

# 2016 Software Development Salary Survey

RESEARCH REPORT

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C#	C++	Java	PHP	Ruby	IOS
Android	Java Script	UI/UX	Designer	Tester	Business Analyst
QA Lead	QA Manager	Technical Team Lead	Software Architect	Project Manager	Product Manager

Click on the position button for detailed salary data



# Methodology

## SAMPLING and sample structure

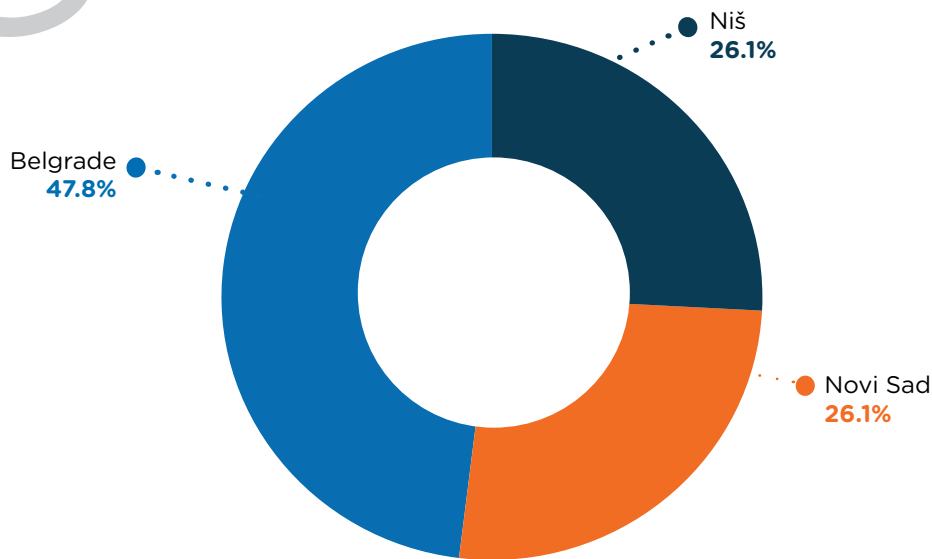
Twenty three software development companies representing **1,101** IT professionals from the Serbian Software Development industry were included in the survey. A comprehensive pool of potential participants was created using the Serbian Business Registers Agency databases and researchers' business contacts in the Serbian IT industry. Two rounds of research invitations were sent to the relevant business email addresses. The resulting sample was formed through self-selection in response to the research invitations.

Companies from Belgrade make up the majority of the sample - 47.8%, companies from Niš represent 26.1% of the sample and companies from Novi Sad 26.1% of the sample (Chart 1). 52.3% of the participating companies were micro (1-50), 26.0% were small (51-100), 26.0% were medium (201-500), 17.4% were large (500+) size (Chart 2). The sample was composed of 73.9% foreign-owned and 26.1% Serbian-owned companies (Chart 3).

### SAMPLE by Location



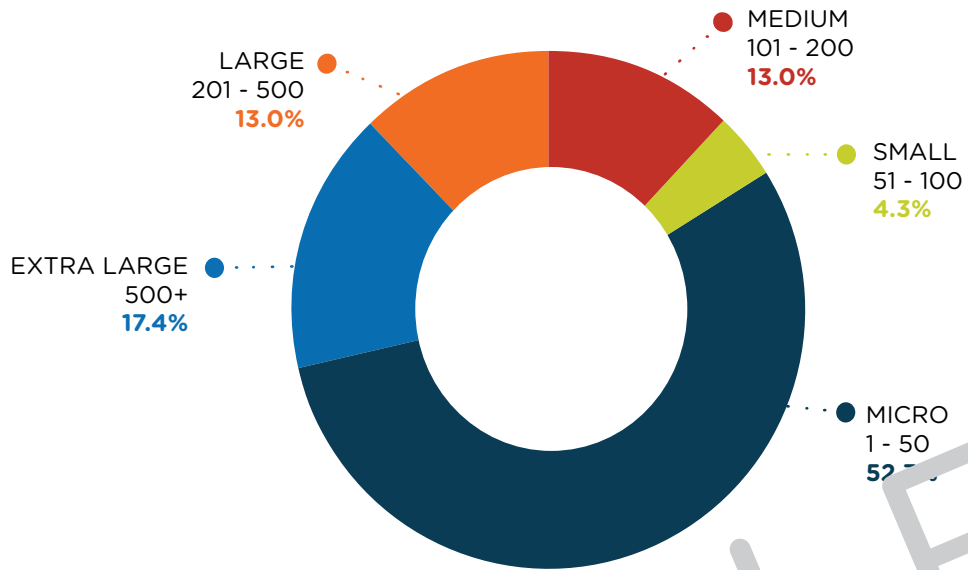
Chart 1. Sample structure according to company location



# SAMPLE by company size



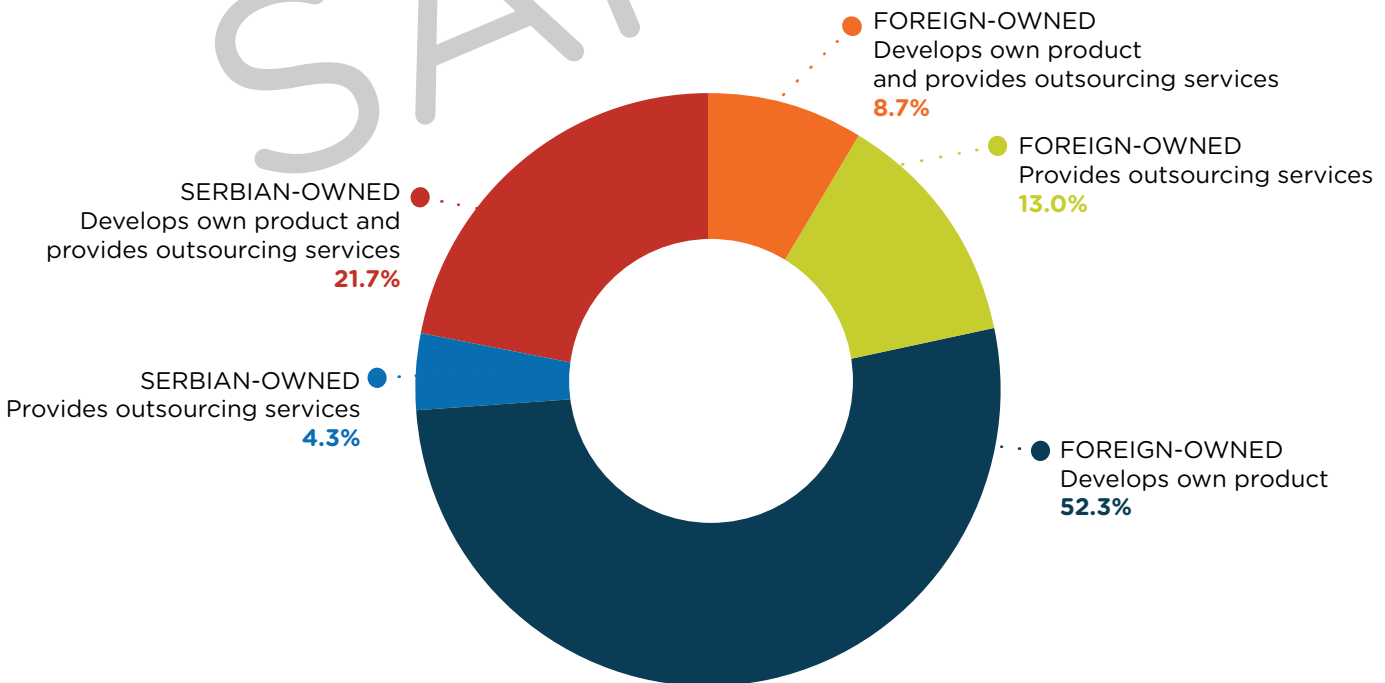
Chart 2. Sample structure according to company size



# SAMPLE by ownership



Chart 3. Sample structure according to ownership type



# DATA collection and handling



Salary and benefits survey was distributed online to all the participating companies in September 2016. The participants had four weeks to complete the survey. In the course of preparing the collected data for analysis, the data was cleaned and verified - values that appeared to be unusual or cases of missing data were checked with the participating company and subsequently verified, corrected or deleted.

Positions with less than 5 responses from the participating companies were not included in the analysis or the final report. These are marked in the report by “-”, signifying Insufficient Data. For these positions, only salary averages are reported in the salary tables.

Each company received both the national and the local breakdowns of all the data. Companies from Belgrade received reports with the national and Belgrade tables, companies from Niš received the national and Niš tables. Since the sample for Novi Sad consisted of 6 companies with divergent positions, Novi Sad data was combined with the Belgrade data for the purposes of analysis and reporting.

## DATA analysis



### SALARY

The survey results for salaries are broken out into **average, median and quartile values** (25<sup>th</sup>, 50<sup>th</sup> and 75<sup>th</sup> percentiles) for both **minimum and maximum monthly net salary amounts**.

**25<sup>th</sup> percentile:** One quarter of all reported salaries for a given position fall below this value. Paying at the 25<sup>th</sup> percentile rate means that 25% of organizations in the relevant sample pay less than that amount and 75% of organizations pay more than that amount for the given position.

**50<sup>th</sup> percentile/Median:** The median is in the middle of all data points, meaning that one half of all reported salaries are on either side of the median value. Median is not affected by extremely high and extremely low salaries (outliers) for a given position and is therefore a preferred measure in salary surveys over simple averages, although both are reported here.

**75<sup>th</sup> percentile:** Three quarters of all reported salaries lie below this value. Paying at the 75<sup>th</sup> percentile means that 75% of organizations pay less than that amount and 25% of organizations pay more than that amount.

**Average:** Average value is an arithmetic mean of all reported salaries for a given position.

**Percentile ranking:** Each company that provided us with the salary data for their positions (except those companies that remained anonymous) received an individual percentile ranking for those salaries.

**No. of incumbents:** Total number of job incumbents in this position as reported by participating organizations.

### Salary ranges

Each of the 18 positions (at 3 experience levels, where applicable) has a **salary range**. Salary range is expressed as a minimum and maximum amount paid for the given position.

**Below-market salary range** is a range that falls on or below the 25<sup>th</sup> percentile (25<sup>th</sup> percentile column min and max values).

**Mid-market salary range** is a range that falls on the 50<sup>th</sup> percentile (Median column min and max values).

**Above-market salary range** is a range that falls on or above the 75<sup>th</sup> percentile (75<sup>th</sup> percentile column min and max values).

## BONUSES

Data on bonuses was also collected in the survey. The bonuses were initially divided into two types - guaranteed and performance-based. **Guaranteed bonus** refers to an amount received by the employee that is not tied to performance results (e.g., 13th salary). **Performance-based bonus** refers to an amount received as a result of good performance (i.e., target bonus).

Based on the additional data provided by the participating companies, we have expanded the performance-based bonus into 4 subgroups (individual performance-based, project-based, profit-share and stock options).

Data analysis on bonuses is presented within the Benefits section of the report. First, the data is submitted to a frequency analysis to determine how are different kinds of bonuses distributed across different experience levels. Second, for each type of bonus an average amount was calculated (where applicable), indicating the minimum and maximum values (expressed as percentages of the employees' annual salary amounts).

## BENEFITS

We collected data on 19 different kinds of benefits that could be offered to employees at different experience levels. Data on benefits was submitted to a frequency analysis, showing the percentage of companies offering each benefit to their Juniors, Intermediates and Senior-level employees, both at the national and local levels. All the participating companies (except those who remained anonymous) also received the personalized section of the benefits analysis. The benefits offered by the participating company were checked in each individual report, providing an easy overview of the company's performance in this area.

The participating companies could add up to 3 additional benefits not covered by the survey. These benefits were summed up and presented in the "Emerging trends" section of the Benefits.

## PROMOTION RATE, PROMOTION SPEED AND VOLUNTARY TURNOVER

**Promotion rate** data was collected as part of the survey. The participating companies were asked to report on the number of promotions in the past 12 months (Sep 2015 - Sep 2016) in the 18 positions sampled in this research. The promotion rate was calculated for each company by dividing the number of promotions in this time period by the average number of employees in the organization (in the 18 positions), multiplied by 100 to obtain the rate in percentages.

**Promotion speed** data was also collected. The participating companies were asked to estimate the average number of months it takes for Juniors, Intermediates and Seniors to become eligible to advance to the next level in their organizations (e.g., from Junior to Intermediate, from Intermediate to Senior, from Senior to upper management, etc.). The average promotion speed was calculated separately for each of the levels, and then further broken down by the size of the company.

**Voluntary turnover** data was collected by asking the participating companies to report on the number of employees who voluntarily left the organization in the past 12 months, counting only separations in the 18 sampled positions. Voluntary turnover rate was calculated for each company by dividing the number of voluntary separations in this time period by the average number of employees in the organization (in the 18 positions), multiplied by 100 to obtain the rate in percentages.

## NOTE ABOUT COMPANY SIZE

Please note that even though we collected data on 5 company sizes – 1-50, 51-100, 101-200, 201-500 and 500+, they were aggregated in three groups (1-50, 51-200, 200+) for the purpose of further analysis and reporting.



## RESULTS SALARIES

This part of the report presents the analyzed salary data for the **18 software development positions**, per experience level (where applicable) and the company location. Data for each of the 18 positions is presented on a separate page in the report. Each position page contains the following information:

- (1) **Salary amounts for the given position on the national level** for Junior, Intermediate and Senior levels (where applicable), for the minimum and maximum salaries provided;
- (2) **Salary amounts for the given position on the local level** (Belgrade, Novi Sad/Belgrade or Nis) for Junior, Intermediate and Senior levels (where applicable), for both the minimum and maximum salaries provided;
- (3) **Graphs representing the 25<sup>th</sup>-75<sup>th</sup> percentile salary ranges** for the given position on Junior, Intermediate and Senior levels (where applicable) for both the minimum and maximum salary amounts. If your company provided salary amounts for the given position, **your company's salary rank** for the position will be represented in the graph (in the green, yellow and red circles);
- (4) If your company participated in the 2015 salary survey, the table will also include a **competitiveness trend indicator** (CTI), marked with green, yellow and red arrows next to the eligible p-rank values.

**PLEASE NOTE**

*If less than 5 organizations supplied salary data for the given position - regardless of the number of incumbents in the position (which can be greater than 5) - the salaries were not calculated for that position. These salaries are marked with "-", indicating Insufficient data.*

*For these positions, only salary averages are reported in the salary tables.*

For information  
on employee  
**bonuses**,  
click here.

For information  
on employee  
**benefits**,  
click here.

# RESULTS **Software Engineer Java** **Belgrade**

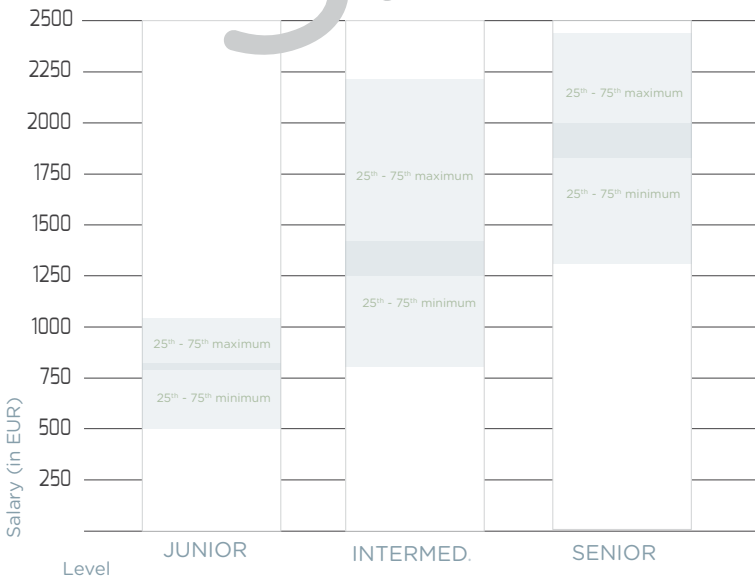
Table 5. Monthly net salary data (EUR) for position, per experience level (Junior, Intermediate, Senior) - Serbia

		Level	No. of incumbents	Base Salary	25 <sup>th</sup> percentile	50 <sup>th</sup> (median)	75 <sup>th</sup> percentile	Avg.	Company value	P rank
<b>Java</b>	NET MONTHLY SALARY IN EUROS SERBIA	JUNIOR	48	€ 700	€ 600	€ 650	€ 800	€ 680	1	21
		INTERMED	48	€ 1,200	€ 1,000	€ 1,100	€ 1,400	€ 1,100	1	21
		SENIOR	48	€ 1,800	€ 1,500	€ 1,600	€ 2,000	€ 1,700	1	21

Table 6. Monthly net salary data (EUR) for position, per experience level (Junior, Intermediate, Senior) - Belgrade

		Level	No. of incumbents	Base Salary	25 <sup>th</sup> percentile	50 <sup>th</sup> (median)	75 <sup>th</sup> percentile	Avg.	Company value	P rank
<b>Java</b>	NET MONTHLY SALARY IN EUROS BELGRADE	JUNIOR	48	€ 700	€ 600	€ 650	€ 800	€ 680	1	21
		INTERMED	48	€ 1,200	€ 1,000	€ 1,100	€ 1,400	€ 1,100	1	21
		SENIOR	48	€ 1,800	€ 1,500	€ 1,600	€ 2,000	€ 1,700	1	21

Graph 3. Company's P-rank\* for the given position (Min/Max)\*\* per experience level - Serbia



\*Your company salary rank (P-rank) is marked in the appropriate circle, on the left side of bar for the minimum salaries, on the right for the maximum salaries.  
 \*\*Shaded areas represent 25<sup>th</sup>-75<sup>th</sup> percentile ranges for both minimum and maximum salary amounts

### HOW TO INTERPRET SALARY DATA?

- BELOW-MARKET RANGE**  
25<sup>th</sup> percentile column shows the below-market base salary ranges for Juniors, Intermediates and Seniors.
- MID-MARKET RANGE**  
50<sup>th</sup> percentile (MEDIAN) column shows the mid-market salary ranges for Juniors, Intermediates and Seniors.
- ABOVE-MARKET RANGE**  
75<sup>th</sup> percentile column shows the above-market base salary ranges for Juniors, Intermediates and Seniors.

Competitiveness Trend Indicator (CTI), in relation to 2015 data

- ▲ Higher CTI
- ◀ Same CTI
- ▼ Lower CTI

**Bonuses for this position**  
click here

**Benefits for this position**  
click here



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