Step A
Specify Research Questions

RQ1
Issues Faced by Developers

root causes | proposed solutions

RQ2
Causes of Issues

RQ3
Solutions to fix the Issues
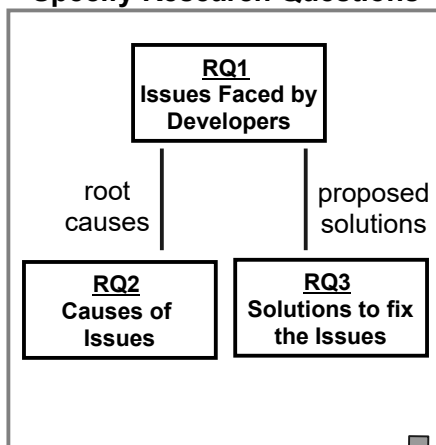
Step C
Extract and Synthesize Extracted Issues

Contributors' Discussions (developers' perspectives)

"Container does not build when running `docker-compose up ..."

Build Issues (BI)

Container Fail (<u>CF</u>) | 'DB' not found
(Sub-theme -- Sub-issues)

Issue Classification

Mapping of Causes

CF ... | npm cache (Cause)

BI ... (Issues)

Cause Mapping

Solutions for Causes

Fixing the Issues

Pilot Data Extraction

1 Issues Screening

2 Issues Extraction

3 Issues Synthesis

4

Phase 1
Mining Developers' Discussion (Repository Mining)
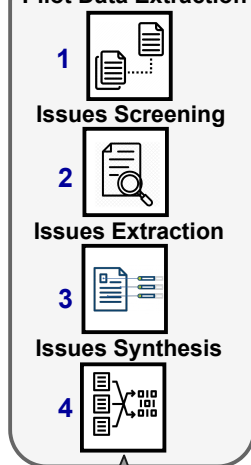
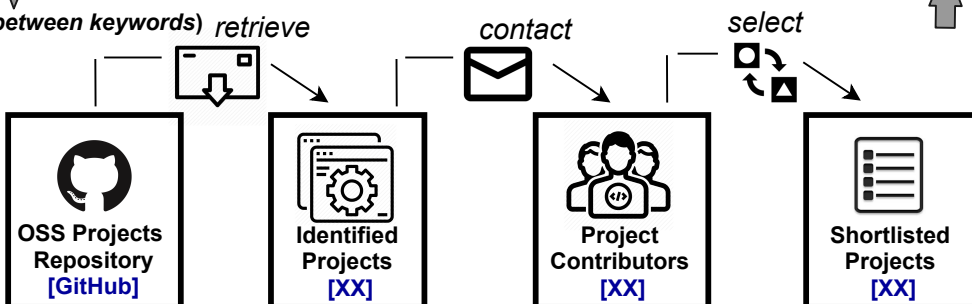**Project Search Strings (*OR logic between keywords*)**
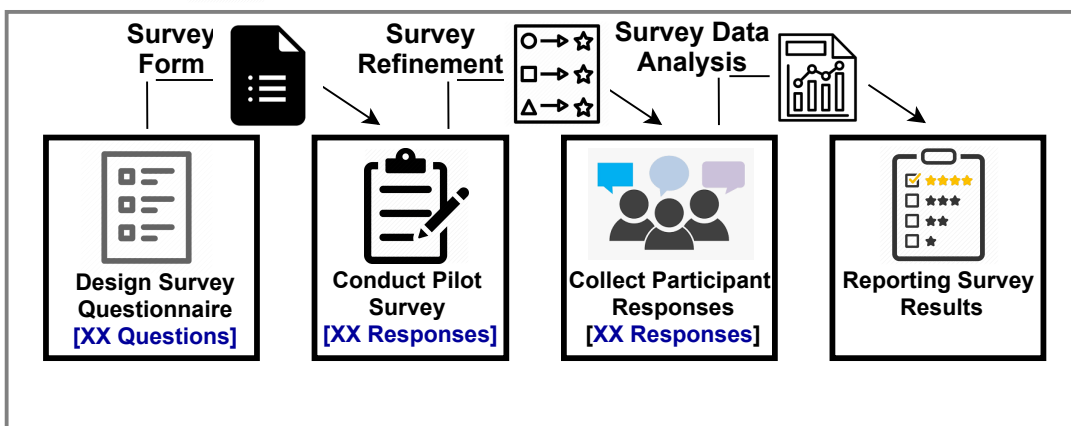
- microservice
- micro service
- micro-service
- ...

search

- Stars > 10
- Forks >10
- Contributors >3
- Language = 'EN'

Project Selection Criteria (*AND logic between criterion*)

retrieve | *contact* | *select*

OSS Projects Repository [GitHub]

Identified Projects [XX]

Project Contributors [XX]

Shortlisted Projects [XX]

Step B
Identify and Select MSA-based OSS Projects

Phase 2
Conducting Developers' Survey (Practitioners' Feedback)

Survey Form

Survey Refinement

Survey Data Analysis

Design Survey Questionnaire [XX Questions]

Conduct Pilot Survey [XX Responses]

Collect Participant Responses [XX Responses]

Reporting Survey Results

Step D
Conduct Web-based Survey of Developers