

## DevOps & Software Development Tools

## The DevOps Market Continues To Gain Traction

Enterprise digital transformation is driving a total refresh in the tools, processes and people developing software applications

- More than a decade ago, Marc Andreessen somewhat famously wrote “software is eating the world,” putting forward the belief that software-defined companies are poised to dominate large swathes of the economy. Over the intervening years, an increasing number of enterprises are expanding their in-house software development teams, creating a greater demand for tools that provide more effective development, testing and launch processes. With examples like Amazon displacing traditional retailers or a proprietary application for player evaluation named “Carmine” helping to lead the Boston Red Sox to four titles in the past 20 years, the power of software cannot be understated.
- Software is not only changing business models that have been in place for centuries (or 86 years of baseball futility), but also it is enabling incumbent vendors across disparate industries to improve product offerings, drive deeper engagement with customers and optimize selling and marketing efforts. Most industries (financial services, retail, entertainment, healthcare) and large organizations now derive a great deal of their competitive differentiation from software.
- But as software has brought benefits, it has also brought increasing demands for business agility – and the software industry itself has been changed. The rapid pace of innovation has required software developers to scrap old methods (waterfall) in favor of DevOps and other continuous delivery methods, ushering in a new set of tools. The explosion of BYOD within the enterprise has changed software development from desktop-focused to mobile. With increased influence within the enterprise, practitioners are now driving and making purchase decisions on tooling. Widespread adoption of the cloud and SaaS delivery has brought automation, microservices and integrated security to the forefront.
- These trends, and others, have given rise to both a new class of emerging leaders and a wave of acquisition activity by incumbent vendors. In this report, we examine some of these trends, as well as the emerging companies at the forefront of innovation in the burgeoning application development ecosystem.



JOHN DEERE

*“Today's large John Deere tractors have more lines of code than early space shuttles.”*

**Samuel Allen, CEO**



*“I run a software company inside of FedEx.”*

**David Zanca, SVP of IT**

**“What we have witnessed over the past year is the dawn of a second wave of digital transformation sweeping every company and every industry” – Satya Nadella, Microsoft CEO**



**“The interface you put in front of that customer is the perception of your product and of your value as a company” – Jeff Lawson, Twilio Founder, CEO**

## Macro Trends Impacting DevOps & DevTools

### [1] Cloud & SaaS Delivery

- A fundamental change to the way software is built, sold, delivered and integrated
- Companies' cloud cost constraints and drive for efficiency have created a complex hybrid private and public cloud environment
- The cloud will increasingly be built on open source – with the notable exception of Microsoft Azure, the major cloud platform vendors are running open source stacks

### [2] Continuous Everything

- As much a cultural shift as a process and tooling change, iterative development methods necessitate continuous everything: development, quality, code integration, releases, performance management ... solutions targeted at waterfall development cannot keep up
- Achieving true CI/CD/DevOps requires continual resolution of bottlenecks in the SDLC

### [3] Services & Containers

- Breaking development projects into reusable components has yielded significant improvement in development efficiency but has brought an added layer of complexity
- Developers can modify, test and deploy smaller services faster than pushing modifications to an application monolith

### [4] Open Source

- 90% of IT leaders are using open source today, and they're using it for IT infrastructure modernization (64%), application development (54%), and digital transformation (53%)<sup>[a]</sup>
- The pace of feature expansion has been notably faster than commercial offerings – and enterprises have long cited the “technical superiority” of open source offerings<sup>[b]</sup>

### [5] End Users Have Purchasing Power

- As enterprises become more digital, IT practitioners are exerting growing influence on software and tooling decisions while needing to maintain a cost-effective solution
- Technical purchasers are hard to sell to, but can be reached via user communities, e.g., those attached to OSS projects

### [6] GenAI-Powered Software Development

- Generative AI has the potential to bring significant efficiency and acceleration to software development
- With established use cases in code autocompletion (GitHub co-pilot), Natural Language Processing (Hugging Face is the most-loved developer library in a recent developer survey), testing and documentation, Generative AI has already made its value apparent

Notes:

[a] Red Hat State of Enterprise Open Source, 2021

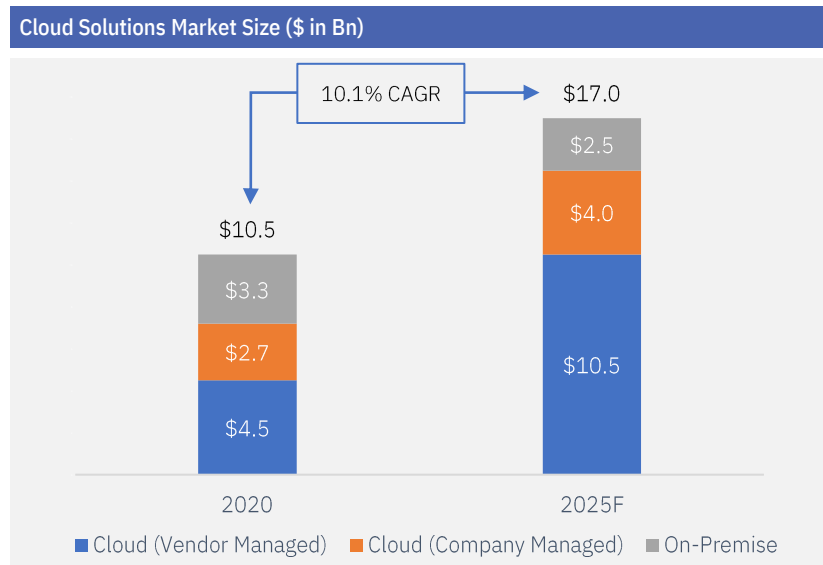
[b] PC World, Linux on the Rise for Business



# [1] Cloud & SaaS Delivery

## New delivery methods act as a major catalyst for changes in tooling and enable the continued shift to true DevOps methodology

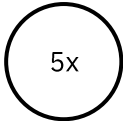


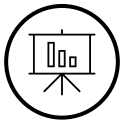
- The shift of workloads from on-premises, IT-managed resources to cloud infrastructure represents perhaps the most fundamental change to the way software is built, sold, delivered and integrated since the migration of models from mainframe to client/server
- The cloud brought a new set of challenges for application owners and developers (particularly around the deployment and monitoring of applications which reside in the cloud), but also enabled a wave of efficiencies, allowing for exponential increases in automation, collaboration, efficiency and quality
- As firms implement cloud-based applications, hybrid workload environments become increasingly complex and customer preference for the secure, scalable and seamless features within cloud deployment continues to drive growth



**Total SaaS Market Growth**  
**200+%**

Source: [Rightscale "State of Cloud" Report](#)

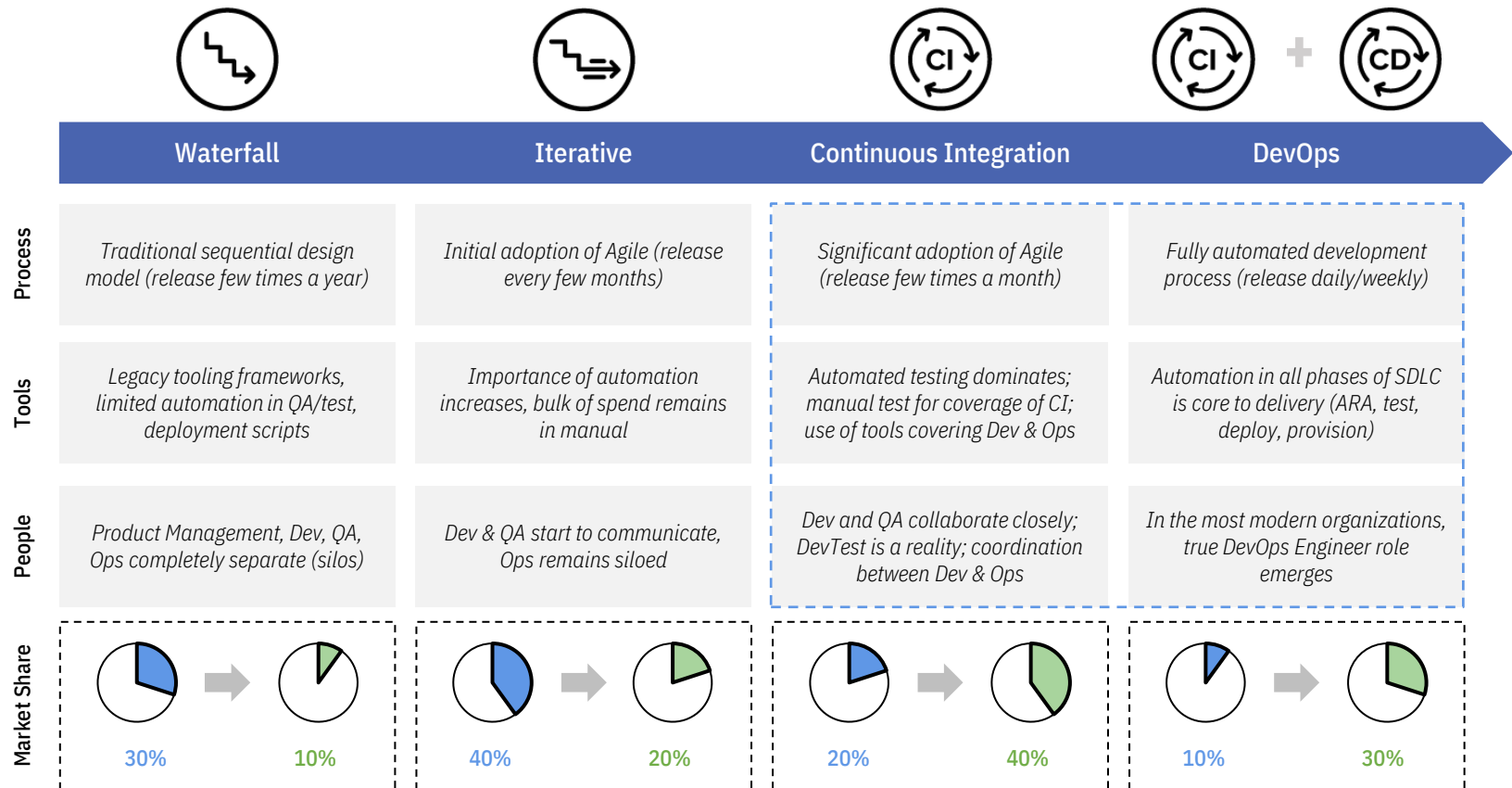
## Explosive Growth in Cloud Spend and Usage Drive a Need for Modern DevOps Tools

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  - Organizations are already running applications on a total of 4.9 cloud environments on average (currently using 3.4 total public and private clouds on average, while experimenting with 1.5 more)
  - 84% of enterprises have a multi-cloud strategy with significant enterprise spend growth
- 
  - 13% of enterprises spend more than \$12 million a year on public cloud, while 50% spend more than \$1.2 million annually; public cloud spend is growing 3x faster than private cloud
  - SMBs generally have fewer workloads overall and therefore smaller cloud bills, but 11% of SMBs still exceed \$1.2 million in annual spend
- 
  - Organizations overall today run 38% of workloads in public cloud and 41% in private cloud
  - Enterprises run 33% of workloads in public cloud, 46% in private
  - SMBs run 43% of workloads in public cloud, 35% in private
- 
  - Optimizing existing cloud use for cost savings continued to be the top IT initiative for the third year in a row (64% of respondents)
  - The challenge of managing cloud spend grows as use increases – 76% of “advanced cloud users” cited spend optimization as their top IT priority

## [2] Continuous Everything

### Development Modernization Requires a Cultural, Process and Tooling Evolution

- Agile development and DevOps has brought about a fundamental change to software development at every step from code, build, test and release
- With release cycles shortening from months to days (and in some cases, hourly) manual processes break down, and the need for efficiency and constant feedback becomes critical – as a result, disciplines like test, release and code integration must become automated
- The rapid pace of iteration means quality can no longer be “assurance” after the fact; instead, code quality is checked at every step of the development process, and testing, once the purview of a dedicated QA department, is now conducted by stakeholders at all stages from developer-led (or test-driven development) to synthetic testing done in production – notably, enterprises have found bugs caught later in the SDLC (particularly in prod) become exponentially more expensive



## [3] Services & Container / API Based Architecture

### New take on an old concept that embraces DevOps and automation

- Application development teams have extended functionality by adopting microservices over monolithic architectures. Instead of building new applications from scratch, developers can break an application into smaller, reusable microservices – bringing significant improvement in development efficiency, speed and reliability
- The reuse of discrete application services first arose under the banner of Service Oriented Architecture (SOA) in the mid-2000s and despite a wave of consolidation by IBM, Oracle, Software AG and TIBCO, the service-oriented approach largely failed as many of the required building blocks were not yet in place, notably connectivity and compute infrastructure
- In a microservices architecture, managing the connectivity between services and eliminating performance bottlenecks is critical, and has given rise to an important class of infrastructure software covering API development (SmartBear, Postman) and API management (CA/Layer 7, Intel/Mashery, MuleSoft) and containers (CoreOS, Docker, Kubernetes, Rancher Labs)

Global Application Containers: Ecosystem Revenue (\$ in Bn)



Source: 451 Research

APIs and Containers Enable Speed and Agility

“Growth in the containers market and ecosystem is being driven by increasing enterprise interest to help application developers move faster, manage infrastructure more efficiently and meet digital transformation goals.”

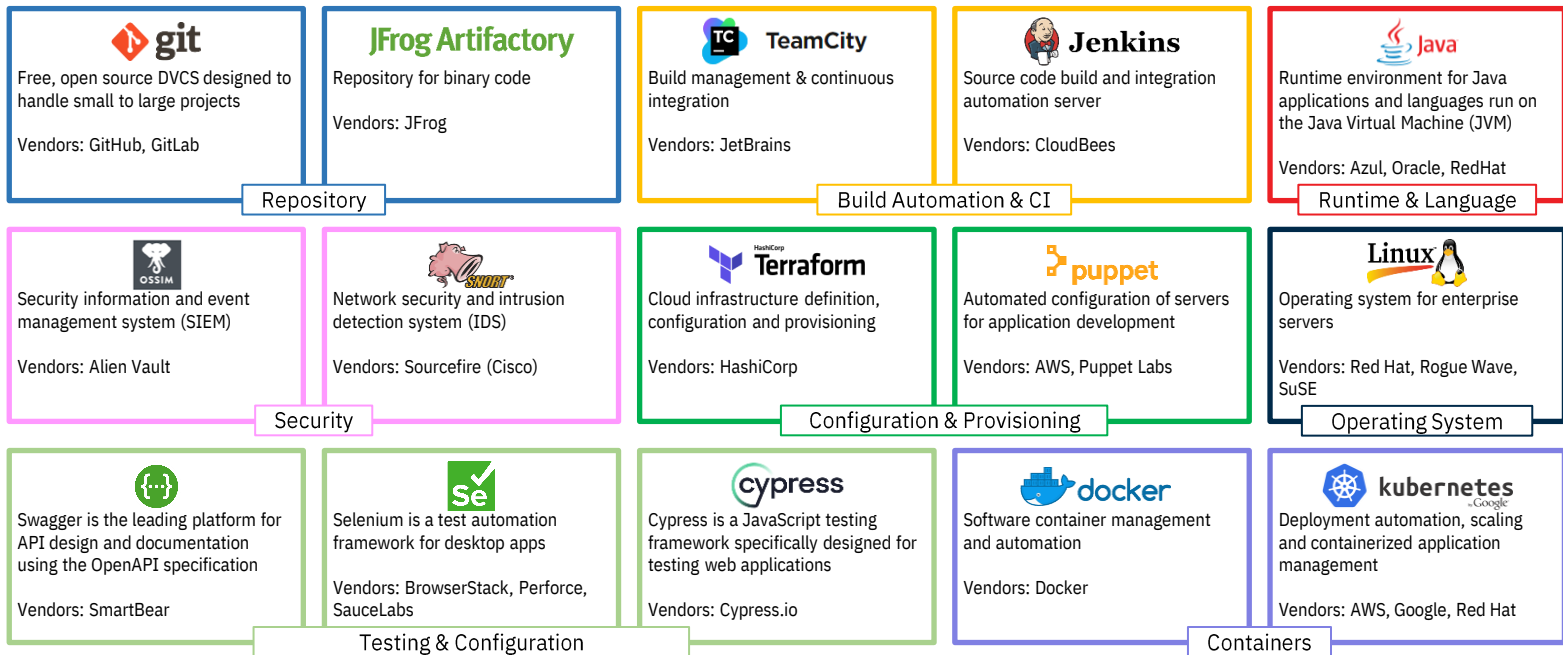


“Delivering software and services through APIs has fundamentally changed the economics of software, by opening new delivery channels with new pricing options”



## [4] Open Source

- **80%** of IT leaders expect to increase their use of open source software for emerging technologies, using it for **IT infrastructure modernization (62%), digital transformation (54%) and application development (52%)** <sup>[a]</sup>
  - **89%** of IT leaders believe open source is as secure or more secure than proprietary software <sup>[a]</sup>
  - **95%** of enterprises use OS within mission-critical segments of their IT portfolios <sup>[b]</sup>
- Open Source has in many ways become the preferred licensing and delivery model across infrastructure software, and particularly in the modern developer tooling market
  - As developers increasingly make/influence tooling decisions, they have gravitated to OS solutions which allow users to download, experiment and modify apps and components with little friction, then as needed purchase a commercial solution for enterprise production deployments
  - The pace of feature/function expansion in many projects has been notably faster than commercial offerings – and enterprises have long cited the technical superiority of open-source offerings
  - The “open core” model, wrapping proprietary functionality around an open-source core, has driven a plurality of the recent Dev & Ops success stories: Elastic, GitHub, GitLab, HashiCorp, JFrog, MongoDB, Mulesoft, Pivotal, Sauce Labs, SmartBear...



Notes:

[a] Red Hat State of Enterprise Open Source, 2022

[b] Gartner, 2019



## [5] Developers Have Purchasing Power

### A paradigm shift away from the traditional Center of Excellence-led purchasing model

- As enterprises become more digital, IT practitioners are exerting growing influence on software and tooling decisions, shifting the buying center from top-down, center of excellence buying to a land-and-expand, high velocity Go-to-Market targeting practitioners and developers
- Initial entry point is typically a single offering cheap enough to be purchased by a development team member via credit card, often at the time of need (the “land”); from there, word-of-mouth and additional product needs help drive additional upsells throughout the organization (the “expand”)
- Companies such as Atlassian employ a “freemium” pricing model <sup>[a]</sup>, adhering to a GTM philosophy where the product is first meant to target single developers for free – once the customer base of developers is established, focusing on increasing the free to paid conversion rate is Atlassian’s strategy to begin targeting teams and entire strategic organizations, creating widespread usage of the product across numerous user personas

Firms employing a product-led growth selling motion aimed at developers rather than the C-suite often showcase greater sales efficiency and/or lower sales & marketing spend. Exemplifiers of this methodology include companies such as Atlassian, Datadog and GitLab.



- Early in the application development market, the landscape was heavily standardized on full-suite tools with legacy frameworks such as IBM Rational and HP Mercury and the resulting limited optionality resulted in a center of excellence buying model with practitioners exerting little influence over the overall purchasing decision
- The market has since evolved dramatically with practitioners and developers playing a central role in most all development-focused purchasing decisions; as such, modern DevOps and DevTools companies of scale all have established PLG sales motions, leveraging freemium pricing models to better engage developer and more effectively expand spend
- The cost efficiencies realized from low-touch PLG motions empowers companies to invest more in product innovation, the results of which help drive additional adoption



- Companies such as Atlassian and Datadog demonstrate stabilized S&M spend (20% and 29% respectively <sup>[b]</sup>) by leveraging PLG sales motions; both companies also show a clear line of sight toward near-term profitability
- GitLab’s S&M spend as a % of revenue has declined consistently over the past 2 years, from 72% in Q3 FY22 to 47% in Q3 FY24 <sup>[c]</sup>; by targeting developers and teams with PLG selling motions, tangible improvements in sales efficiency leaves room for more R&D investment
- In Q3 FY24, MongoDB saw a 30% increase Y/Y in subscription revenue, anchored by a 45% spend in S&M as a % of revenue to support accelerated growth

Shea & Company  
 [a] Source: [Atlassian](#)  
 [b] Three months ended as of September 30, 2023  
 [c] Source: [GitLab Q3 FY24 Investor Presentation](#)  
 Other data from publicly available sources

# [6] GenAI-Powered Software Development

Generative AI tools can analyze and learn from large datasets as well as generate new content, predictions and responses

## GenAI Powering the Next Generation of Software

### GenAI: A Paradigm Shift in Software Development






- Generative AI models have evolved into systems that now understand natural language at near-human levels, generating and synthesizing sophisticated outputs in a context-specific manner
- When considering application layer use cases, Generative AI can effectively simplify the entire development cycle from code generation, code completion, bug detection, documentation and testing
- Foundation models allow developers to focus on design and feature building rather than correcting errors in the code, helping developers save time, upskill their abilities and improve code quality

### Investment Outlook and Trends in GenAI for DevOps

- In the near term, the application layer represents the bulk of opportunities for investors; companies focused on delivering tangible, measurable value to their customers throughout different stages of the SDLC can displace large incumbents
- GenAI platforms are poised to rewrite DevOps best practices, primarily in the software building, testing and delivery phases; leveraging GenAI to build low-code solutions, produce unit / functional tests and write release notes in an agile environment are all engineering tasks that can be automated
- While GenAI-powered tools are following a healthy trajectory in terms of capital funding, the market is still in its infancy

## GenAI Supporting Developers

### Current Use Cases

-  Code suggestions and autocompletion
-  Translate code from one language to another
-  Accelerate debugging
-  Automatically generate unit tests
-  Write documentation such as user stories and success criteria

### Future Use Cases

-  Automate security checks and vulnerability scans
-  Simplify code with less complex alternatives
-  Write code that goes beyond templates or stub code
-  Explore alternative solutions to coding challenges
-  Provide guidance on code functionality for implementation

## Limitations to GenAI



### Hallucinations

Generative AI lacks common sense and contextual understanding – it cannot fully understand the nuances of human language



### Knowledge

Generative AI is limited by the knowledge that is available in its training data – in an enterprise context, that can mean a dataset of “1”



### Creativity

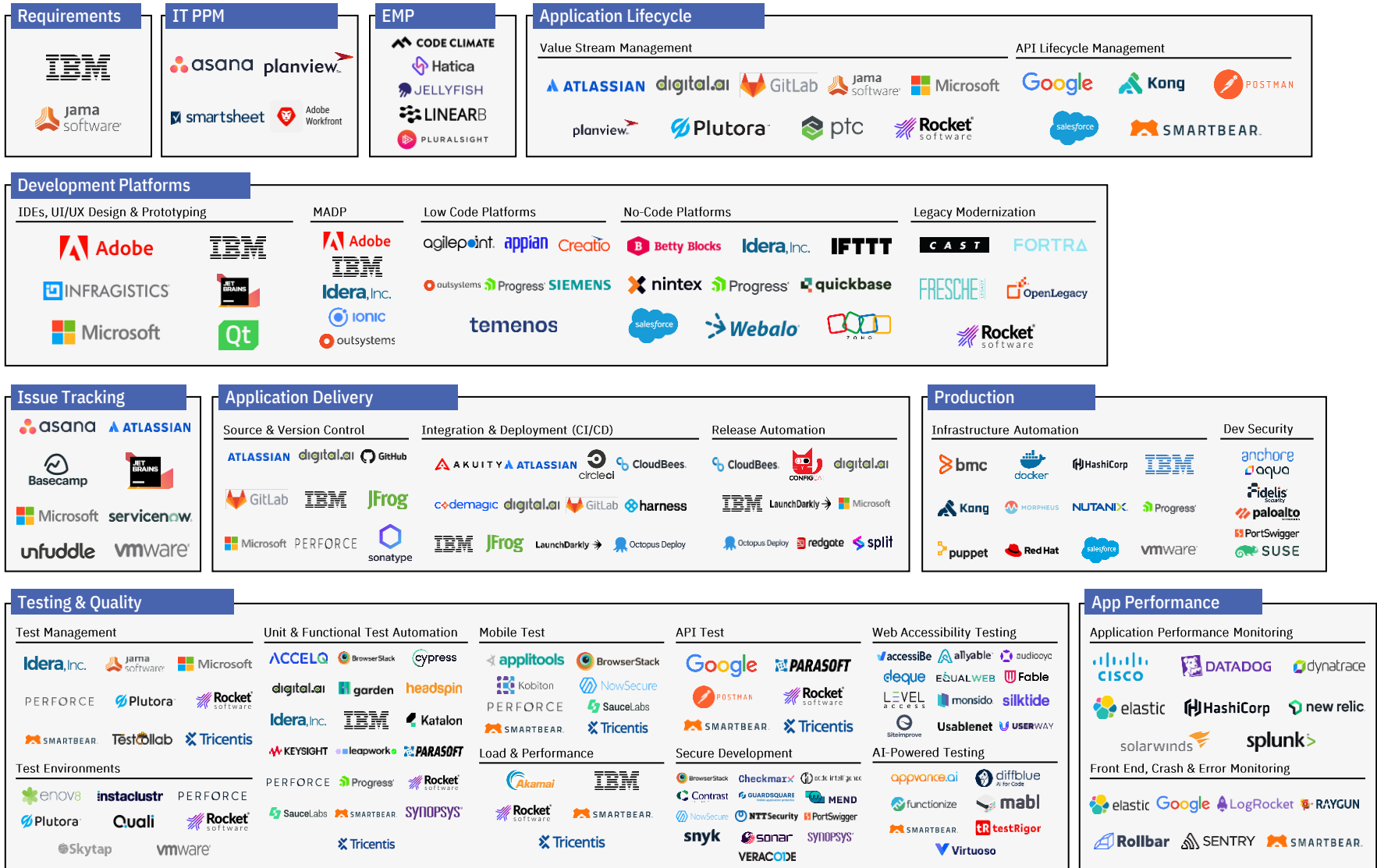
Although generative AI can create new content, it lacks true creativity and originality



### Ethics

Ethical concerns associated with the use of Generative AI (bias, discrimination and the potential impact on human labor)

# Market Landscape: Notable Leaders



# Market Landscape: Taxonomy by Segment

Requirements	IT PPM	EMP	Application Lifecycle										
<ul style="list-style-type: none"> <li>Atlassian</li> <li>IBM</li> <li>Inflectra</li> <li>Jama</li> <li>Microsoft</li> <li>PTC</li> <li>Rocket</li> </ul>	<ul style="list-style-type: none"> <li>Adobe</li> <li>Asana</li> <li>Citrix</li> <li>KeyedIn</li> <li>Microsoft</li> <li>One2Team</li> <li>Planisware</li> <li>Planview</li> <li>Salesforce</li> <li>SmartSheet</li> <li>Upland</li> <li>Zoho</li> </ul>	<ul style="list-style-type: none"> <li>CloudBees</li> <li>Code Climate</li> <li>Hatica</li> <li>Jama</li> <li>Jellyfish</li> <li>LinearB</li> <li>Planview</li> <li>Pluralsight</li> </ul>	<table border="1"> <tr> <th>Value Stream Management</th> <th>API Lifecycle Management</th> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Apptio</li> <li>Aqua</li> <li>Atlassian</li> <li>Decision Lens</li> <li>Digital.ai</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Digité</li> <li>GitKraken</li> <li>GitLab</li> <li>Inflectra</li> <li>Jama</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>LiquidPlanner</li> <li>Microsoft</li> <li>One2Team</li> <li>Parasoft</li> <li>Perforce</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Planisware</li> <li>Planview</li> <li>Plutora</li> <li>PTC</li> <li>Rocket</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Sopheon</li> <li>Tasktop</li> <li>ZenHub</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Axway</li> <li>Dell</li> <li>DreamFactory</li> <li>Google</li> <li>Kong</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Microsoft</li> <li>Perforce</li> <li>Postman</li> <li>Red Hat</li> <li>Salesforce</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>SmartBear</li> <li>Software AG</li> <li>Tyk</li> <li>WSO2</li> </ul> </td> </tr> </table>	Value Stream Management	API Lifecycle Management	<ul style="list-style-type: none"> <li>Apptio</li> <li>Aqua</li> <li>Atlassian</li> <li>Decision Lens</li> <li>Digital.ai</li> </ul>	<ul style="list-style-type: none"> <li>Digité</li> <li>GitKraken</li> <li>GitLab</li> <li>Inflectra</li> <li>Jama</li> </ul>	<ul style="list-style-type: none"> <li>LiquidPlanner</li> <li>Microsoft</li> <li>One2Team</li> <li>Parasoft</li> <li>Perforce</li> </ul>	<ul style="list-style-type: none"> <li>Planisware</li> <li>Planview</li> <li>Plutora</li> <li>PTC</li> <li>Rocket</li> </ul>	<ul style="list-style-type: none"> <li>Sopheon</li> <li>Tasktop</li> <li>ZenHub</li> </ul>	<ul style="list-style-type: none"> <li>Axway</li> <li>Dell</li> <li>DreamFactory</li> <li>Google</li> <li>Kong</li> </ul>	<ul style="list-style-type: none"> <li>Microsoft</li> <li>Perforce</li> <li>Postman</li> <li>Red Hat</li> <li>Salesforce</li> </ul>	<ul style="list-style-type: none"> <li>SmartBear</li> <li>Software AG</li> <li>Tyk</li> <li>WSO2</li> </ul>
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Development Platforms									
IDEs, UI/UX Design & Prototyping	MADP	Low Code Platforms	No-Code Platforms	Legacy Modernization					
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Issue Tracking	Application Delivery	Production															
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<ul style="list-style-type: none"> <li>Apwidge</li> <li>CloudShare</li> <li>Enov8</li> <li>Humanitec</li> </ul>	<ul style="list-style-type: none"> <li>Infstaclustr</li> <li>Infovista</li> <li>Perforce</li> <li>Plutora</li> <li>Quali</li> <li>Rocket</li> <li>Skytap</li> <li>VMWare</li> </ul>	<ul style="list-style-type: none"> <li>Akamai</li> <li>IBM</li> <li>Inflectra</li> <li>Keysight</li> <li>Mobileum</li> </ul>	<ul style="list-style-type: none"> <li>Rocket</li> <li>RadView</li> <li>SmartBear</li> <li>Tricentis</li> </ul>	<ul style="list-style-type: none"> <li>Appvance.ai</li> <li>Diffblue</li> <li>Functionize</li> <li>Mabl</li> </ul>																																									
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	<ul style="list-style-type: none"> <li>Appwidge</li> <li>Elastic</li> <li>FullStory</li> <li>Google</li> <li>Instabug</li> </ul>	<ul style="list-style-type: none"> <li>Akamai</li> <li>IBM</li> <li>Inflectra</li> <li>Keysight</li> <li>Mobileum</li> </ul>	<ul style="list-style-type: none"> <li>Parasoft</li> <li>Portswigger</li> <li>Snyk</li> <li>SonarSource</li> <li>Synopsys</li> <li>Veracode</li> </ul>	<ul style="list-style-type: none"> <li>BMC</li> <li>Cisco</li> <li>Datadog</li> <li>Dynatrace</li> <li>Elastic</li> <li>HashiCorp</li> <li>IBM</li> </ul>																																									
	<ul style="list-style-type: none"> <li>Front End, Crash &amp; Error Monitoring</li> </ul>			<ul style="list-style-type: none"> <li>Microsoft</li> <li>Netreo</li> <li>New Relic</li> <li>Oracle</li> <li>Quest</li> <li>Riverbed</li> <li>Rocket</li> </ul>																																									
	<ul style="list-style-type: none"> <li>Appentive</li> <li>Elastic</li> <li>FullStory</li> <li>Google</li> <li>Instabug</li> </ul>	<ul style="list-style-type: none"> <li>LogicMonitor</li> <li>LogRocket</li> <li>Microsoft</li> <li>Progress</li> <li>Raygun</li> </ul>	<ul style="list-style-type: none"> <li>Rollbar</li> <li>SauceLabs</li> <li>Sentry</li> <li>SmartBear</li> </ul>																																										
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# Market Landscape: Modern Leaders in the DevOps Toolchain

**DevSecOps**

**Testing & Quality**

Open Source: Appium, Cucumber, JMeter, Selenium, Cypress

**Containers**

Open Source: Mesos, Docker, Kubernetes

**Continuous Integration & Continuous Delivery (CI/CD)**

Open Source: Ant, Bamboo, CruiseControl, Gradle, Jenkins, Jenkins X, Liquibase, Maven, Spinnaker



**Configuration Management & Provisioning**

Open Source: Ansible, Salt, Terraform

**Source Repository & Version Control**

Open Source: Artifactory, Git, Kallithea, Mercurial, Subversion

**Application Performance Management**

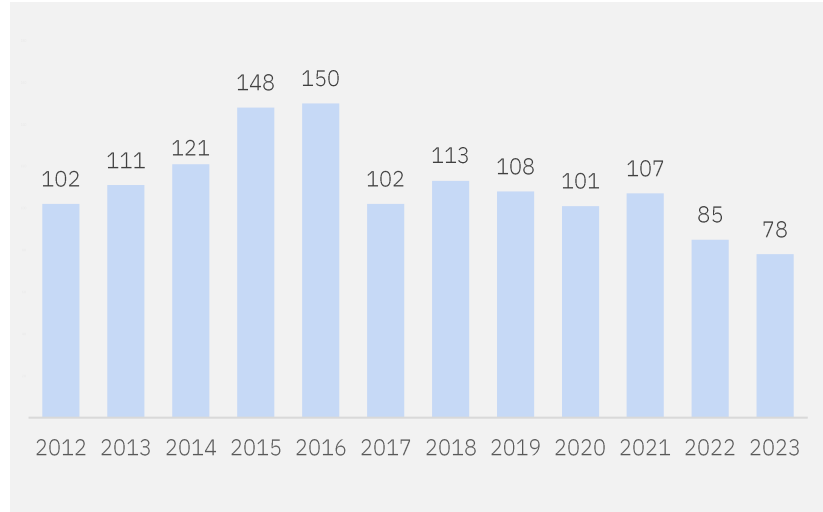
Open Source: Elastic, Logstash, Kibana (ELK), Nagios

**Developer Collaboration**



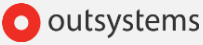








# DevOps is an Incredibly Vibrant Market, With Considerable Investor Attention

## M&A Activity 2012 – 2023






















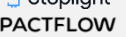
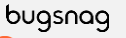


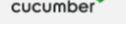




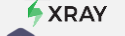

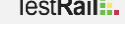

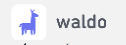

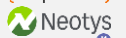


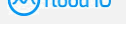

## Notable Recent Capital Raises

- |  |   |
|--|---|
| <br><b>Adept</b>          | ■ Raised \$47m at a \$215m valuation (2/2024)   |
| <br><b>snyk</b>           | ■ Raised \$350m (2/2023)                        |
| <br><b>outsystems</b>     | ■ Raised \$197m at a \$7.4B valuation (12/2022) |
| <br><b>VERACODE</b>       | ■ Raised \$228m at a \$4.3B valuation (10/2022) |
| <br><b>POSTMAN</b>        | ■ Raised \$2.5B (4/2022)                        |
| <br><b>Octopus Deploy</b> | ■ Raised \$225m at a \$5.6B valuation (8/2021)  |
| <br><b>JFrog</b>          | ■ Raised \$173m (4/2021)                        |
| <br><b>DATADOG</b>        | ■ \$509m IPO at a \$4.0B valuation (9/2020)     |
| <br><b>GitLab</b>         | ■ \$648m IPO at a \$7.8B valuation (9/2019)     |
|  | ■ Raised \$268m at a \$2.8B valuation (9/2019)  |

## Strategic Activity Has Slowed ...

	
12 dev acquisitions since 2019	6 acquisitions since 2018
    	    

## ... But PE-Backed Platforms Have Filled the Gap




				
11 relevant acquisitions since 2020	11 relevant acquisitions since 2019	13 relevant acquisitions since 2019	21 relevant acquisitions since 2016	7 relevant acquisitions since 2017
     	      	      	      	      

# Consolidation Has Fueled Demand for Strategic Assets

Many of today’s DevOps market leaders were built through carefully built through a combination of transformative and tuck-in acquisitions, adding functionality and expanding TAM to outpace competitors

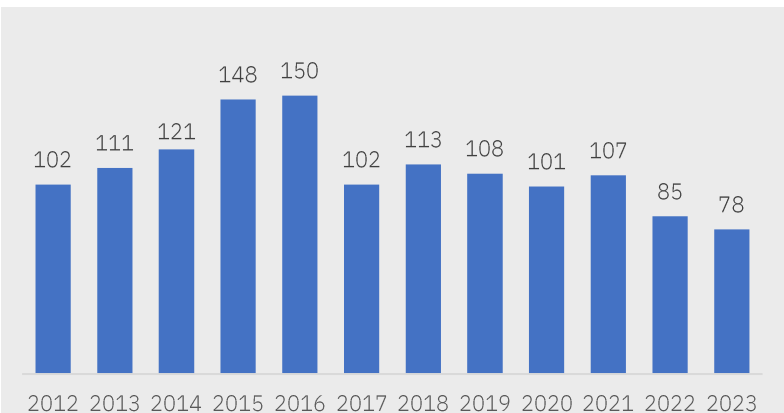
Platform	Total Add-ons	Notable Acquisitions							
 	27	 2023	 2022	 2021	 2021	 2021	 2020	 2020	
 	10	 2020	 2020	 2020	 2020	 2019			
 	28	 2022	 2022	 2021	 2021	 2021	 2018	 2016	
 	13	 2024	 2022	 2021	 2021	 2020	 2020	 2019	 2018
	31	 2023	 2021	 2020	 2019	 2017	 2017	 2016	
 	14	 2024	 2023	 2022	 2021	 2020	 2019	 2019	 2018

## Differing Strategies Employed Among Market Consolidators:

<p><b>Product-Driven:</b> </p> <ul style="list-style-type: none"> <li>SmartBear’s acquisition strategy has primarily been focused on product adjacencies to build on its existing product set, including observability (Bugsnag, Aspecto) and API (Stoplight, SwaggerHub)</li> </ul>	<p><b>End Market Oriented:</b> </p> <ul style="list-style-type: none"> <li>Perforce has sought to make acquisitions in its end market focus areas of digital asset-intensive industries, such as media and gaming, with a focus on providing “DevOps at Enterprise Scale”</li> </ul>	<p><b>Broad Consolidation:</b> </p> <ul style="list-style-type: none"> <li>Idera has executed a broad consolidation strategy, rolling up a variety of assets across test development and management, cloud migration and version control, content processing and API creation</li> </ul>
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## Recent M&A Activity

M&A Volume By Year



Source: Shea & Company and 451 Research

- As business agility demands pressure software developers to deliver custom, high-quality products in shorter periods of time, IT organizations will continue to migrate to Agile and DevOps methodologies, which will drive a wave of consolidation
- Consolidation within application testing and release automation is already well underway, which we expect to continue as the market evolves and DevOps becomes even more mainstream; additionally, we expect the larger IT management software vendors to make strategic acquisitions in other Agile/DevOps driven market segments, including ALM, APM and automated testing, among others
- Driven by cloud and mobile initiatives, API management should also see continued consolidation

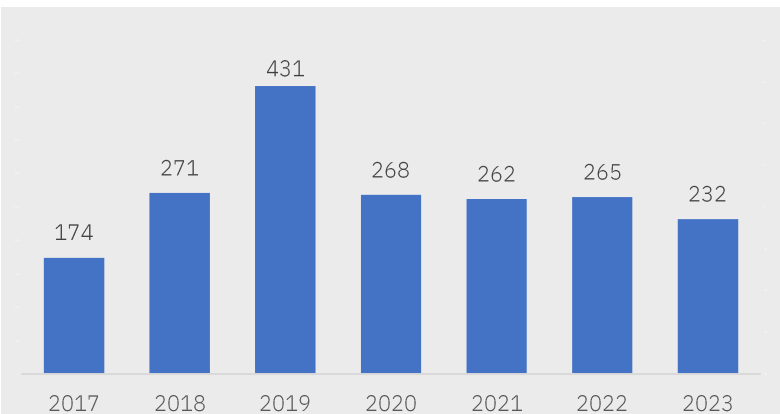
[a] Source: The 451 Group  
Other data from publicly available sources

Select Transactions (\$ million)

Date	Acquirer	Target	EV
03/18/24	FP FRANCISCO PARTNERS	Jama software	\$1,200m
12/18/23	IBM	StreamSets/webMethods	\$2,297m
11/28/23	Rocket software	opentext™	\$2,275m <sup>[a]</sup>
07/31/23	FP FRANCISCO PARTNERS	new relic	\$6,095m <sup>[a]</sup>
07/19/23	DELL Technologies	moogsoft	n/a
06/26/23	databricks	mosaic <sup>ML</sup>	\$1,300m <sup>[a]</sup>
04/17/23	DATADOG	Codiga	n/a
02/09/23	FP FRANCISCO PARTNERS	sumo logic	\$1,700m
02/08/23	IBM	StepZen	n/a
08/25/22	opentext™	MICRO FOCUS	\$5,880m <sup>[a]</sup>
05/18/22	planview.	TASKTOP	n/a
04/09/22	PERFORCE	puppet	\$300m <sup>[a]</sup>
05/05/21	THOMABRAVO	applitools	n/a
02/11/21	DATADOG	sqreen	\$195m <sup>[a]</sup>
02/03/21	Rocket	UNIFACE	n/a
08/08/20	SUSE	RANCHER	\$600m <sup>[a]</sup>

## Recent Capital Raise Activity

Capital Raise Volume By Year



Source: Shea & Company and 451 Research

- DevOps funding continues to see healthy traction as the proliferation of point solution tools and use cases drives growth across all subsectors
- Businesses are pressured to meet accelerated product release cycles while optimizing cost efficiencies amid budget constraints for developer and QA engineering teams; as a result, new dev-focused subsectors have emerged from what was previously Ops domain (Release Automation/Orchestration, CI/CD, Application Performance Monitoring, etc.) or QA/CoE domain (Testing & Test Management)
- Automation is another key driver of funding spanning subsegments – as the talent shortage continues to grow and companies become ever more software-reliant and software-centric, opportunities to automate across the DevOps lifecycle enable customers to see increased productivity and gain a competitive edge

[a] Source: Pitchbook  
Other data from publicly available sources

Select Capital Raises (\$ million)

Date	Acquirer	Target	Amount Raised
02/13/24	Amplify	ANTITHESIS	\$47m
11/01/23	FusionAuth	update PARTNERS	\$65m
02/23/23	a_capital	Adept	\$350m
12/01/22	evo/ution EQUITY PARTNERS	snyk	\$197m
10/01/22	KKR	outsystems	\$228m
08/23/22	intel capital	anyscale	\$99m
08/17/22	Akkadian	BigPanda	\$120m <sup>[a]</sup>
07/25/22	APOLLO	APTOS	\$200m <sup>[a]</sup>
06/22/22	SILVERSMITH CAPITAL PARTNERS	Gearset	\$55m
06/20/22	BCV	platform.sh	\$140m <sup>[a]</sup>
04/26/22	NORWEST	harness	\$230m
12/13/21	X <sup>n</sup>	Airtable	\$735m
12/09/21	Goldman Sachs	cloudbees	\$245m
12/08/21	ICONIQ	miro	\$400m
09/09/21	TIGERGLOBAL	snyk	\$530m
04/20/21	INSIGHT PARTNERS	Octopus Deploy	\$173m

# Major Application Development Subsectors & Market Trends



## CI/CD

- The ARA market spans platforms and tools for release control, script automation and vertical collaboration
- The targeted nature of ARA tools drives the demand for CI/CD capabilities like feature flagging and release analytics
- The crave for high quality and velocity apps will only grow



## Software Application Testing

- Relying solely on manual testing is no longer sustainable
- In the context of iterative development methods, consumers now expect higher quality applications and accelerated releases
- Having a variety of testing tools is vital for streamlining the app development process



## Low and No-Code Solutions

- Rapid application development has forced companies to off-load both general and sophisticated tasks to non-technical users
- No-code and low-code tools offer non-technical user personas access and visibility into application management



## DevSecOps

- Continuous development creates unforeseen functional and run-time vulnerabilities
- Companies are adopting a DevSecOps philosophy to embed security in each stage of the development lifecycle, enabling remediation prior to deployment



## Observability & APM

- Real-time application performance defines the user experience and brand reliability
- APM tools ensure system-uptime with end-to-end observability, application KPI monitoring and incident resolution, resulting in optimal user experiences



## Accessibility

- Optimization of web features beyond general compliance is necessary to reach all demographics of end-users
- Prioritizing software to meet accessibility criteria requires a nuanced toolkit for testing and end-user experience validation



## Engineering Intelligence

- Manual collection of KPIs is costly, inaccurate and inefficient in an agile development context
- Engineering visibility allows executives to effectively communicate delivery expectations while avoiding pushed deliverable deadlines, frustrated business stakeholders and overburdened engineering teams



# CI/CD is Streamlining and Accelerating the Software Development Lifecycle

## Market Trends & Key Drivers

### Evolution of Application Release Automation & CI/CD

- Software is the engine that powers all industries; however, creating and delivering software is not enough – developers must be able to keep up in a CI/CD context for application development
- The ARA market has emerged as a formal set of solutions to address the specific requirements of enterprises for deploying agile-based or web-based apps; ARA is being driven by companies' need to: i) push releases quickly and easily across all phases of the app lifecycle; ii) replace manual scripting with automation; and iii) establish and encourage collaboration between developers and admins
- Feature flagging and feature management have emerged as ways for vendors to further break down releases and gradually roll out features to end users

### Market Maturity Driving M&A and New Entrants

- While new vendors continue to emerge, the market has reached a level of maturity where large vendors are recognizing the strategic nature and value of ARA tools; heritage vendors are beginning to add functionality in ARA either organically or through acquisitions

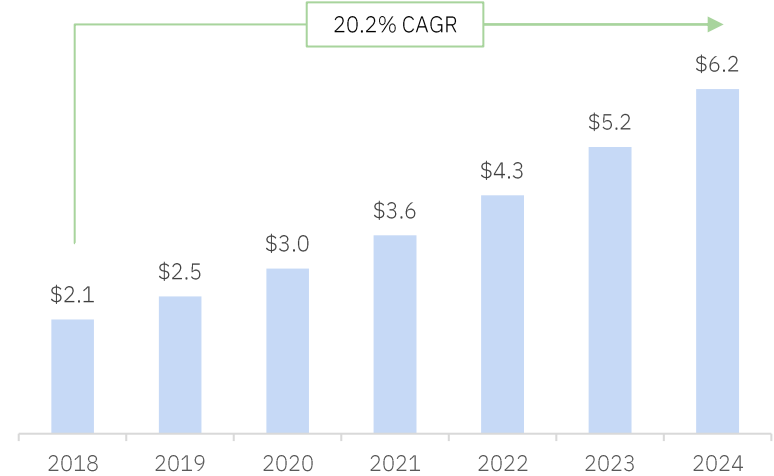
### Continued Solution Integration and Feature Development

- While many ARA tools are currently used in a targeted fashion to address the app release process with a distinct set of actions, integration into an organization's larger DevOps, IT support and other CI/CD tools such as feature flagging and release analytics has begun in this space and is expected to be the next evolution of the sector
- ARA developers continue to broaden their view of continuous delivery and desire to move faster with greater control and security across all environments, including databases, middleware and app servers

### Release Automation as an Anchor for DevOps

- Gartner estimates that 50% of global enterprises have implemented at least one ARA solution today, up from 10% just a few years ago. Demand for higher-quality and higher-velocity app releases continues to drive the adoption of ARA, as it becomes increasingly integral to enterprises' growth and execution strategy

## ARA Market Growth (\$ billions)



## Notable Market Activity

Date	Acquirer	Target	EV
02/26/24	Octopus Deploy	codefresh	n/a
05/22/23	salesforce ventures	COPADO	\$26m Capital Raise
05/05/22	iqt <small>IN-Q-TEL</small>	weaveworks	n/a Capital Raise
04/26/22	NORWEST	harness	\$230m Capital Raise
12/09/21	Goldman Sachs	CloudBees	\$245m Capital Raise
10/15/21	NEXT PLAY  LEAD EDGE	LaunchDarkly →	n/a Capital Raise
08/17/21	OWL ROCK CAPITAL PARTNERS	split	\$50m Capital Raise
04/20/21	INSIGHT PARTNERS	Octopus Deploy	\$173m Capital Raise

# Testing is *the* Critical Bottleneck in DevOps Adoption

## Market Trends & Key Drivers

### Large and Growing Market

- Test Management & Automation market growth driven by increased application complexity and strategic factors like corporate image and security; according to Gartner at \$2.7 billion, growing at 9% CAGR

### Overreliance on Manual Testers

- Manual testing is still the largest portion of time spent on a typical development project
  - 80% of testing is manual (Gartner) and \$22 billion is spent annually on QA/test services at the global SI firms (IDC/Nelson Hall)
  - A recent Forrester survey found 46% of respondents “always” tested manually
- The shift to iterative development methods has strained software development processes heavily dependent on manual testing – much of this work is redundant, with repeat testing and other inefficiencies – and simply cannot keep up in a CI/CD context
- Manual testing remains important for the long tail of test cases, but automation brings faster cycle times and an increase in coverage; as a result the “mix” will shift

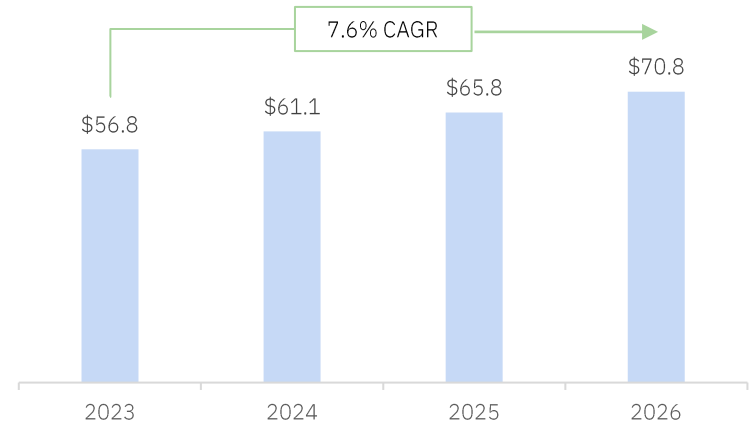
### Continuous Delivery Requires Continuous Quality

- Testing is no longer a point-in-time event managed by dedicated QA resources; quality is now embedded in all stages of development
- Automation allows scaling of testing to fit disparate needs, but without the lead time and cost of increase testing infrastructure

### Challenges to Adoption

- Adoption of test management and automation will frequently serve as the first step toward the adoption of more advanced automation tools
- However, the central challenge of most test solutions is the expertise required to create and maintain scripts – “loss of expertise” (i.e. a champion leaves the company) is the leading cause of churn at many enterprise test automation vendors

## Testing & Quality Engineering Market Growth (\$ billions)



## Notable Market Activity

Date	Acquirer	Target	EV
02/13/24	<b>Amplify</b>	ANTITHESIS	\$47m Capital Raise
07/07/23	<b>Tricentis</b>	waldo	n/a
06/07/22	<b>TPG</b>	SAUCE LABS	n/a Capital Raise
02/09/22	<b>Tricentis</b>	<b>testim</b>	\$150m
11/01/21	PERFORCE	BlazeMeter	n/a
10/19/21	elephant	Katalon	\$27m Capital Raise
06/15/21	<b>BOND</b>	BrowserStack	\$4,000m
05/05/21	THOMABRAVO	applitools	n/a
10/21/20	VISTA EQUITY PARTNERS	SMARTBEAR	n/a

# Low and No-Code: Solutions for Resource-Constrained Enterprises

## Market Trends & Key Drivers

### Bifurcating the Market

- No-Code “high productivity” platforms supporting workflow-based apps via a captive, proprietary runtime environment which IT generally does not control where development is led by “citizen developers” (notable vendors: Appian, Force.com, QuickBase)
- Low-Code “high control” vendors supporting development of sophisticated enterprise applications within the control environment of IT, and generally targeting developer audiences looking to augment or accelerate customer development efforts (notable vendors: Mendix, OutSystems, Uniface)

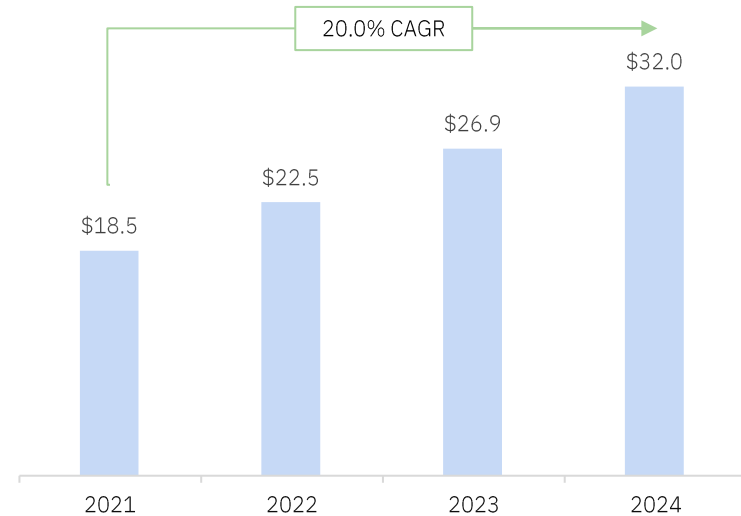
### Demand for Agility and Responsiveness Push the Market

- Digital transformation, along with overly-strapped IT organizations, has provided the underpinnings for technologies which help developers quickly create applications, and platforms which allow business analysts and other non-developers to develop apps on their own
- Rapid application development (RAD) as a discipline has existed for quite some time, but as a market-ready technology had not taken off until recently, under the new banner of “low-code”
- Non-technical users are building and managing applications that run from general purpose to sophisticated and scalable, using “drag-and-drop” composition for quick UI creation across mobile, web and cloud
- Gartner predicts that by 2024, 75% of large enterprises will be using at least four low-code development tools for IT application development as well as citizen development initiatives

### Fragmented Market, Ripe for Investment and Consolidation

- The low-code, no-code market is highly fragmented, with a broad group of vendors generally segmented along productivity / control lines
- This market has seen considerable uptake from enterprise customers, and supported several notable liquidity events, including public exits (Appian), strategic M&A (Kony) and LBOs (QuickBase) as well as notable funding events at OutSystems

## Low-Code and No-Code Market Growth (\$ billions)



## Notable Market Activity

Date	Acquirer	Target	EV
12/12/23	nintex	skuid	n/a
02/06/23	Jitterbit	ZUDY	n/a
10/01/22	KKR	outsystems	\$230m Capital Raise
12/13/21	X <sup>N</sup>	Airtable	\$735m Capital Raise
08/01/21	Smartfin	Betty Blocks	\$33m Capital Raise
02/22/21	VOLITION CAPITAL  Horizon Capital	Creatio	\$68m Capital Raise
08/28/19	TEMENOS	kony	\$580m

# DevSecOps: As the Perimeter Evaporates, Applications Must be Secure by Design

## Market Trends & Key Drivers

### Integration of IT Security into DevOps

- As applications, data and users are increasingly outside the confines of the datacenter’s firewall, the “perimeter” first spread to the individual and device level (e.g., IAM/IdM) then further fragmented into security maintained at the application and service level – the threat surface is continually growing
- As with functional/performance bugs, catching security vulnerabilities earlier in the development lifecycle is order of magnitude less expensive than production
- According to a 2018 Forrester survey, direct web application attacks and exploitation of software vulnerabilities were the top two methods of external attacks
- DevSecOps, a development approach which embeds security practices and tools into each phase of the DevOps pipeline (mirroring the “shift left” in testing), embeds automated security controls, checks, tests, etc., embedding built-in security that is adaptable while still maintaining robust functionality

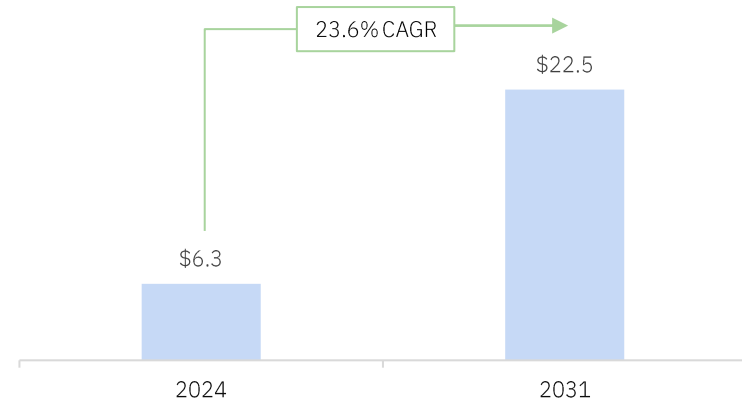
### Secure by Design

- Rising cyber security concerns necessitate DevOps tools that provide built-in security rather than being implemented from the outside
- In addition to creating more secure applications, security built into the DevOps toolchain enables problems to be detected earlier and remedied prior to deployment
- DevSecOps implementation helps address the sometimes-competing priorities of development, IT operations and security teams

### The Challenge is Adoption

- Security remains very much a top-down selling and adoption path; CSOs have tremendous budget and ability to dictate tooling decisions – this is directly at odds with the adoption path in DevOps
- Budget for DevSecOps pulls from either Test or Security wallets – both of which are deep at most enterprises – the challenge remains how to insert DevSecOps into the practitioner-led adoption motion common within Dev and Test teams

## DevSecOps Market Growth (\$ billions)



## Notable Market Activity

Date	Acquirer	Target	EV
05/06/24	FP FRANCSISCO PARTNERS	SYNOPSYS®	\$1,625m <sup>[b]</sup>
01/16/24	snyk	Helios	n/a
09/05/23	Battery	GRAMMATECH	n/a
06/07/23	snyk	enso	n/a
06/19/22	SUMMIT PARTNERS	HALBORN	\$90m <i>Capital Raise</i>
04/27/22	SYNOPSYS®	NTT Security	\$330m
04/29/22	TA ASSOCIATES	VERACODE	\$2,500m <i>Capital Raise</i>
04/12/22	ADVENT CAPITAL MANAGEMENT, LLC	sonar	\$412m <i>Capital Raise</i>
03/10/21	ION ASSET MANAGEMENT	aqua	\$1,000m

# Observability & Application Performance Monitoring

## Market Trends & Key Drivers

### Mission Criticality of APM in a Highly Digitized Economy

- Application performance monitoring (APM) is the practice of tracking key software application performance metrics using monitoring software and telemetry data
- Practitioners use APM to ensure system availability, optimize service performance & response times and improve user experiences for mobile apps, websites and business applications
- According to Forrester, 62% of sales are digitally influenced; when an app crashes or faces slow load times, this can cause businesses to suffer brand damage and lose significant amounts of revenue
- Digital teams often find it difficult to find the root cause of an application performance problem, from coding errors to database slowdowns to hosting or network performance issues – highlighting the necessity of APM tools for developer and QA teams

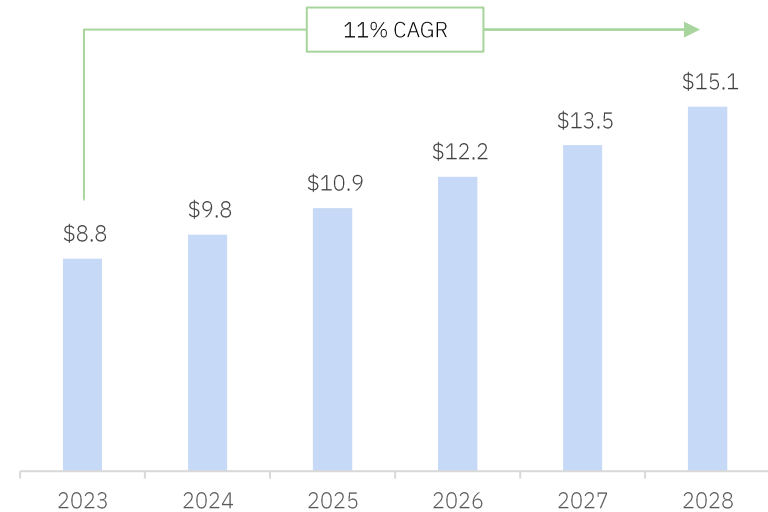
### Core Features of APM Tools – Developer Oriented Observability

- Modern APM platforms and tools cover a broad range of use cases, including: i) end-to-end observability of an application’s complete behavior and effects on user experience, ii) mobile and desktop application monitoring to track user experience across platforms, iii) root cause and impact analysis for streamlined incident resolution, iv) business KPIs and user journey analysis to optimize user experiences and v) endpoint monitoring to understand how mobile applications impact endpoint devices
- Developers that sit earlier in the application development lifecycle are becoming increasingly involved with tools that offer increased visibility and intelligence into the performance of their applications; detecting and pinpointing performance issues before real users are impacted enables developers to these address issues during production

### APM Market Outlook

- The APM market is largely dominated by vendors of scale that are competing for the same wallet share
- There are a handful of smaller APM players given the adjacencies between APM and broader software testing tools for applications, signifying further opportunities for consolidation in the market

## APM Market Growth (\$ billions)



## Notable Market Activity

Date	Acquirer	Target	EV
07/31/23	FP FRANCISCO PARTNERS LP	new relic.	\$6,095m <sup>[a]</sup>
05/20/23	VECTOR CAPITAL	riverbed	n/a
02/09/23	FP FRANCISCO PARTNERS LP	sumo logic	\$1,700m
06/21/22	Battery	LogRocket	\$25m Capital Raise
11/18/20	IBM	INSTANA	n/a
03/12/18	NUTANIX	NETSIL	\$70m <sup>[a]</sup>
01/23/17	CISCO	APPDYNAMICS	\$3,700m <sup>[a]</sup>



# Accessibility has Become a Core Development Objective

## Market Trends & Key Drivers

### Creating Software that is Accessible to All Demographics

- Millions of people access the web with some form of visual, auditory and/or mobility impairment – the ultimate success of a web application relies on how well it can be navigated by those with such impairments
- Web accessibility testing software deals with testing the features of a web application in a way that ensures all users, irrespective of most disabilities, will be able to interact with the software to its full potential
- Accessibility is also a necessity – the federal government has put legislation in place to ensure digital content is as accessible as possible through the Web Content Accessibility Guidelines (WCAG), Section 508 and Americans With Disabilities Act (ADA)
- To stay relevant in the industry and differentiate from competition, simply meeting compliance standards is no longer sufficient; robust web accessibility testing ensures that applications exceed standard compliance protocols and put in place user-friendly accessibility options that enhance the overall UX

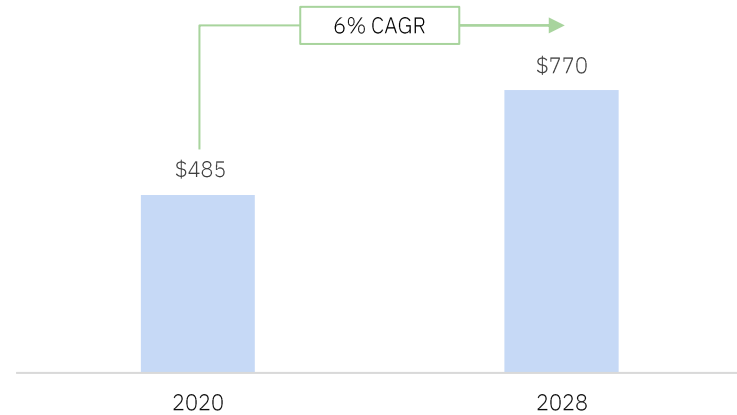
### Catering Automated Accessibility for End Users

- Automated accessibility tools /overlays designed to fix original coding errors and add more accessible features have caused page reformats and changes that make it difficult for blind users to navigate websites
- Ensuring that accessibility widgets and overlays do not interfere with screen readers and other software already utilized by disabled or blind website users is critical – businesses must focus on the full scope of the end user experience beyond just meeting compliance standards

### Market Impacts of Accessibility

- In 2021, more than 400 companies with an accessibility widget or overlay on their website were sued over accessibility rights<sup>[a]</sup>, demonstrating a lack of depth from automated widgets and the need for full-service, nuanced offerings to meet the diverse set of user needs
- Web accessibility is not just yesterday’s compliance challenge but is now materially revenue-impacting; with 75% of all US citizens with disabilities using the web on a daily basis, companies ill-prepared to meet today’s standards will continue to lose customers and may incur material reputation and financial repercussions

## Web Accessibility Market Growth (\$ millions)



## Notable Market Activity

Date	Acquirer	Target	EV
10/05/22	crownpeak	IUMINO	n/a
06/23/22	INSIGHT PARTNERS	evinced	\$38m Capital Raise
06/14/22	LEVEL access	ESSENTIAL ACCESSIBILITY	n/a
05/17/22	Five Elms Capital	Fable	\$11m Capital Raise
04/05/22	GLILOT CAPITAL PARTNERS	accessibe	\$33m Capital Raise
03/10/22	audioeye*	BUREAU OF INTERNET ACCESSIBILITY	\$8m
08/26/21	ArchiveSocial <small>POWERED BY CIVICPLUS</small>	monsidO.	n/a
01/01/21	KKR	LEVEL access	n/a Capital Raise
09/03/20	NORDIC CAPITAL	Siteimprove	\$592m

[a] Source: The 451 Group

[b] Source: [NYT's For Blind Internet Users, the Fix Can Be Worse Than the Flaws Article](#)

Other data from publicly available sources

# Engineering Intelligence Driving Accountability & Productivity

## Market Trends & Key Drivers

### Communicating the Impact of Engineering

- Application development has grown beyond execution to become a driving force behind success with customers – and as the mission-critical nature of software has become more evident, enterprises have been forced to rethink the way they track and manage the SDLC at the enterprise level
- The need to bring visibility and predictability to the R&D line has become a key priority for both engineering leadership and the C Level, and allowing enterprises to optimize investment, track and manage costs and more closely align R&D with overall business strategy
- Manual collection of these metrics is costly and borderline impossible, and developers have little tolerance for any overhead or latency in the SDLC – vendors must leverage the “data exhaust” from existing software tooling and integrate across the SDLC (version control, work management, test management, etc.)

### Defining Different Perspectives of Key Engineering Metrics

- Org-level metrics define a clear, high-level view of a company’s capability to deliver against its R&D roadmap and meet strategic goals; by rolling up every developer and process into a singular view, C Level executives can track progress, allocation of effort and investment goals
- Team-level metrics create a more focused view into the day-to-day operations of an engineering team; this perspective helps development managers easily diagnose bottlenecks and allocate scarce developer resources effectively

### Market Outlook

- It has become clear that companies are in need of more effective ways to hold internal teams accountable – a recent Planview (owner of Tasktop) survey found 40% of R&D effort is wasted within technology organizations<sup>[c]</sup>
- The same survey found 70% of firms are planning to implement engineering intelligence in their DevOps pipeline, leading to both improved flow and faster delivery of customer value
- Funding and investment activity has to this point been less aggressive than other sectors of application development – given the strategic importance of Engineering Intelligence we expect an inflection

## Key Disciplines of Engineering Intelligence



**Strategy & Business Alignment** – Clearly articulated view on what engineering teams are working on and the material value added by prioritizing that work



**Engineering & Product Operations** – Holistic awareness of technical operations to easily diagnose a strategic alignment or team health problem



**Delivery Management** – The ability to monitor and communicate deliverable status and proactively facilitate the on-time delivery of projects



**Team Health** – Positive work culture to collaborate effectively, manage conflict respectfully and develop career opportunities efficiently



**Financial Acumen** – Transparency, understanding and maturity of financial operations to make efficient and effective decisions to drive material returns

## Notable Market Activity

Date	Acquirer	Target	EV
07/19/23	DELL Technologies	moogsoft	n/a
06/06/23	BROADCOM	ConnectALL	n/a
05/18/22	planview	TASKTOP	n/a
04/01/22	TRIBE CAPITAL	LINEARB	\$50m Capital Raise
02/01/22	INSIGHT PARTNERS	JELLYFISH	\$71m Capital Raise
09/01/21	PSG	CODE CLIMATE	\$50m Capital Raise
04/06/21	VISTA	PLURALSIGHT	\$3,500m
02/23/21	Battery	LINEARB	\$15m Capital Raise

## Selected Notable Companies

### **ATLASSIAN**

Theme: Collaboration & Issue Tracking

Atlassian provides software development and collaboration tools to help teams conceive, plan and launch products. The company's Jira product is a project management and issue tracking tool that helps product teams manage issues, bugs, tasks and deadlines. Confluence is a content collaboration tool enabling teams to create, share and discuss documents and media. In 2015, the company raised \$462 million via IPO.

Employees: 20,145

Key Executives: Mike Cannon-Brookes (Co-CEO), Scott Farquhar (Co-CEO), Anu Bharadwaj (COO)

Investors: Publicly traded

### **circleci**

Theme: CI/CD

CircleCi is a developer of a continuous delivery automation platform designed to offer automated testing and continuous integration tools. The company's continuous integration platform helps developers to rapidly code, for web and mobile applications by automating the build, test and deployment process quickly, safely and at scale, enabling businesses to detect and fix bugs before they even reach customers.

Employees: 498

Key Executives: Jim Rose (CEO), Chitra Balasubramanian (CFO), Rob Zuber (CTO)

Investors: Base10 Partners, Eleven Prime, NP Capital, IVP, Sapphire Ventures, Heavybit, NextEquity Partners, Industry Ventures

### **CloudBees.**

Theme: Application Release Orchestration

Cloudbees offers a cloud-based platform designed to provide software delivery of businesses. The company's platform provides a wide range of continuous delivery services, enabling businesses to meet the unique security, scalability and manageability needs. The end-to-end automated software delivery system allows companies to balance governance and developer freedom.

Employees: 512

Key Executives: Anuj Kapur (CEO), Audrey Zhao (CFO)

Investors: Bridgepoint Capital, Eight Roads, Goldman Sachs, Morgan Stanley, HSBC Ventures, Ascent Ventures, Delta-v Capital, Unusual Ventures, Verizon Ventures, Lightspeed Venture Partners

### **DATADOG**

Theme: Application Performance Monitoring

Datadog Inc is a monitoring and analytics platform for developers, IT operations teams and business users. Its platform integrates and automates infrastructure monitoring, application performance monitoring and log management. The solutions offered by the company include Financial Services, Manufacturing & Logistics, Media & Entertainment and Gaming among others.

Employees: 5,849

Key Executives: Olivier Pomel (CEO), Alexis Lê-Quôc (CTO & Co-Founder), David Obstler (CFO)

Investors: Publicly traded

Sources: publicly available sources

## Selected Notable Companies Continued



Theme: End-to-End DevOps Platform

CollabNet VersionOne's upstream Agile planning and enterprise version control functionality is united with XebiaLabs' downstream release orchestration and deployment automation capabilities and Arxan's application security suite to create an end-to-end platform for enterprise DevOps, now known as Digital.ai. The company provides end-to-end intelligent value stream management, software delivery and application security in a unified platform.

Employees: 887

Key Executives: Derek Holt (CEO), Prasenjit Dasgupta (CFO)

Investors: TPG Capital



Theme: Release Automation

Gearset is a release management software created to make deployment and collaboration ingeniously simple. The platform features comparing metadata differences, extend to any git-based version control repository, roll-backs all unwanted changes, annotates deployments, provides detailed reports as well as analyzes and identifies issues with coding, enabling clients to make tracking, testing and deploying changes faster and easier.

Employees: 216

Key Executives: Kevin Boyle (CEO & Co-Founder), Matt Dickens (CPO & Co-Founder)

Investors: Silversmith Capital Partners



Theme: Source Code Repository & Management

GitHub provides a social network platform for programmers to share code with friends, co-workers and complete strangers, making it easier for individuals and teams to write better code, faster. The solution is built for software development projects using the Git revision control system and offers paid plans for private repositories and free accounts for open source projects.

Employees: 5,217

Key Executives: Thomas Dohmke (CEO), Elizabeth Pemmerl (CRO), Kyle Daigle (COO)

Investors: Acquired by Microsoft for \$7.5Bn



Theme: Project Management & Collaboration

GitKraken is a developer of project management software designed to help software developers and teams become more productive. The company's cross-platform suite offers a visual way of managing both public and private source code repositories along with issue tracking and planning solutions that suggest project progress via a series of sprints, enabling clients to complete their projects on time and efficiently manage bug fixing.

Employees: 98

Key Executives: Matt Johnston (CEO), Dick Davidson (CFO)

Investors: Resurgens Technology Partners, Dovesco

Sources: publicly available sources

## Selected Notable Companies Continued



Theme: Infrastructure Automation

Developer of cloud infrastructure automation platform designed to solve development, operations and security challenges in infrastructure. The company's platform provides consistent workflows to provision, secure, connect and run infrastructure for any application so as to help enterprises address the realities of multi-cloud, enabling organizations to adopt workflows to provision, secure, connect and run any infrastructure for any application. In 2021, the company raised \$1.2 billion via IPO.

Employees: 2,378

Key Executives: Mitchell Hashimoto (Co-Founder), Armon Dadgar (CTO & Co-Founder), Dave McJannet (CEO)

Investors: Publicly traded



Theme: Requirements and Test Management

Jama provides a product delivery platform that helps companies bring complex products to market. The company's collaborative solution integrates requirements and test management. Distributed teams can join real-time discussions, propose edits, flag issues and electronically sign-off on requirements. All documents reside in one centralized place and documents and product details can be reused on future products. In 2024, the company was acquired by Francisco Partners for \$1.2Bn.

Employees: 268

Key Executives: Marc Osofsky (CEO), Colleen Yeager (CFO)

Investors: Francisco Partners



Theme: End-to-End DevOps Platform

Provider of end-to-end DevOps platform for accelerating and optimizing enterprise software delivery. The company's platform spans centralized artifact repository management for all types of binaries and container images; security vulnerability and licenses compliance scanning enabling DevSecOps; CI/CD pipeline automation; and private, secured CDN for distribution of applications from any source to any deployment target. Offered as a self-hosted or cloud SaaS solution. In 2020, the company raised \$509 million via IPO.

Employees: 1,514

Key Executives: Shlomi Ben Haim (CEO & Co-Founder), Yoav Landman (CTO & Co-Founder)

Investors: Publicly traded



Theme: DevSecOps

WhiteSource is a developer of an open-source security platform designed to provide security by combating associated vulnerabilities. The company's platform fully automates the entire process of open-source components management, including real-time security alerts on vulnerable components, enabling clients to ensure the continuity and integrity of open-source management and reduce respective risks.

Employees: 298

Key Executives: Rami Sass (CEO & Co-Founder), Ron Rymon (Board Member & Co-Founder), Ilan Sidi (CFO)

Investors: Big-Tech 50, Pitango Ventures, Poalim Equity, Union Tech Ventures, Susquehanna Growth Equity, M12, 83 North

Sources: publicly available sources

## Selected Notable Companies Continued



Theme: Cloud Infrastructure

Morpheus provides cloud-based applications and infrastructures designed to manage hybrid clouds and modernize apps. Their agnostic cloud management platform (CMP) unifies the management of multi-cloud and hybrid IT while empowering DevOps teams with self-service provisioning of bare metal, VM and container-based application services, enabling clients to have standardized processes across multiple clouds with complete application lifecycle management.

Employees: 91

Key Executives: Ted Danielson (President), Brad Parks (CPO), Christine Peterman (CFO)

Investors: Bertram Capital



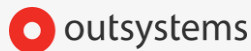
Theme: CI/CD

Octopus is a continuous integration platform intended to deploy software and deliver projects for enterprises and mid-sized companies. The company develops a server to enable reliable, secure, automated releases of applications and Windows services into test, staging and production environments, whether they are in the cloud or on-premise, enabling clients to automate deployments and operations runbooks from a single place.

Employees: 222

Key Executives: Paul Stovell (CEO), Sammy Michaels (CFO)

Investors: Insight Partners



Theme: Low-code Platform

OutSystems provides low-code development with advanced mobile capabilities, enabling visual development of entire application portfolios that easily integrate with existing systems. Comprehensive metadata models enable configuration of application layers like business processes, integration workflows, UIs, business logic, data models, web services and APIs. Applications are developed using native desktop tools and deployed on-premises, or in a private or public cloud and are usable with Web and mobile devices.

Employees: 2,081

Key Executives: Paulo Rosado (CEO), Carlos Alves (COO)

Investors: Abdiel Capital, Chamaleon, Tiger Global Management, General Atlantic, KKR, Goldman Sachs



Theme: End-to-End DevOps Platform

Perforce provides a versatile software development platform for implementing fast and scalable continuous delivery. The Perforce product is applicable in a variety of industries and allow for hybrid version control for both distributed and centralized workflows, collaboration for both technical and non-technical staff, change history tracking and enterprise Git management for more complete Git management and social code review.

Employees: 949

Key Executives: Jim Cassens (CEO), Mike Goergen (CFO)

Investors: Francisco Partners, Clearlake Capital

Sources: publicly available sources

## Selected Notable Companies Continued



Theme: API Lifecycle Management

Provider of a collaboration platform designed to offer application program interface. The company's platform creates and sends HTTP requests, creates collections and folders to group requests logically, save requests, switches contexts and customize with scripts to simplifying collaboration across your teams and organizations, enabling developers to build application programming interface and improve developer productivity.

Employees: 1,996

Key Executives: Abhinav Asthana (CEO & Co-Founder), Ankit Sobti (CTO & Co-Founder)

Investors: Firebolt Ventures, Battery Ventures, Bond Capital, Coatue Management, Insight Partners



Theme: Test Automation

Sauce Labs provides a cloud-based mobile and web-testing platform, based on popular open-source testing tools for the web (Selenium), JavaScript (Jasmine, QUnit, YUI Test, Mocha) and mobile (Appium). The company's automated testing platform lets users run functional and unit tests on their native mobile applications, mobile web applications and desktop applications across multiple browsers in parallel without setting up or maintaining test infrastructure.

Employees: 360

Key Executives: Dave Rhodes (CEO)

Investors: TPG



Theme: Test Automation & Management

SmartBear provides a suite of tools for developers, testers and operations professionals for all stages of software development, from software development, to QA & testing, to web & app monitoring. The firm provides code review, automated testing, performance/load testing, API testing, performance profiling and development management tools. SmartBear's tools are highly flexible, and can be used for desktop, mobile, Web and cloud-based applications.

Employees: 837

Key Executives: Frank Roe (CEO), Bryce Chicoyne (COO), Shital Whitmore (CFO)

Investors: Francisco Partners, Vista Equity Partners



Theme: Test Automation & Management

Tricentis provides software testing products that enable enterprises to achieve unprecedented automation rates while minimizing business-related risks. The solutions empower organizations to systematically align software testing with business needs, so they can harness technology change while optimizing cost and efficiency. The company's testing solution encompasses risk-based testing, test data management and provisioning, service virtualization and quality assurance services.

Employees: 1,351

Key Executives: Kevin Thompson (CEO), Dave Hafner (CFO)

Investors: Fulcrum Equity Partners, Insight Partners, Wipro Ventures

Sources: publicly available sources



# The Leading Advisor in DevOps and Application Development

DevOps & DevTools are core competencies for our firm; we have been among the most active advisors (if not the most active), completing multiple market-defining transactions with leading companies spanning the software development lifecycle

## Thought Leader in the DevOps Market

- We have completed transactions across the market, working on both buy-side and sell-side engagements, and interacting regularly with all the relevant players in these sectors to deliver superior outcomes and support market developments
- Established recurring dialogue with the leading private equity investors, strategic acquirers and market leading companies in the DevOps ecosystem
- Multiple active mandates spanning the DevOps lifecycle provide holistic industry knowledge and connections to achieve a desired outcome
- Comprehensive DevOps industry insight developed using the latest data gathered from industry practitioners

## Dedicated Shea & Company DevOps Team

**Chris Pingpank**  
 Managing Director  
 cpingpank@shea-co.com













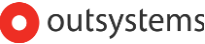



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## Recent Experience













































 has received a minority investment from 	 has received an investment from 	 has received an investment from 
 has made a majority investment in 	 has received an investment from 	 has been acquired by 
 has acquired 	 has acquired 	 has acquired 
 has been acquired by 	 has been acquired by 	 has received an investment from 
 has received an investment from 	 has been acquired by 	 has been acquired by 

# About Our Firm

<b>1</b>	<b>2</b>	<b>35+</b>	<b>\$45Bn+</b>	<b>40%</b>	<b>145+</b>
Firm focused exclusively on enterprise software	Offices in Boston and San Francisco	Professionals focused on the software industry	Advised aggregated transaction value	Transactions with a Cross-Border Component	Transactions completed representing billions of dollars in value

## Mergers & Acquisitions, Private Placements & Capital Raising

Shea & Company has advised on important transactions representing billions of dollars in value across the strategic acquirer and financial investor landscape with clients in the U.S. as well as Canada, Europe and Israel.

 <p>has received an investment from</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Octopus Deploy</p>	 <p>has received an investment from</p>  <p>Shea &amp; Company served as financial advisor to SmartBear and Francisco Partners</p>	 <p>has received an investment from</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Lansweeper</p>	 <p>has been acquired by</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Perfecto</p>	 <p>has acquired</p>  <p>Shea &amp; Company served as the exclusive financial advisor to SmartBear</p>	 <p>has received a strategic investment from</p>   <p>Shea &amp; Company served as the exclusive placement agent</p>	 <p>has received an investment from</p>  <p>Shea &amp; Company served as the exclusive placement agent</p>
 <p>has been acquired by</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Uniface</p>	 <p>has been acquired by</p>  <p>Shea &amp; Company served as the exclusive financial advisor to ibi</p>	 <p>has been acquired by</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Decibel</p>	 <p>has received a majority investment from</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Prophix</p>	 <p>has received a strategic investment from</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Gearset</p>	 <p>has been acquired by</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Optimere</p>	 <p>has made a majority investment in</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Hg</p>
 <p>has made a majority investment in</p>  <p>Shea &amp; Company served as financial advisor to Vitruvian</p>	 <p>a portfolio company of</p>  <p>has acquired</p>  <p>Shea &amp; Company served as the exclusive financial advisor to TA Associates</p>	 <p>has been acquired by</p>  <p>Shea &amp; Company served as the exclusive financial advisor to XebiaLabs</p>	 <p>has received an investment from</p>  <p>Shea &amp; Company served as financial advisor to Perforce and Clearlake</p>	 <p>has received an investment from</p>  <p>Shea &amp; Company served as the exclusive financial advisor to Mimecast</p>	 <p>has been acquired by</p>  <p>Shea &amp; Company served as financial advisor to Rogue Wave</p>	 <p>has acquired</p>  <p>Shea &amp; Company served as financial advisor to Digital.ai</p>