FORRESTER®

The Total Economic Impact™ Of IBM ADDI
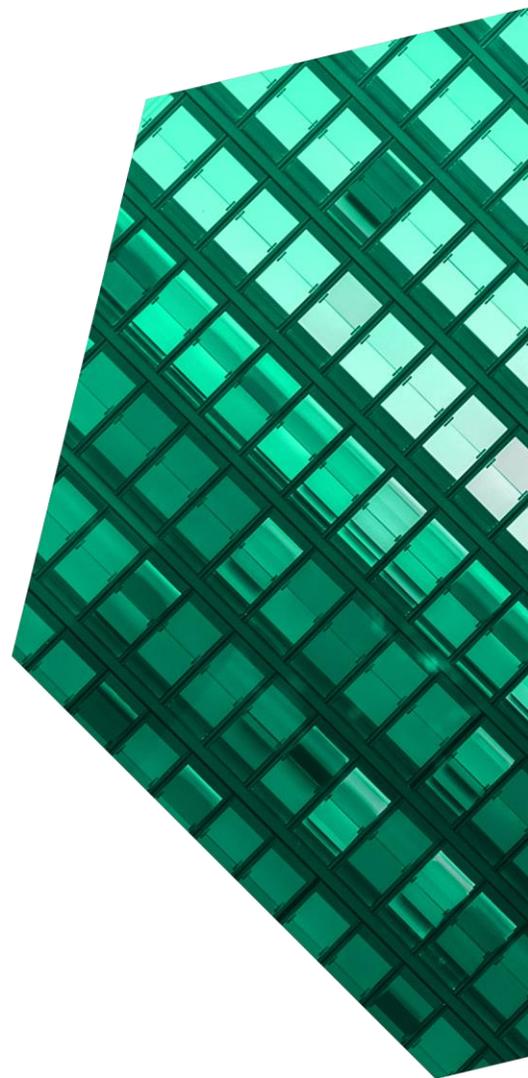
Cost Savings And Business Benefits For Application Modernization Enabled By ADDI

OCTOBER 2021

Table Of Contents

Consulting Team: Adi Sarosa
Isabel Carey

Executive Summary

> Legacy mainframe environments often contain millions of transactions daily — even hourly. They have historical data that covers decades. Because of this, the mainframe environment is a prime opportunity to unearth key application insights that can help larger organizations. Modernizing and transforming the mainframe environment keeps organizations competitive, enhances customer experience, and potentially drives new revenue streams.

IBM Application Discovery And Delivery Intelligence (ADDI) is an analytical platform that helps with application modernization. It assists with application discovery and delivery, particularly with IBM Z applications. ADDI allows developers to quickly gain visibility and insights of the interconnections between application components and data, highlighting the impact of changes and driving modernization. Using ADDI, developers have visibility to the application development processes, enabling them to focus on innovation and accelerate time-to-market for deploying new apps.

IBM commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying ADDI.[1] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of ADDI on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed five decision-makers at four organizations with experience using ADDI. For the purposes of this study, Forrester aggregated the experiences of the interviewed decision-makers and combined the results into a single composite organization.

Prior to using ADDI, the interviewees' organizations had valuable, business-critical applications on their mainframes. These applications were complex and hard to manage, especially when the original developer was not available. Modern interfaces were

KEY STATISTICS

Return on investment (ROI)
163%

Net present value (NPV)
$1.62M

Benefits PV
$2.60M

Payback period
Less than one year

available, but the organizations kept to basic functions since deeper application integration would take more time.

By adopting ADDI into their mainframe environment, the interviewees' organizations were essentially reducing risk in their organization. The level of visibility into application and data that ADDI provided meant decision-makers and executives were more confident in taking initiatives based on the information gathered in the mainframe, because 1) they knew what information existed and 2) they knew how changing that information impacted the other applications in the environment.

KEY FINDINGS

Quantified benefits. Risk-adjusted present value (PV) quantified benefits include:

- **Accelerated transformation in the application development process by 10% to 20%.** Interviewees reported that ADDI provided developers with faster search capabilities and superior reports compared to their previous solutions. They stated that this improved the process of application development, allowing for more applications every year. Over three years, this is worth over $900,000 to the composite organization.

- **Increased developer productivity by 20% to 30% due to faster impact analysis.** ADDI enabled developers to analyze all programs on the mainframe at the same time, which saved time compared to the alternative of having to analyze one program at a time. Additionally, ADDI also served as a single pane of glass, eliminating the need for mainframe developers to repeatedly hop from one software to another to collect the data needed when doing an impact analysis. Interviewees calculated that this and other improvements increased productivity at

organizations and reduced developer time spent on impact analysis. This translates into over $595,000 in savings to the composite organization over three years.

- **Consolidated infrastructure for cost savings from retiring 10% of infrastructure each year.** ADDI enabled the interviewees' organizations to discontinue a range of tools and, ultimately, made infrastructure consolidation possible every year. This cost avoidance saves the composite organization nearly $1.1 million over three years.

Unquantified benefits. Benefits that are not quantified for this study include:

- **Reduced business risk related to enterprise application environments.** Interviewees explained that their organizations' developers were more accurate in their application development work because of ADDI, leading to better quality code, fewer mistakes, and less risk to the business overall. ADDI also provided customers with visibility that prevented compliance and regulatory penalties, as well as lost revenue.

- **Improved mainframe profitability from new business as well as retained customers.** Improved service led to gaining new customers and retaining current customers, as the customers were ensured that mainframe applications would be useful and flexible going forward.

- **Faster integration of new hires and non-mainframe developers into mainframe environment.** Interviewees described a shorter learning curve for developers to master parts of the system that they were unfamiliar with. Interviewees also explained that ADDI's modern tools made it easier to attract new hires.

- **Improved developer satisfaction.** Interviewees pointed out that their developers found ADDI's interface more user-friendly than their

> **"We want to modernize some parts of our application, so it is important to know what parts can be modernized. We use ADDI to get a structure on these applications to see where the areas to modernize are."**
> *Software engineer, IT software development for financial services*

organizations' previous solutions, and that developers were happy with the new tools and were not afraid to use them.

Costs. Risk-adjusted PV costs include:

- **ADDI licensing.** The interviewees noted their organizations incurred a one-time licensing cost, which was based on the number of users and servers, and annual subscription and support fees.

- **Implementation and management cost.** Internal developers implemented the ADDI solution at the interviewees' organizations. These internal developers were the first users of ADDI. Implementation typically took two months. Some ongoing management was also required; for the interviewed organizations, this was typically two developers dedicating 10% of their time.

The decision-maker interviews and financial analysis found that a composite organization experiences benefits of $2.60 million over three years versus costs of $989,000, adding up to a net present value (NPV) of $1.62 million and an ROI of 163%.

"Our developers are enjoying having more free time, which ADDI enables."
Mainframe lead, IT software development for financial services

ROI
163%

BENEFITS PV
$2.60M

NPV
$1.62M

PAYBACK
Less than one year

Benefits (Three-Year)

Faster application development process on mainframe environment — $921.8K

Increased developer productivity — $595.0K

Infrastructure consolidation due to ADDI features — $1.1M

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in ADDI.

The objective of the 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 that ADDI can have on an organization.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by IBM and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the study to determine the appropriateness of an investment in ADDI.

IBM reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

IBM provided the customer names for the interviews but did not participate in the interviews.

DUE DILIGENCE
Interviewed IBM stakeholders and Forrester analysts to gather data relative to ADDI.

DECISION-MAKER INTERVIEWS
Interviewed five decision-makers at organizations using ADDI to obtain data with respect to costs, benefits, and risks.

COMPOSITE ORGANIZATION
Designed a composite organization based on characteristics of the interviewees' organizations.

FINANCIAL MODEL FRAMEWORK
Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the decision-makers.

CASE STUDY
Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

Interviewed Decision-Makers

Interviewee	Industry	Region	Number of ADDI users
Lead software engineer	Financial services	Global	100 developers
Developer	Financial services	Global	100 developers
Software engineer	IT software development for financial services	Europe	150 developers
Methods and tools expert engineer	Insurance	Global	170 developers
Mainframe lead	IT software development for financial services	Europe	20 developers (currently in pilot)

KEY CHALLENGES

Prior to ADDI, interviewees noted their organizations struggled with application discovery and delivery and had no tool that comprehensively addressed the problem. Complex and antiquated applications were hard to manage, especially if the original developer was unavailable. These applications were also difficult to understand and extracting key information from them was fraught with uncertainty. To acquire the needed functionality, these organizations used a mix of ad hoc tools but still fell short.

The interviewees noted their organizations struggled with common challenges, including:

- **Application architecture that was too complex.** Interviewees stressed that their organizations' previous environments were complicated and difficult to work in. They described old applications with thousands of lines of code that were hard to understand and, at times, left developers completely lost. The lead software engineer in financial services shared: "Figuring out what programs were done on the mainframe, doing searches on the mainframe, even rudimentary searches of code, took a long time. You had to do multiple split screens just to try to figure out what is going on."

- **Future change was done with uncertainty and risk.** Interviewees explained that with thousands of programs and dozens of applications that were decades old, information gathering was hazy. This made subsequent decision-making fundamentally riskier. Given this, there was a need to convert programs and applications to something that works with modern tools to fully understand the information and make the right decisions. The software engineer for an IT software development for financial services organization stated: "You can never be sure that the information is current or is the correct information. You can never rely on the information found."

- **Inefficient test cycles.** Interviewees recounted inefficient test cycles stemming from analyzing only one program at a time. This slowed the delivery of updates and increased testing cost. The software engineer for IT software development for financial services said: "With our previous program, we can only analyze one program at a time. Now with ADDI, we have access to information of all the sources at once, so we can analyze all of them at once."

- **Difficulty in knowledge transfer.** Interviewees described the ramp up time for new developers to become productive in applications as too long. Only a few experts understood these applications and knowledge became lost over time, especially as experts retired and existing documentation was incomplete or missing altogether. The methods and tools expert engineer in insurance explained, "Mainframe applications environments at organizations are often not up to date, and thus developers are completely lost when they need to understand something in the programming, the cross-references, and so on."

> **"ADDI is a good tool to get a better understanding of the implementation of our programs, and so it helps younger developer get up to speed."**
> *Mainframe lead, IT software development for financial services*

SOLUTION REQUIREMENTS

The interviewees' organizations searched for a solution that could:

- **Enable more productive development and testing processes.** Interviewees sought a solution where it was easy to get up-to-date documentation and a quick understanding of their applications in order to see more productive development and testing. The methods and tools expert engineer in insurance explained, "We wanted a solution that could help developers find

all the information they need to understand their applications."

- **Reduce risk of development modifications, without breaking functionality.** Interviewees noted needing a solution that could give their organizations visibility into their mainframe environment, so that they could make changes to it without risking the functionality of other applications. The developer in financial services shared: "We have thousands on programs that are quite large, cumbersome, and old. So, another reason why we want to have a good tool is if we ever need to convert those with something else, we will have the tools to do that."

- **Provide the opportunity to integrate younger developers or nonmainframe developers into the mainframe environment.** Interviewees' organizations wanted to bring new developers into the mainframe environment and spur new development there. The lead software engineer in financial services stated: "We wanted to bring in younger people into the mainframe environment. Having new visual way of doing things would make their job much easier to search out what needs to be changed in code."

- **Allow familiarity with IBM as a vendor.** Some interviewees were already using other IBM products, which led them to prefer an IBM solution. Familiarity with IBM meant organizations had a variety of tools that could integrate with IBM solutions, as well as rely on the support and partnership IBM provided. The mainframe lead in IT software development for financial services stated, "We already had other IBM tools, so ADDI was a logical option."

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and a ROI analysis that illustrates the areas financially affected. The composite organization is representative of the five decision-makers that Forrester interviewed and is

used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. The composite organization is an enterprise global financial services company with annual revenue of $30 billion. The composite organization has thousands of programs, millions of lines of code in the mainframe environment, and 150 developers working on it.

Deployment characteristics. The composite organization uses ADDI to handle application development and management processes in the mainframe, as well as monthly impact analysis. Three hundred initiatives/change requests every year are deployed on the organization's IBM Z. Implementation of ADDI takes two months and involves 10 developers who dedicate 60% of their time. Once in place, the composite assigns two developers for day-to-day management, and they dedicate 10% of their time.

Key assumptions
- **Financial services**
- **Global operations**
- **$30 billion in annual revenue**
- **Thousands of programs and millions of lines of code**
- **150 developers**

Analysis Of Benefits

■ Quantified benefit data as applied to the composite

Total Benefits						
Ref.	**Benefit**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Atr	Faster application development processes in mainframe environment	$252,450	$378,675	$504,900	$1,136,025	$921,793
Btr	Increased developer productivity	$193,882	$242,352	$290,822	$727,056	$595,046
Ctr	Infrastructure consolidation due to ADDI features	$400,000	$440,000	$480,000	$1,320,000	$1,087,904
	Total benefits (risk-adjusted)	$846,332	$1,061,027	$1,275,722	$3,183,081	$2,604,743

FASTER APPLICATION DEVELOPMENT PROCESSES IN MAINFRAME ENVIRONMENT

Evidence and data. Interviewees said that several capabilities of ADDI improved their organizations' application development process. Developers have the documentation for the whole application in one single project repository. ADDI made getting needed information from sources, programs, and copybooks easy, and allowed developers to understand the big picture and exactly which parts of application will change if it was rewritten

Interviewees said that ADDI provided high-quality reports that showed the flow of a program through its lifecycle. They explained that this visual representation of program flow eliminated the costly and time-consuming step of speaking to other team members to grasp key information. Interviewees also noted that ADDI had a faster search than their prior environments.

- The software engineer in IT software development for financial services stated: "With ADDI, it is easy to get the correct documentation. Even with our largest application with about 5,000 to 6,000 source programs, you can get up-to-date documentation and a picture of your application within one day. Without ADDI, this would have been nearly impossible. With ADDI, we do have the documentation for the whole application in one single project repository."

- The mainframe lead in IT software development for financial services said: "As a developer, without ADDI, I would scan the source library of our productive sources, productive programs, and copybooks to get the information I needed. With ADDI, I do not have to spend a lot of time doing this."

> **"The search capabilities are much quicker. The reports are much nicer. [Developers] are able to do their jobs more efficiently."**
> *Lead software engineer, financial services*

- The lead software engineer in financial services shared: "When [developers] get results back, they can understand the flow of a particular program without needing to talk to another person. To have a visual representation of a program flow is something we did not have before in the mainframe."

Modeling and assumptions. For the composite organization, Forrester assumes that:

- The number of new initiatives or change requests each year is 300.

- The percentage of mainframe application development process acceleration due to ADDI is 10% in Year 1, 15% in Year 2, and 20% in Year 3.

- A developer spends an average of 150 hours per new initiative or change request.

- The average fully burdened hourly salary for developers is $100.

- A 66% productivity recapture represents the percentage of time from faster application development that is put back into productive tasks. Forrester assumes that developers may not necessarily put 100% of their reclaimed time into more productive work.

Risks. Benefits from faster application development may vary, and specific considerations include:

- The average annual number of new initiatives or change requests in the prior environment.

- How much time is saved, which may depend on how much understanding developers have of the system. If developer knowledge is already very high, the amount of time saved may be lower.

- The number of developers with access to ADDI.

- Geographic region and industry, which can impact the average burdened salaries of the developers.

- The organization may have a more or less efficient process for handling both planned and unplanned end-user downtime.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $922,000.

35%

$921,793
three-year
benefit PV
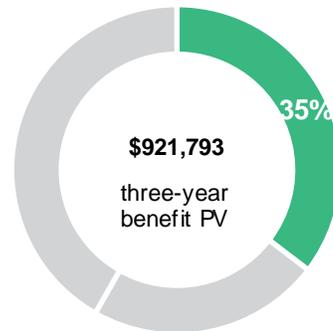
Faster Application Development Process On Mainframe Environment

Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Number of new initiatives/change requests per year	Composite	300	300	300
A2	Percentage of mainframe process acceleration due to ADDI	Interview	10%	15%	20%
A3	New initiatives/change requests realized sooner	A1*A2	30	45	60
A4	Average developer time spent per request (hours)	Assumption	150	150	150
A5	Average developer hourly salary (fully burdened)	Assumption	$100	$100	$100
A6	Productivity recapture	Assumption	66%	66%	66%
At	Faster application development process on mainframe environment	A3*A4*A6	$297,000	$445,500	$594,000
	Risk adjustment	↓15%			
Atr	Faster application development process on mainframe environment (risk-adjusted)		$252,450	$378,675	$504,900
	Three-year total: $1,136,025	**Three-year present value: $921,793**			

INCREASED DEVELOPER PRODUCTIVITY

Evidence and data. Interviewees described impact analysis as much faster. ADDI provided developers access to the information of all sources at once and eliminated the time-consuming need to go through one program at a time and bounce from software to software. Interviewees noted their organizations' productivity in relation to impact analysis improved by an average of 20% to 30%, though some analyses saw even stronger improvements in productivity. Since impact analysis takes up much of developers' time, this was a significant benefit to the interviewees' organizations.

- The lead software engineer in financial services explained: "When we build impact analysis projects, and we go out to the mainframe to grab the code, it is stored into a SQL [structured query language] server. So, it's not taking up MIPS [million instructions per second] or costing any money on the mainframe server. And it's fast. Depending on the project, it could actually save a

lot more money. In a COBOL [common business-oriented language] Upgrade Project, one designer was able to extract reports that maps program connectivity. This saved 50% to 60% of that particular analysis as compared to the green screen. That should translate to about a week saved."

- The software engineer in IT software development for financial services noted: "The previous program can only analyze one program at a time. Now with ADDI, we have access to the information of all the sources at once, so we can analyze all of them at once."

- The mainframe lead in IT software development for financial services shared, "Developers are 20% faster using ADDI just from not having to turn on, turn off, and hop from one software to another."

Modeling and assumptions. For the composite organization, Forrester assumes that:

- There are 150 developers and 30% of them are impact analysis designers.

- Annually there are 12 impact analysis projects per designer.

- An average impact analysis project takes a designer 32 hours.

- The percentage of mainframe process acceleration due to ADDI is 20% in Year 1, 25% in Year 2, and 30% in Year 3.

- The average fully burdened hourly salary for developers is $100.

- A 66% productivity recapture represents the percentage of time from faster application development that is put back into productive tasks. Forrester assumes that developers may not necessarily put 100% of their reclaimed time into more productive work.

Risks. Benefits from increased developer productivity may vary, and specific considerations include:

- The yearly number of impact analysis projects a developer performs.

- How long impact analysis took prior to ADDI.

- How much time is saved, which may depend on how much understanding developers have of the system. If developer knowledge is already very high, the amount of time saved may be lower.

- The number of developers with access to ADDI.

- The salaries of those professionals.

- The organization's process for handling both planned and unplanned end-user downtime.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $595,000.

$595,046

three-year
benefit PV

23%
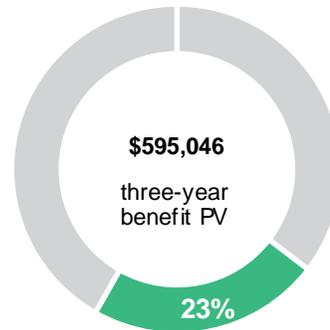
Increased Developer Productivity				
Ref.	Metric	Source	Year 1	Year 2	Year 3
---	---	---	---	---	---
B1	Number of developers	Composite	150	150	150
B2	Percentage of developers that are designers	Interview	30%	30%	30%
B3	Number of annual impact analysis projects per designer	Interview	12	12	12
B4	Average time per impact analysis per designer without ADDI (hours)	4 days*8 hours	32	32	32
B5	Total hours for impact analysis in previous environment	B1*B2*B3*B4	17,280	17,280	17,280
B6	Percentage of mainframe process acceleration due to ADDI	Interview	20%	25%	30%
B7	Productivity recapture	Assumption	66%	66%	66%
B8	Average developer hourly salary (fully burdened)	A5	$100	$100	$100
Bt	Increased developer productivity		$228,096	$285,120	$342,144
	Risk adjustment	↓15%			
Btr	Increased developer productivity (risk-adjusted)		$193,882	$242,352	$290,822
	Three-year total: $727,056	**Three-year present value: $595,046**			

INFRASTRUCTURE CONSOLIDATION DUE TO ADDI FEATURES

Evidence and data. Interviewees noted that their organizations discontinued a mix of infrastructure since adopting ADDI. This included both internal and external tools that ADDI's capabilities cover, making those older solutions unnecessary. Decommissioning this infrastructure ultimately improved the interviewees' organizations' bottom lines.

- The lead software engineer in financial services stated: "For searching, you don't need to run against the Mainframe and consume MIPS. You can just go against AD [Application Discovery], and it's way faster and easier. We also have an emulator on the mainframe that has a costly license. The new tools has a host emulator, so we can discontinue that."

Modeling and assumptions. For the composite organization, Forrester assumes that:

- In total, there are 1,000 MIPS.

- The grand total cost per MIPS is $5,000 in Year 1, $5,500 in Year 2, and $6,000 in Year 3.

- Each year, 10% of infrastructure is retired.

Risks. Benefits from infrastructure consolidation may vary, and specific considerations include:

- The number of and cost per MIPS.

- The amount and cost of the software and hardware that the organization currently has that ADDI enables to be retired.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV of $1,100,000.

42%

$1.1 million

three-year
benefit PV
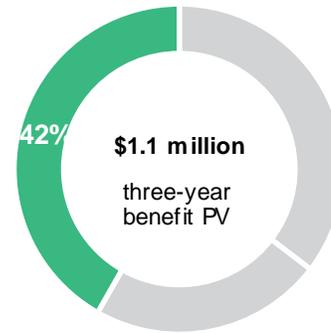
Infrastructure Consolidation Due To ADDI Features

Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Number of MIPS	Composite	1,000	1,000	1,000
C2	Total cost per MIPS, including hardware, software, and support	Assumption	$5,000	$5,500	$6,000
C3	Annual infrastructure spend for mainframe (without ADDI)	C1*C2	$5,000,000	$5,500,000	$6,000,000
C4	Percentage of infrastructure retired due to ADDI	Interview	10%	10%	10%
Ct	Infrastructure consolidation due to ADDI features	C3*C4	$500,000	$550,000	$600,000
	Risk adjustment	↓20%			
Ctr	Infrastructure consolidation due to ADDI features (risk-adjusted)		$400,000	$440,000	$480,000
	Three-year total: $1,320,000		**Three-year present value: $1,087,904**		

UNQUANTIFIED BENEFITS

Additional benefits that customers experienced but were not able to quantify include:

- **Reduced business risk related to enterprise development from less mistakes going into production in the mainframe environment.** Interviewees said ADDI led to better code and less mistakes, along with more confident developers. Interviewees described their business related to the mainframe as highly profitable, making its smooth functioning all the more important. The lead software engineer in financial services explained, "It's going to help out with less risk on better quality of code and less mistakes going into production that will help make our business less risky."

- **Improved business profitability related to performance in the mainframe environment.** Interviewees noted ADDI was an integral part of offering more to customers by modernizing mainframe services. This then drove profitability for the interviewees' organizations. The software engineer in IT software development for financial services said, "One of our goals is to move our mainframe services to a more modern platform to get higher velocity, and ADDI is an integral part to that."

- **Faster integration of new hires into the mainframe environment.** Interviewees described the improved ease of attracting new hires given the modern tools ADDI offers. Moreover, ADDI enabled new hires to get up to speed on a new system they were unfamiliar with. In the previous environments, getting used to certain aspects of the system could take months and that timeframe is now completely gone. The lead software engineer in financial services stated: "ADDI shortens the learning curve for people trying to learn different parts of a system they are unfamiliar with. This also makes

it a lot easier to attract new hires when we have these kinds of tools."

- **Improved mainframe developer happiness and job satisfaction.** Interviewees described employees who, overall, were happier and more satisfied since the implementation of ADDI. Specifically, developers found the interface user friendly. They were also happy with the additional free time ADDI allowed. The lead software engineer in financial services said: "Developers are happier with the new tools. They are not afraid to use the new tools."

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement ADDI and later realize additional uses and business opportunities, including:

- **New insights and information from traditional mainframe infrastructure to support continuous effort to be more agile.** Interviewees noted that using ADDI gave their organizations the opportunity to gather further insights and information from areas that were often overlooked. The developer in financial services noted, "If you want your company to embrace a digital enterprise format and want everybody to move to agile and scrum methodology, you cannot leave any part of the organization out."

- **A partnership with IBM that could lead to additional analytical functionalities to derive business value.** Interviewees anticipated using additional functionalities in the months and years ahead to derive additional business value. In particular, interviewees anticipated greater use of IBM Wazi Analyze and the source analyzer tool, as well as expanded use of ADDI for documentation. Moreover, while current use cases center on developers, there are plans for business analysts and system analysts to use ADDI as well. The lead software engineer in

financial services said: "We will probably dig into Wazi Analyze. Our plan is not just for developers to use ADDI, but also business analysts and system analysts, so they can look at the code and know what is changing and all."

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

"If I had ADDI four years ago, it would have been much easier to switch to a modern environment. It would have been much easier to learn what my applications do."
Software engineer, IT software development for financial services

Analysis Of Costs

Quantified cost data as applied to the composite

Total Costs							
Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Dtr	ADDI licensing	$517,500	$109,250	$109,250	$109,250	$845,250	$789,189
Etr	Implementation and management cost	$134,640	$26,400	$26,400	$26,400	$213,840	$200,293
	Total costs (risk-adjusted)	$652,140	$135,650	$135,650	$135,650	$1,059,090	$989,482

ADDI LICENSING

Evidence and data. The interviewees paid annual licensing costs to ADDI based on the number of servers and users (either floating or authorized). Organizations implementing ADDI do need a separate virtual machine for the server.

Interviewees' organizations tended to opt for the flexibility of floating users. Licensing costs were most expensive in the first year, as it involved the effort for the initial deployment of ADDI. Upfront costs included planning, implementation, and training.

Modeling and assumptions. For the composite organization, Forrester assumes that:

- The composite pays $450,000 for the initial deployment.

- After that, the subscription and support in Year 2 and Year 3 are $95,000 annually for the composite organization.

- Data center buildout is insignificant, as it is assumed that the composite organization already has data centers.

Risks. The cost of licensing may vary, and specific considerations include:

- Customer-specific discounting.

- The number of licensed servers.

- The number of users, either floating or authorized, with access to ADDI.

Results. To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year, risk-adjusted total PV of $789,000.

$789,189

three-year cost PV

76%
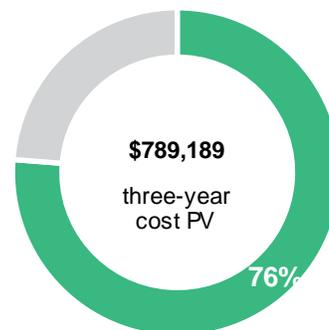
Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
ADDI Licensing						
D1	Initial deployment	Assumption	$450,000			
D2	Subscription and support	Assumption		$95,000	$95,000	$95,000
Dt	ADDI licensing	D1+D2	$450,000	$95,000	$95,000	$95,000
	Risk adjustment	↑15%				
Dtr	ADDI licensing (risk-adjusted)		$517,500	$109,250	$109,250	$109,250
	Three-year total: $845,250			**Three-year present value: $789,189**		

IMPLEMENTATION AND MANAGEMENT COST

Evidence and data. Interviewees noted their organizations saw straightforward implementations that took around two months. The process of implementing ADDI included installing software, setting up necessary databases, and creating projects. A core group of internal developers were involved in implementation, and this group served to pilot ADDI before its use was rolled out to the broader organization. Ongoing management costs were minimal.

IBM provided Deployment Project Office (DPO) services to the interviewees' organizations and ADDI customers, which offered 50 hours free of charge to help implement ADDI. After that, IBM had several professional service offerings that customers can choose from.

- The lead software engineer in financial services said: "Our whole implementation process of installing the software on a server, creating a database to store all the code and artifacts, and creating projects with AD. This all took one month. We had our first project built."

- The developer in financial services added: "We had six to eight people involved in implementation, dedicating about 60% of their time. We started with a pilot group of 10 developers looking at AD and doing impact analysis. Within six to eight months later, we grew that to 100 developers."

- The software engineer in IT software development for financial services suggested: "For implementation, we had to install the SQL server. Designing the server took one to 1.5 months. We used the 50-hour DPO [Deployment Project Office] program IBM offers to help implement ADDI. All potential customers should take advantage of this. After two months, we analyzed three departments. Within one year, we have analyzed 20 to 25 departments in our organization."

Modeling and assumptions. For the composite organization, Forrester assumes that:

- Ten developers are involved in implementation.

- They dedicate 60% of their time to implementation.

- Implementation takes two months.

- Ongoing management of ADDI requires two developers dedicating 10% of their time.

Risks. The cost of implementation and ongoing management may vary, and specific considerations include:

- The complexity of the mainframe environment in which ADDI is being implemented.

- The skill set available among developers.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $201,000.

$200,293

three-year
cost PV

24%
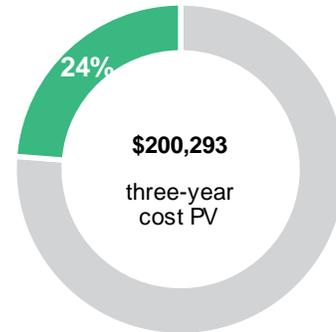
Implementation And Management Cost

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
E1	Developers involved in implementation	Composite	10			
E2	Percentage of time dedicated in implementation	Assumption	60%			
E3	Time for implementation (years)	Interview	0.17			
E4	Developers involved in ongoing management	Composite		2	2	2
E5	Percentage of time dedicated in ongoing management	Assumption		10%	10%	10%
E6	Average annual developer salary	Assumption	$120,000	$120,000	$120,000	$120,000
Et	Implementation and management cost		$122,400	$24,000	$24,000	$24,000
	Risk adjustment	↑10%				
Etr	Implementation and management cost (risk-adjusted)		$134,640	$26,400	$26,400	$26,400
	Three-year total: $213,840		**Three-year present value: $200,293**			

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)
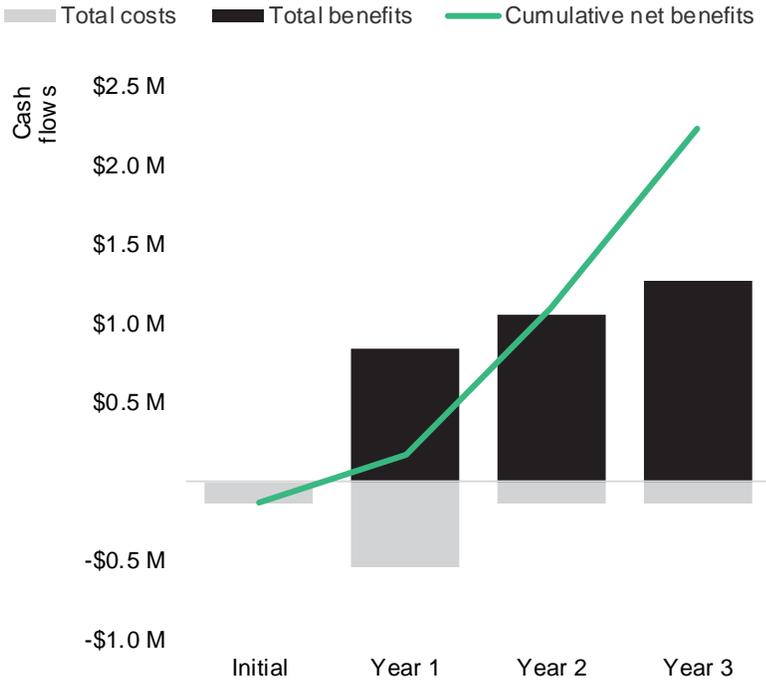
The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Analysis (Risk-Adjusted Estimates)	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	($652,140)	($135,650)	($135,650)	($135,650)	($1,059,090)	($989,482)
Total benefits	$0	$846,332	$1,061,027	$1,275,722	$3,183,081	$2,604,743
Net benefits	($652,140)	$710,682	$925,377	$1,140,072	$2,123,991	$1,615,261
ROI						163%
Payback period						Less than a year

Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

TOTAL ECONOMIC IMPACT APPROACH

Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

PRESENT VALUE (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

NET PRESENT VALUE (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made unless other projects have higher NPVs.

RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

PAYBACK PERIOD

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Appendix B: Endnotes

[1] Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders

FORRESTER®