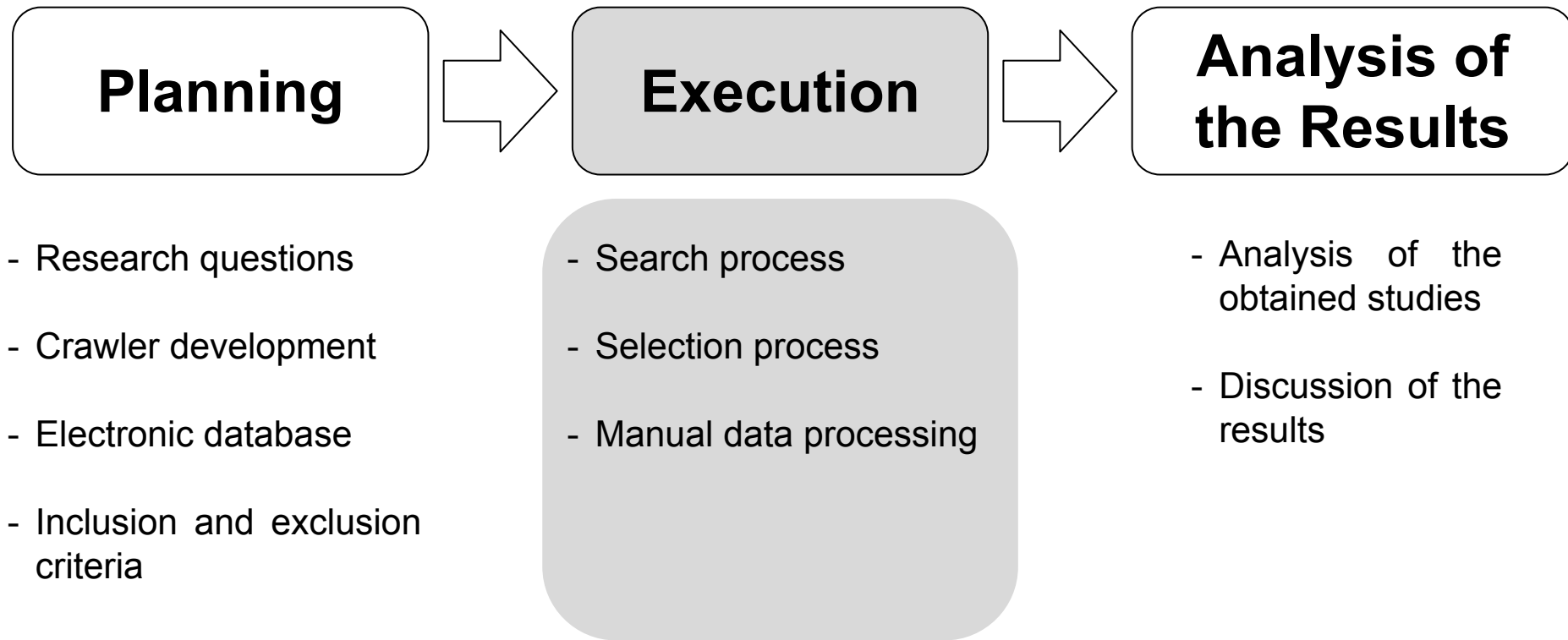
- **RQ1:** What are the top topics that have been studied in Software Engineering?
- **RQ2:** How has the community interest in the top topics evolved over time?
- **RQ3:** What are the contributions produced in Software Engineering?

Electronic Database

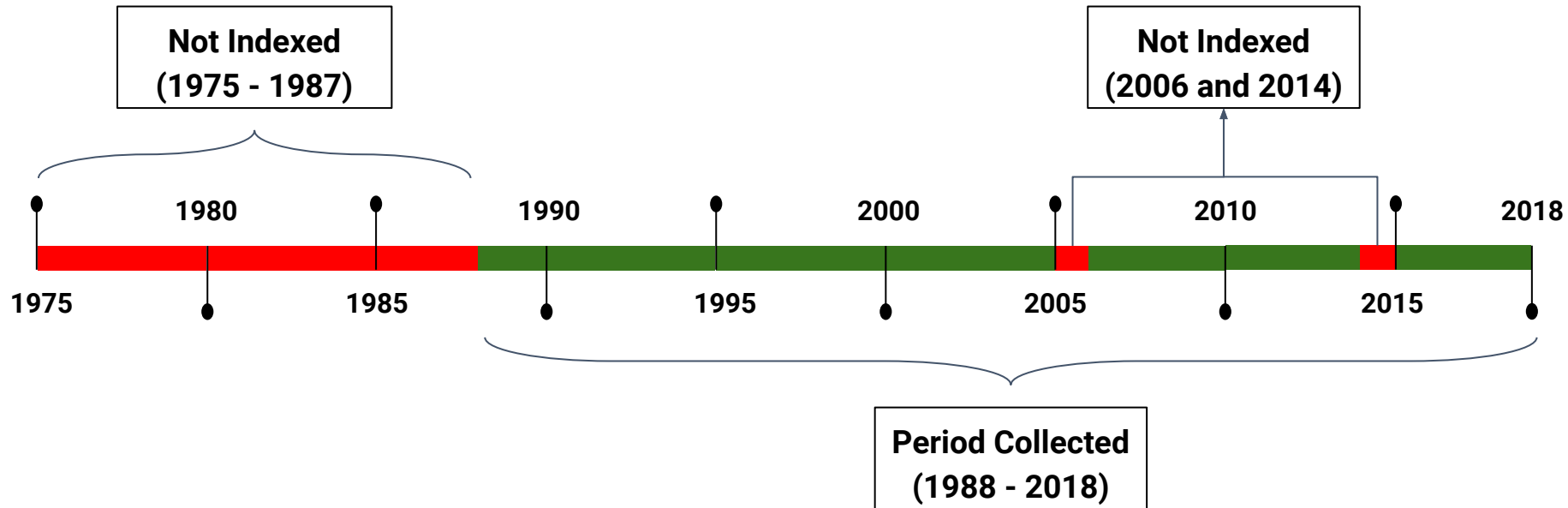
IEEE *Xplore*[®]
Digital Library



Method

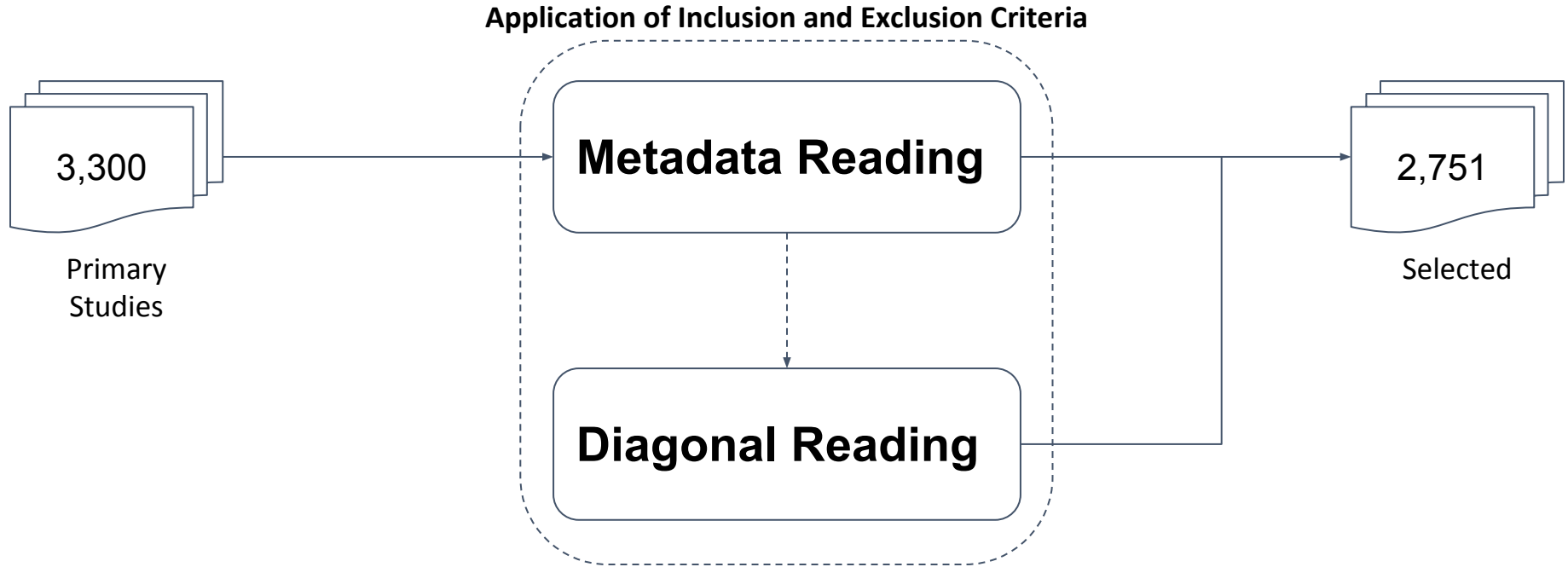


Search Process

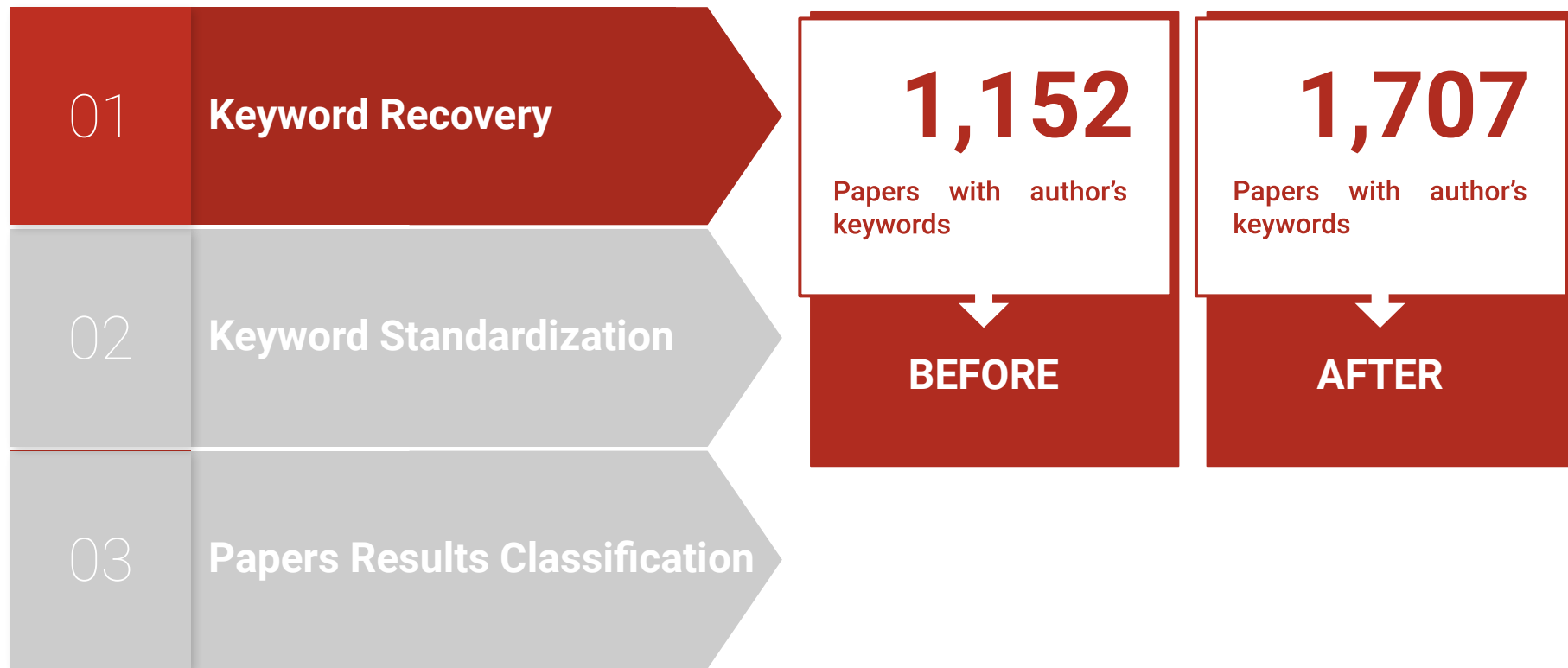


Number of Documents Collected: 3,300

Selection Process



Manual Data Processing



Manual Data Processing



Manual Data Processing

01

Keyword Recovery

02

Keyword Standardization

03

Papers Results Classification

Categories

Procedure or technique

Qualitative or descriptive model

Empirical model

Analytic model

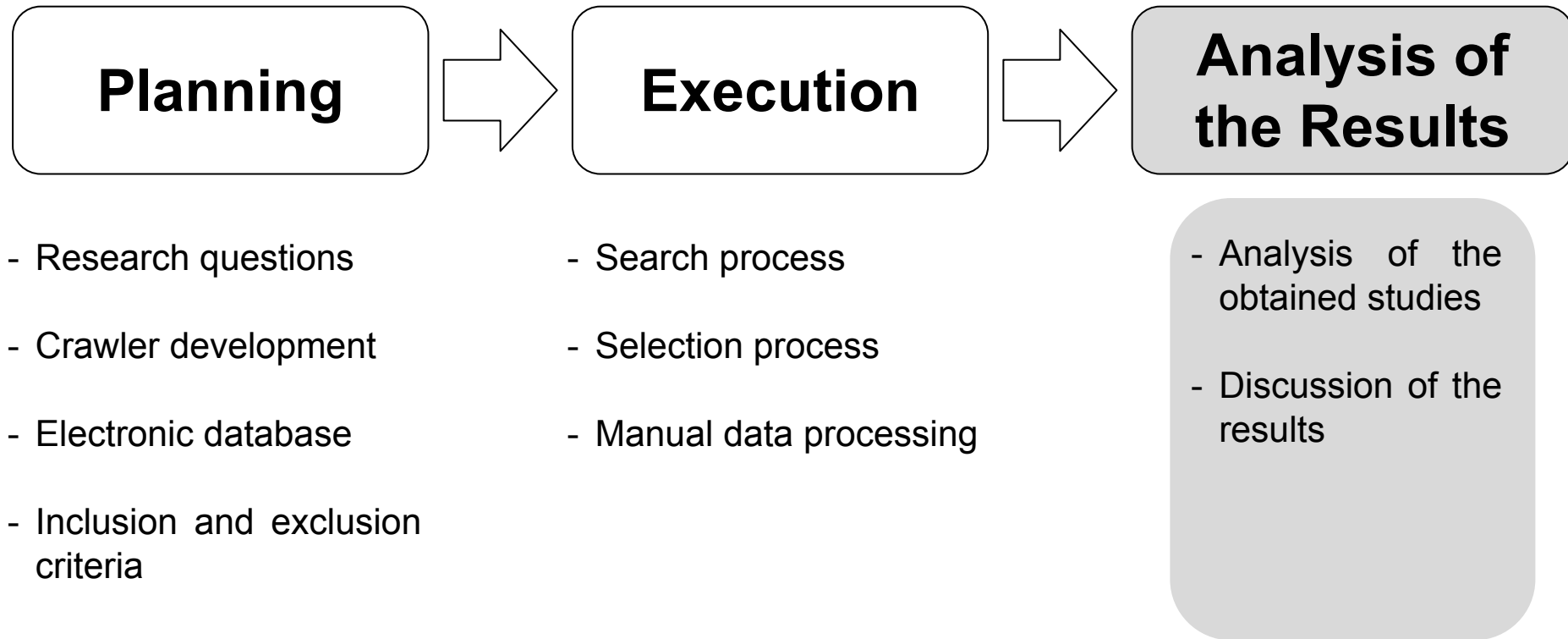
Tool

Specific solution

Empirical study

Report

Method



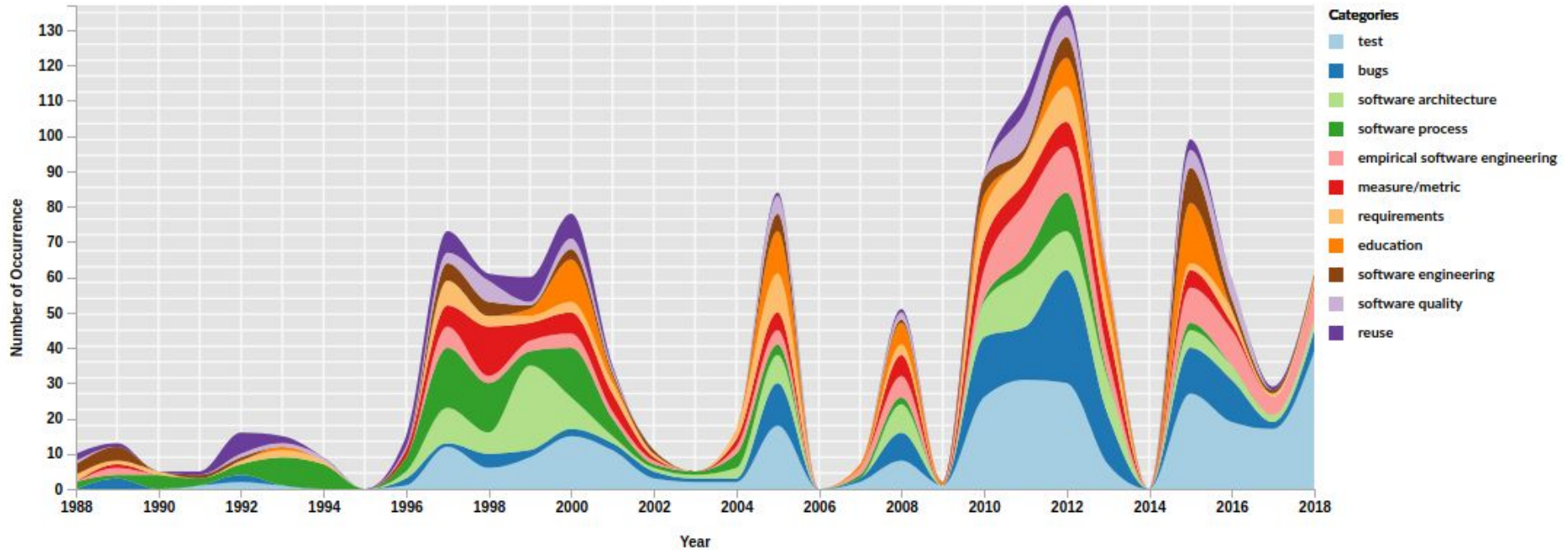
RQ1. What are the top topics that have been studied in Software Engineering?

Top Topics

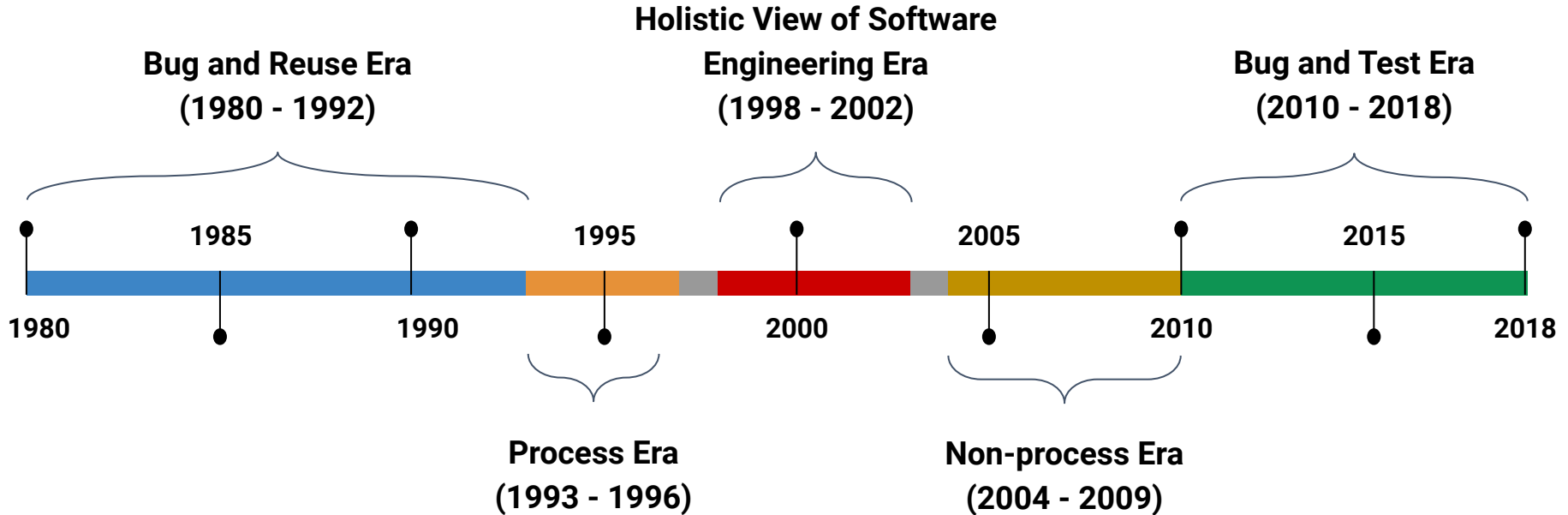
Keyword	#Occurrences
Test	290
Bugs	154
Software Architecture	135
Software Process	116
Empirical Software Engineering	110
Measure/Metric	90
Requirements	86
Education	73
Software Engineering	58
Software Quality	57
Reuse	52

RQ2. How has the community interest in the top topics evolved over time?

Top Topics Evolution

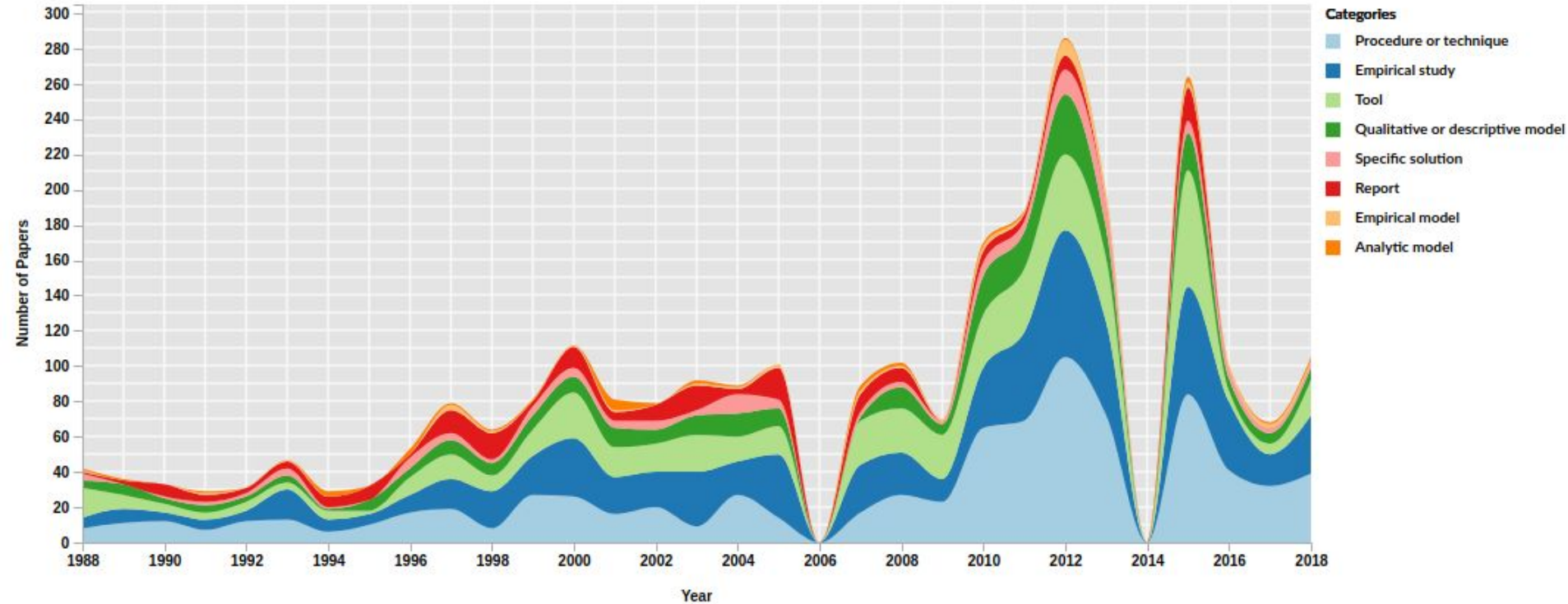


Software Engineering Timeline



RQ3. What are the contributions produced in Software Engineering?

Software Engineering Contributions



Conclusion

- ❑ Compilation of Software Engineering evolution
- ❑ Mapping of the top 11 topics investigated by the Software Engineering
- ❑ Characterization of Software Engineering in eras

Future Work

- ❑ Replicate this study with articles from other conferences and journals
- ❑ Evaluate how the discussion of the main key topics have evolved

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