Analysis of Productivity in Low-code

Application Development

Introduction

As the ISBSG repository contains more data of projects carried out in an agile way of working, analysis of differences between traditional projects and agile projects becomes more significant. The ISBSG collects industry data, where output is measured using ISO/IEC standardized and therefore objective, repeatable, auditable methods, such as Nesma, IFPUG and COSMIC function points. Typical key metrics based on function points are:

- Project Delivery Rate (PDR)[1]: Hours spent per function point
- Cost efficiency: Cost (or Price) per function point
- Quality: Defects per function point (in test and/or 1st month of production)
- Speed: Function points delivered per calendar month.

The ISBSG repository 'New Developments & Enhancements' contains thousands of completed projects for which these metrics are calculated, enabling organizations to use this industry data for fact-based understanding and decision making. In this short paper, low-code productivity is analyzed and compared to the popular programming language Java. Examples of low-code languages are Mendix, Outsystems, Pega and Salesforce.
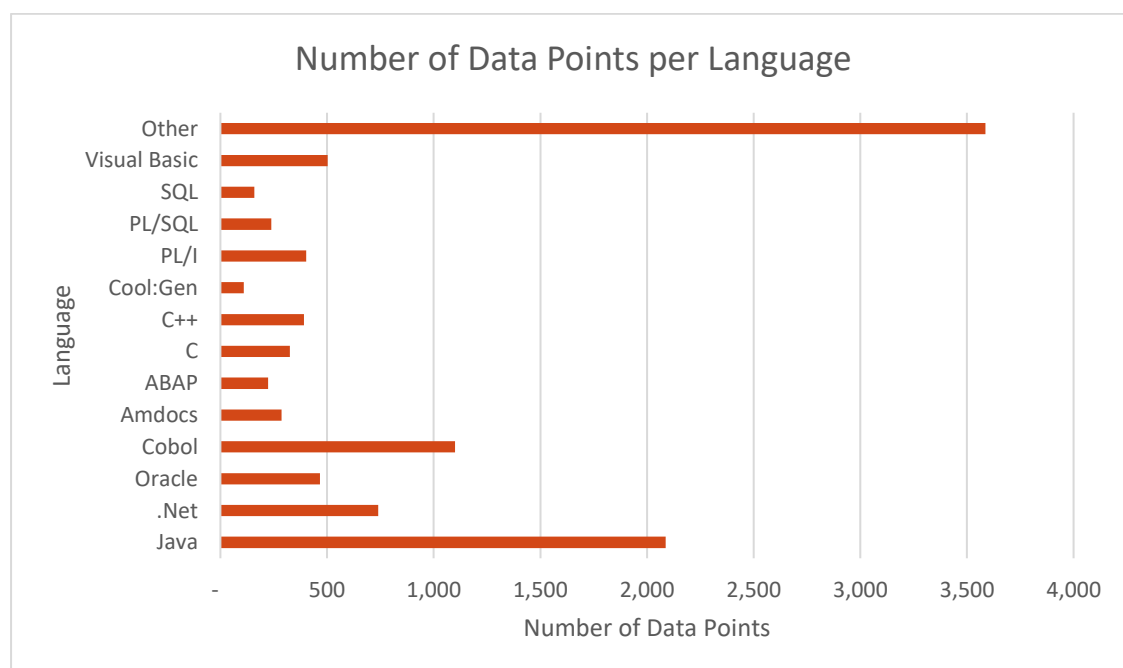

Figure 1: Number of data points per programming language in the ISBSG 2021 D&E repository

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[1] The PDR is the universal concept of Productivity (output/input) as it is easier to process for human minds, which usually struggles with metrics with many decimals.

Project Delivery Rate Low-code vs Java

In the current version of the ISBSG repository 'New Developments & Enhancements' the data set is selected using the following filters:

- Data Quality Rating: A or B
- Count approach: Nesma or IFPUG
    - For Low-code: Primary Programming Language: Mendix, Outsystems or Salesforce
    - For Java: Programming Language = Java and Project Year >2010

This results in a dataset of 58 Low-code projects and 648 Java projects. In the next figure the difference in PDR is shown.
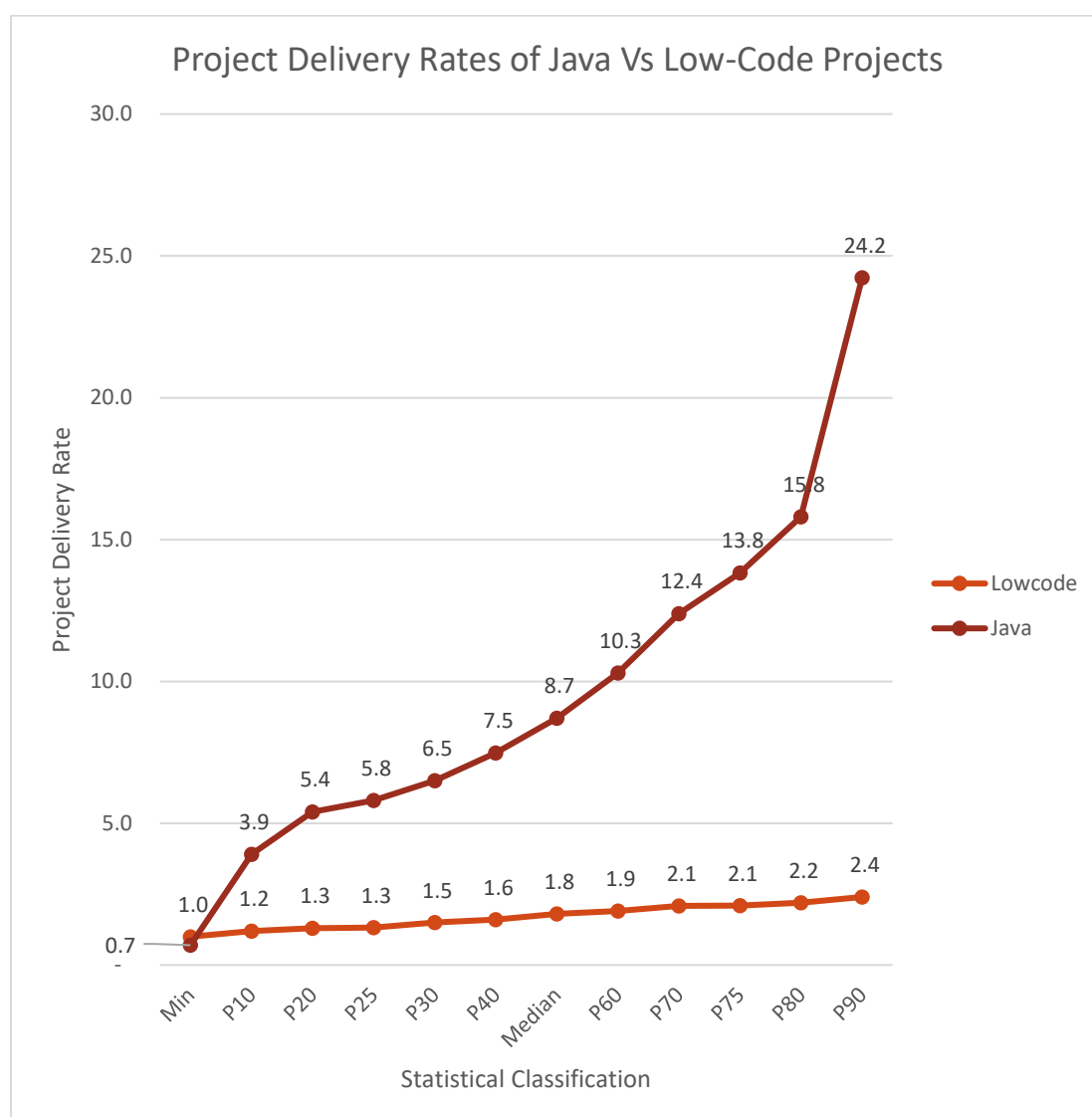

Figure 2 Percentile distribution of PDR in the ISBSG 2021 D&E repository (Java vs Low-code).

The figure shows that low-code languages show high productivity (low PDR) consistently, with a minimum of 1,0 hours per FP and a P90 of 2,4 hours per FP. For Java the minimum is very low, even lower than the Low-code minimum, but the median is 8,7 hours per FP and the 90th percentile is even 24,2 hours per FP. This analysis shows that developing using Low-code platforms is indeed much more productive and more predictive than developing using traditional programming languages like in this case Java.

If you wish to do your own analysis, or if you are interested to use the ISBSG data for Cost estimation, benchmarking, performance measurement, procurement, etc., please subscribe to the data here: https://www.isbsg.org/project-data/

The International Software Benchmarking Standards Group (ISBSG)

The ISBSG is a not-for-profit organization founded in 1997 by a group of national software metrics associations. Their aim was to promote the use of IT industry data to improve software processes and products.

ISBSG is an independent international organization that collects and provides industry data of software development projects and maintenance & support activities in order to help all organizations (commercial and government, suppliers and customers) in the software industry to understand and to improve their performance and decision making. ISBSG sets the standards of software data collection, software data analysis and software project benchmarking processes and is considered to be the international thought leader in these practices.

The ISBSG mission is to support commercial and public organizations to improve the estimation, planning, control and management of IT software projects and/or maintenance and support contracts.

To achieve this:

ISBSG maintains and grows 2 repositories of IT software development/maintenance & support data. This data originates from trusted, international IT organizations and can be obtained for a modest fee from the website www.isbsg.org/project-data/

Help us to collect data

ISBSG is always looking for new data. In return for your data submission, we issue a free benchmark report that shows the performance in your project or contract against relevant industry peers.

Please submit your data through one of the forms listed on http://isbsg.org/submit-data/

A specific Agile/Scrum data collections questionnaire can be downloaded here:
https://cutt.ly/4vnuXVT

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