

# **An Empirical Study on the Evolution of Open Source JavaScript Projects**

**Everton da S. Maldonado     Shahriar Rostami Dovom**

**Department of Computer Science and Software Engineering**

**Concordia University**

**Montreal, Canada**

# Research Goal

Our goal is to compare how **JavaScript** projects **evolves** in comparison with Java projects.

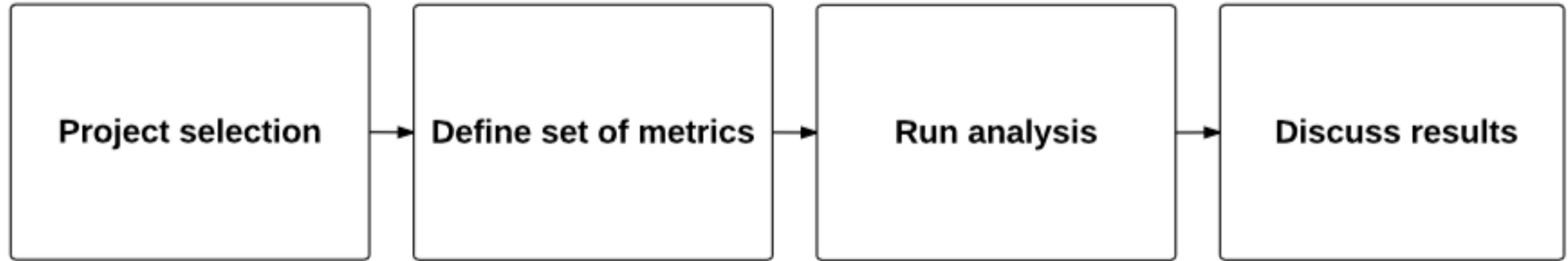
The comparison can show us how practices learnt from Java can be applied to JavaScript.

# Why JavaScript ?

Thus far, there are **few studies** in the evolution of script languages.

It is getting popular in both client side and server side.

# Research Overview



# Case study on ten open source projects

Project	Files	Directories	Functions	Statements	Description
NPM	165	32	1217	5329	A package manager for javascript
Node MySQL	140	11	667	3317	Node.js java script MySQL client
Esprima	34	6	4862	29002	Javascript parser
Grunt	31	9	251	1245	Javascript task runner
Node Redis	18	18	457	2537	Redis client for node.js

Project	Files	Directories	Functions	Statements	Description
ElasticSearch	4050	831	35762	198944	Search server based written in Java
Guava	799	28	11769	32698	Set of common libraries for Java
JodaTime	327	15	9560	50609	Time and date java library
Jsoup	80	14	1487	7980	Java html parser
Junit	392	73	3479	7972	Unit test framework

# Research questions

**RQ1 - How JavaScript language projects evolve in comparison with projects written in compiled languages?**

# Used metrics

- Number of files
- Lines of code
- Number of functions and statements
- Complexity
- Technical debt

# Research questions

**RQ2 - How Technical Debt can influence the change proneness of the source code in the project ?**

**RQ3 - How Technical Debt can influence the bug proneness of the source code in the project ?**



# Mining GitHub repositories

**GitHub can be used as code and bug repositories and it provides an API to access this data.**

**Create a authorization token**

`<username> -d '{"scopes": ["repo", "user"]}' \https://api.github.com/authorizations`

**Request all the commits**

`https://api.github.com/repos/<repo_owner>/<repo_name>/commits`

**Request all the issues**

`https://api.github.com/repos/<repo_owner>/<repo_name>/issues`

# Questions ?

**CHALLENGE CONSIDERED**

