A Forrester Total Economic Impact™ Executive Summary Commissioned By JetBrains
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JetBrains IntelliJ IDEA Optimizes Developer Productivity And Enhances Code Quality

Forrester Consulting conducted a Total Economic Impact™ (TEI) study to provide readers with a framework to evaluate the potential financial impact of IntelliJ IDEA on their organizations. To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed several customers with experience using IntelliJ IDEA. This summary is based on a full TEI study, which can be downloaded at https://jb.gg/ij_roi.

Through these customer interviews and data aggregation, Forrester concluded that IntelliJ IDEA has the following three-year financial impact: $19.5 million in benefits versus costs of $2.0 million, resulting in a net present value (NPV) of $17.4 million and an ROI of 850%.

Quantified benefits. The following risk-adjusted quantified benefits for the composite organization are representative of those experienced by the companies interviewed:

- **Improved developer productivity, resulting in a benefit of $7.6 million.** Developers were able to write more code with more confidence thanks to IntelliJ IDEA. The technical lead for the development platform described: "The hurdle to cleaning up things that you happen to notice while you're working goes down [with IntelliJ IDEA] because it can help you fix it and feel confident that you got it right. It helps a lot." To the software developer at the media company, "The code completion features in IntelliJ [IDEA] are, at least in my mind, one of the killer features."
- **Improved testing and debugging productivity and savings, resulting in a benefit of $7.7 million.** The CEO of the software automation company described: "The debugger is a lifesaver. Just being able to either set break points or step through code, it's just awesome." Both testers and developers were able to reduce the time they spent debugging and working with code during testing thanks to IntelliJ IDEA.
- **Improved code maintenance effort, resulting in a benefit of $3.3 million.** Code maintenance costs decreased as code bases reduced defect density and technical debt.
- **Improved new hire onboarding, resulting in a benefit of $845,195.** Organizations streamlined onboarding for new employees due to reduced technical debt, better user interface, shared configuration files, and implementation of styles guides and templates.

850%

Return on investment

270 hours/user

Hours saved per developer, per year

$3,868/user

Net annual benefit per IntelliJ IDEA user

SUMMARY

Based on a commissioned study, "The Total Economic Impact Of JetBrains IntelliJ IDEA," October 2018.

METHODOLOGY

The objective of the TEI framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact of IntelliJ IDEA, including interviews with Forrester analysts, JetBrains stakeholders, and four current IntelliJ IDEA customers. Forrester constructed a financial model representative of the interviews using the TEI methodology.

COMPOSITE ORGANIZATION

This analysis uses a composite organization, based on the interviewees, to present the aggregate financial analysis.

RISK ADJUSTMENT

Forrester risk-adjusted the financial model based on issues and concerns of the interviewed organizations to account for uncertainties in benefit and cost estimates.

Unquantified benefits. The interviewed organizations experienced the following benefits, which are not quantified for this study:

- Elevated peer reviews and enhanced collaboration.
- Accelerated time-to-market.
- Reduced customer impact of bugs.
- Enhanced employee recruitment and reduced employee churn.

Composite organization:
Global enterprise
1,000 developers
500 testers
1,500 IntelliJ IDEA licenses

Deployment:
50% adoption by developers and testers at the end of Year 1. 100% adoption among developers and testers by the beginning of Year 2.

The IntelliJ IDEA Customer Journey

Forrester conducted four interviews with JetBrains IntelliJ IDEA customers:

- The CEO of a North American software automation company.
- The lead engineer and a software developer of a global media company.
- The software developer of a European online gaming company.
- The technical lead of a global development platform company.

The interviewed organizations shared the following investment drivers:

- **Inefficiencies inhibited developer productivity and slowed feature deployment.** Text editors and open-source IDEs wasted developer labor and hindered release cycles. The CEO of a software automation company stated: "A company has to keep pumping out features in order to stay competitive. It really comes down to: can you develop new features in a reasonable amount of time, have it work within our performance envelope, and do it all with a reasonable amount of bugs."
- **Excess bugs negatively impacted customers.** The CEO of a software automation company told Forrester: "We had an issue where it took us two weeks to get most of the bugs ironed out after a release. This led to a significant increase in customer churn; it was painful. Months later our customers were still mentioning the slowdowns — it feels like it takes them years to forget that kind of stuff. And so bugs have that serious, serious impact to the customer that they really don't seem to forget."
- **Accumulated technical debt hindered development.** A technical lead for a development platform said: "With our previous solution, you had this accumulation of technical debt. For example, bad names that just stay around. It's hard to put a number on it, but it would be prohibitively expensive to go back and clean it up."

"Our [legacy IDE] was horrible. Learning the way your [editor or IDE] works can be one of the biggest pain points, but [IntelliJ IDEA] has good aesthetics right out of the box, and the ergonomics are very thoughtful."

CEO, software automation company

The interviewed organizations achieved key investment results:

- **Improved developer focus.** Developers leveraged contextual information and avoided time-consuming distractions for searches, wizards, and switching screens.
- **More accurate code writing.** A technical lead for a development platform stated: "It definitely helps me write code right the first time around. IntelliJ IDEA helps me along the way, and then when I go and actually use the build tool I don't get an error."
- **Reduced feedback cycles for QA.** A lead engineer for a media company told Forrester: "I would say the biggest impact is the duration speed. The feedback cycle is shorter. It takes fewer iterations for developers to arrive at a fresh new code.

"IntelliJ IDEA has a big impact on helping our developers spend more time designing and building products rather than iterating on the code, identifying bugs, and resolving them."

Technical lead, development platform

- **Reduced technical debt.** Refactoring eliminated manual effort and reduced errors, and IntelliJ IDEA enabled developers to more quickly learn and understand the code base.
- **Enhanced employee experience and ability to attract and retain top talent.** A lead engineer for a media company noted: "Having IntelliJ IDEA as an organization definitely makes it a better workplace for our developers. They're happier now that we're paying for a license and not making them use some free tool that's not nearly as effective."

IntelliJ IDEA Saves Developers Time And Reduces Technical Debt

The benefit impact experienced by the composite organization is based on experiences of the four interviewees; over three years, the composite organization expects risk-adjusted total benefits to be a present value (PV) of $19.5 million.

Total Benefits

BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Development	$1,447,875	$3,627,000	$4,416,750	$9,491,625	$7,632,140
Testing and debugging	$1,764,360	$3,711,240	$3,985,020	$9,460,620	$7,665,109
Maintenance	$790,920	$1,642,680	$1,642,680	$4,076,280	$3,310,775
Onboarding	$175,500	$351,000	$526,500	$1,053,000	$845,195
Total benefits (risk-adjusted)	$4,178,655	$9,331,920	$10,570,950	$24,081,525	$19,453,219

- **IntelliJ IDEA enabled developers to work more efficiently.** The media company's software engineer explained: "I use the refactoring tool daily. It improves the quality of the code. If I want to extract some piece of code to a method, for example, I have a lot more confidence that IntelliJ IDEA would do it properly, instead if I were to do it myself manually because I might make mistakes. It's also much faster. I use refactoring regularly because it's better and faster than I am at doing it."
- **Testing and debugging became more efficient.** The technical lead for the development platform described how IntelliJ IDEA accelerates debugging: "The trial and error of using a text editor is unnecessary with IntelliJ IDEA. It knows a lot more about the code than you can just read in the text editor. You no longer need to leave where you currently are, go hunt around for a method, figure out what types were involved, write a print statement, and try to find it."
- **IntelliJ IDEA reduced the time spent maintaining code.** Developers reduced their time spent maintaining code from 18% to 15.3% by Year 3. In total, the composite organization recognized a three-year risk-adjusted PV of $3.6 million.
- **Onboarding became easier.** Onboarding new employees went from 20 days to 18 days in Year 1, improving to 16 days in Year 2, and 14 days in Year 3 as technical debt, configuration files, and templates improve each year and approach a steady state.

> "We have extremely high standards. By using IntelliJ, where you can interactively see problems without having to go through a huge build cycle, or worst case, integration cycle, where you need to push the code somewhere else is key. It helps us have extremely high-quality code."
>
> *Lead engineer, media*

IntelliJ IDEA Costs Include Licensing, System Administration, And Training And Customization

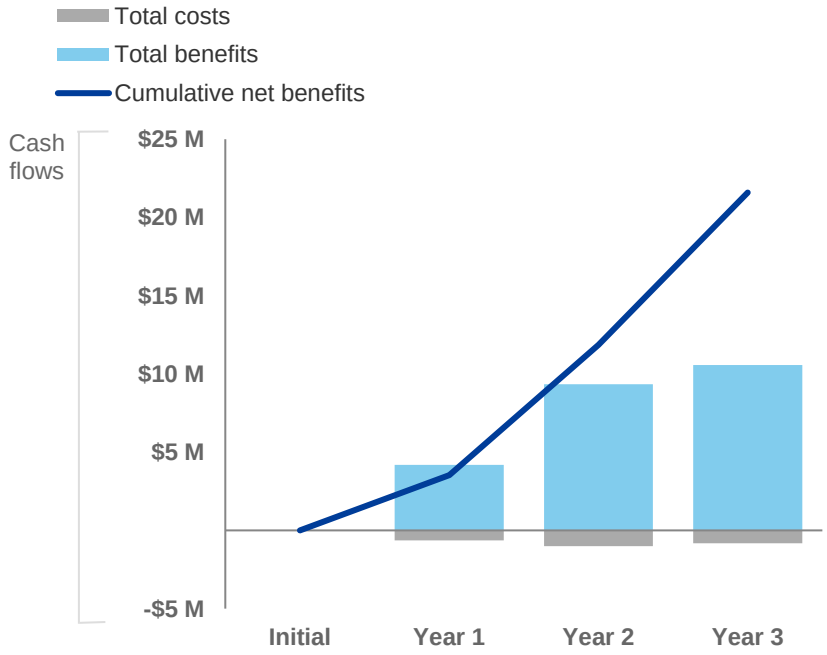
The composite organization experienced three categories of cost associated with the IntelliJ IDEA investment. Over three years, the composite organization expects risk-adjusted total costs to be a PV of $2.0 million.

Total Costs

COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Licensing	$0	$392,963	$628,425	$470,925	$1,492,313	$1,230,411
Systems administration	$0	$50,669	$25,334	$25,334	$101,338	$86,034
Training and customization	$0	$204,750	$358,313	$332,719	$895,781	$732,239
Total costs (risk-adjusted)	$0	$648,381	$1,012,072	$828,978	$2,489,431	$2,048,684

Financial Summary

The financial results calculated in the Benefits and Costs tables above can be used to determine the ROI, NPV, and payback period for the composite organization's investment in IntelliJ IDEA. Forrester assumes a yearly discount rate of 10% for this analysis.



ROI
850%

NPV
$17.4 million

Payback
<6 months

This document is an abridged version of a case study commissioned by JetBrains, titled: "The Total Economic Impact Of JetBrains IntelliJ IDEA," October 2018. Read the full study at https://jb.gg/ij_roi.

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