ISBSG
Delivering IT Confidence

The global and independent source of data and analysis for the IT industry

Short paper

Analysis of Productivity Trends in Application Development

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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, the trends in productivity over time are analyzed.

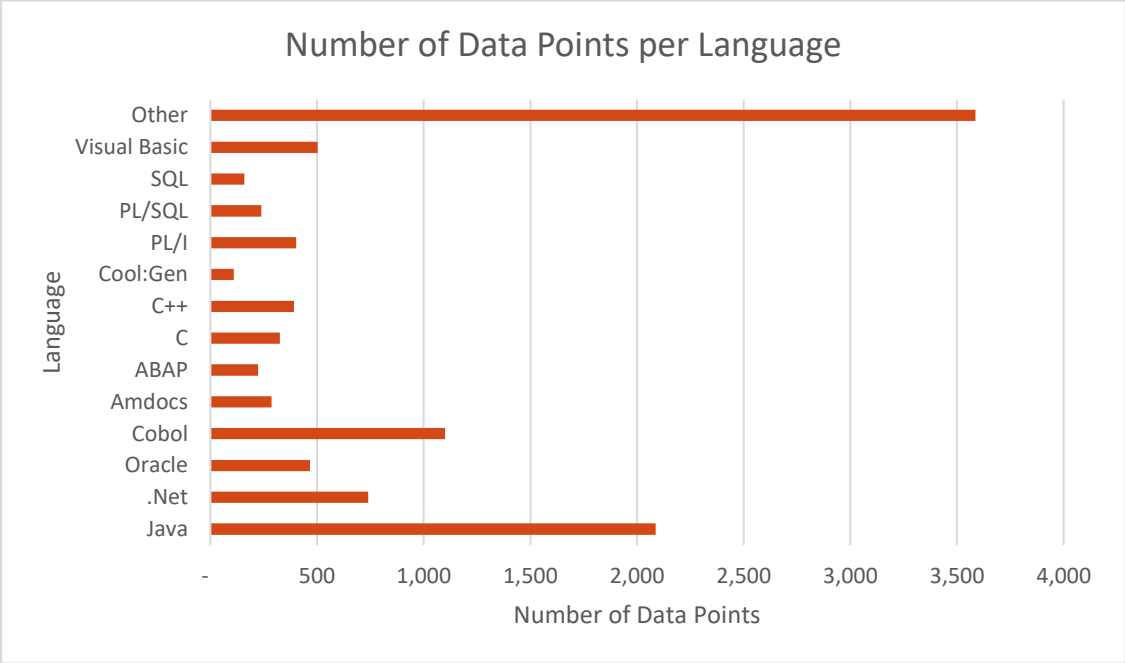


Figure 1: Number of data points per programming language in the ISBSG 2021 D&E repository

[1] The PDR is the inverse of 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 (PDR) through time

In the next two graphs, the P25 (25th percentile), the median and the P75 (75th percentile), normalized PDR for is given in 5-year period blocks for Java and Oracle.

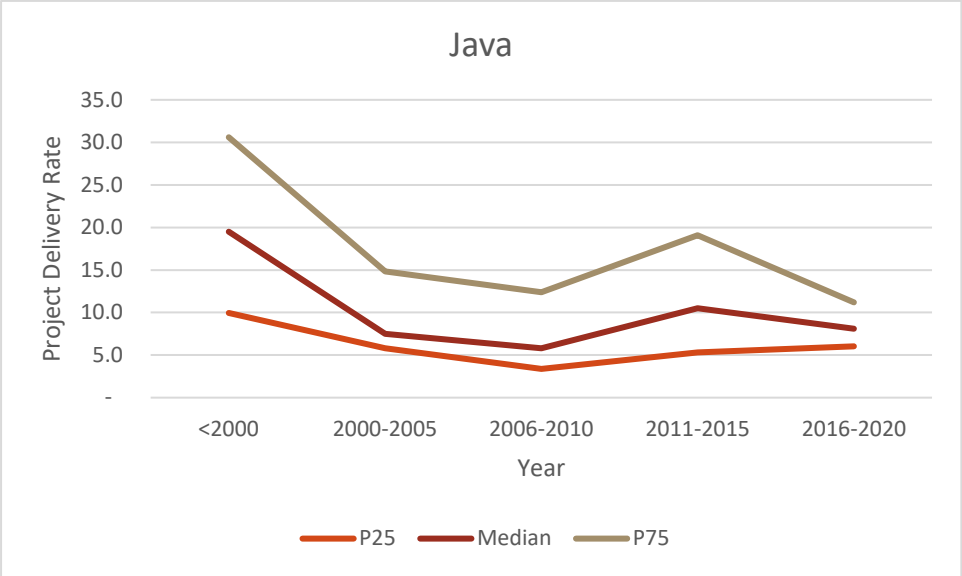


Figure 2: Average normalized PDR per 5-year period in the ISBSG 2021 D&E repository (Java)

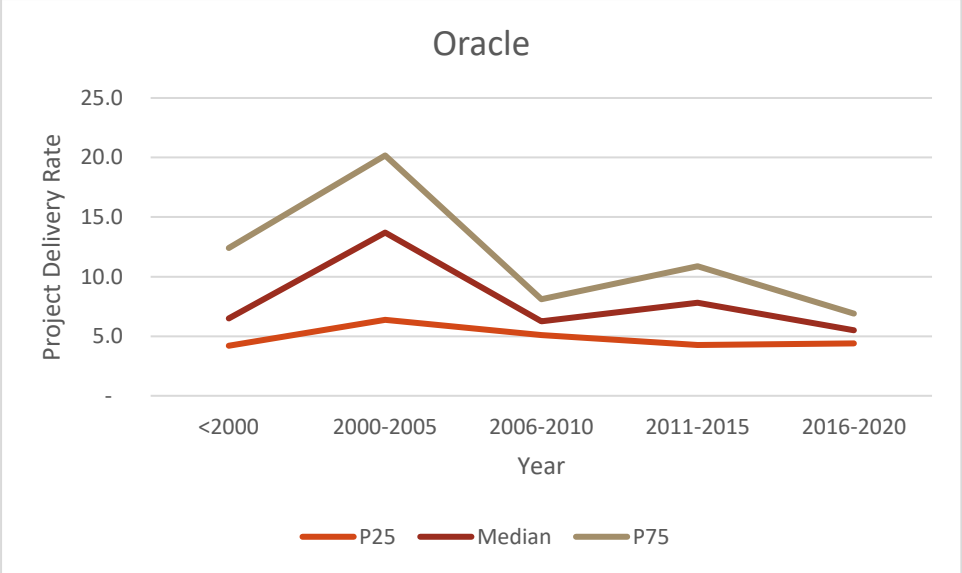
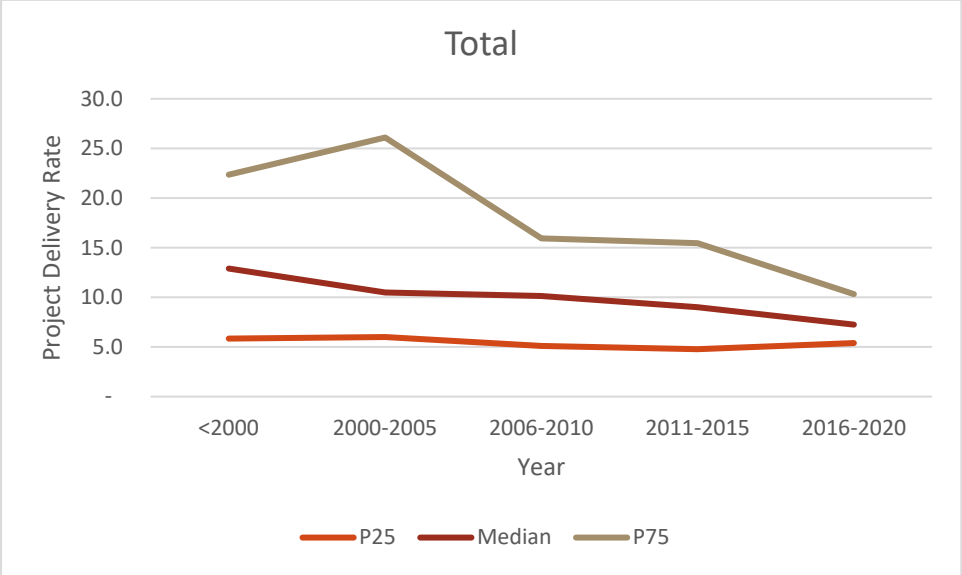


Figure 3: Average normalized PDR per 5-year period in the ISBSG 2021 D&E repository (Oracle)

For both languages, it seems that the productivity was getting worse after 2010 but improved again since 2015. When looking at several popular languages together, a gradual Project Delivery Rate improvement is shown over time.



Conclusion

Project Delivery Rate in the industry is improving over time, as is shown in the figures above. In the Java and Oracle graphs, it shows that PDR in the period 2006-2010 was in line with the current PDRs, but in the period 2016-2020 the bandwidth between the P25 and P75 is much smaller, which indicates a higher predictability of the Project Delivery Rate.

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

Partners

This page will help you to find an ISBSG partner in your country:

http://isbsg.org/meet-isbsg-partners/