



Evolution of the Software Development Lifecycle and DevOps Tools

June 2020

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What is the Software Development Lifecycle?



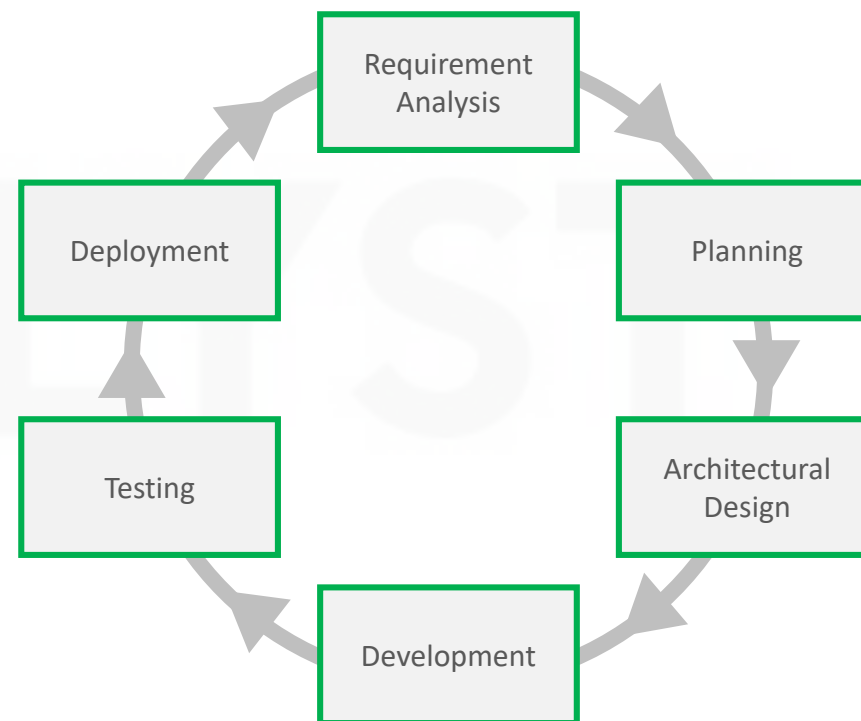
Moore's Law is the observation that overall processing power doubles every two years, leading to exponential growth with a diminishing cost basis

Processing power's rampant growth has had significant implications, including catalyzing growth among other enabling technologies (e.g., cloud computing) and forcing more rapid innovation and greater agility from participants across the technology ecosystem

- In response, independent software vendors (ISVs) have had to rethink how they approach the software development lifecycle (SDLC)

The SDLC is a methodology for creating and deploying software through defined processes, which includes the following phases (in some form): requirement analysis, planning, architectural design, development, testing and deployment^[1]

- ISVs have adopted a variety of new approaches and tools that promote the rapid development and production of high-quality software



Process Evolution

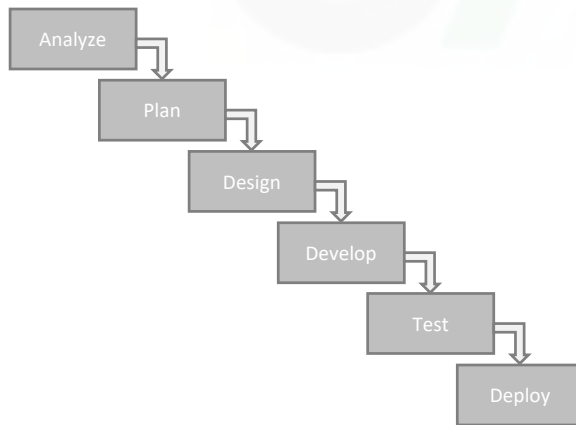


Demand for rapid innovation has forced DevOps teams to rethink everything from the way they approach the process to the tools they use

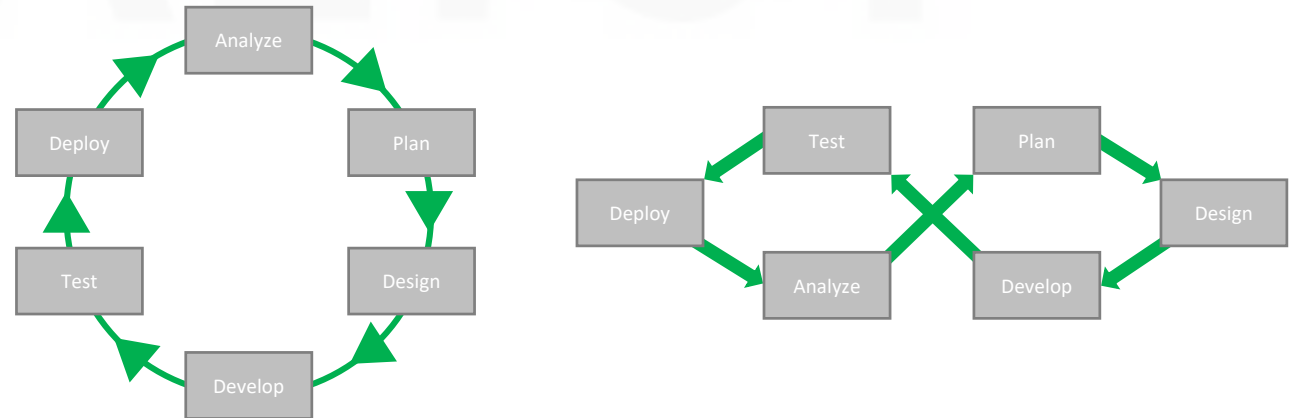
From a process perspective, teams have fundamentally changed the way they approach developing and deploying software, migrating from the traditional waterfall method to any number of new, iterative techniques that have emerged

- Iterative methods prioritize agility, which is enabled by *continuous everything*^[2]: development, testing, integration, delivery, and monitoring
- A proliferation of DevOps tools has followed, accompanying these new, agile methods and enabling this idea of *continuous everything*

“Old Guard”



“New Wave”



Sources: [2] Shea & Co

Proliferation of DevOps Tools

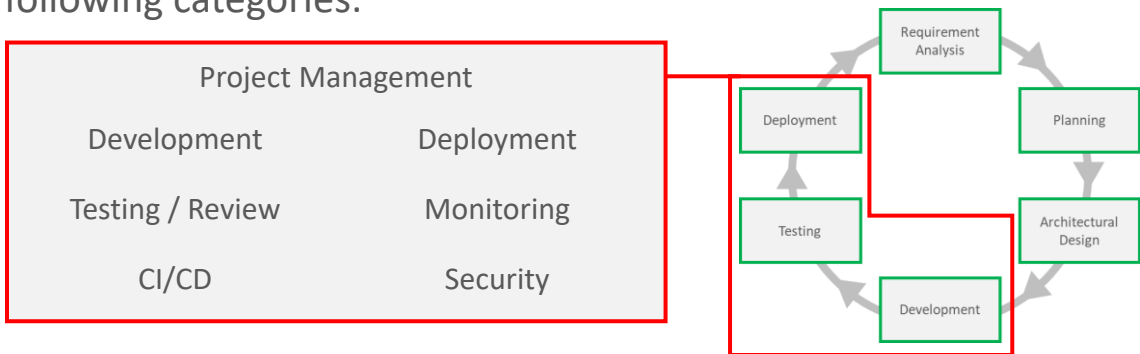


Refined processes only get teams so far; a new set of tools was required to facilitate the adoption of these new approaches while accelerating each step of the process

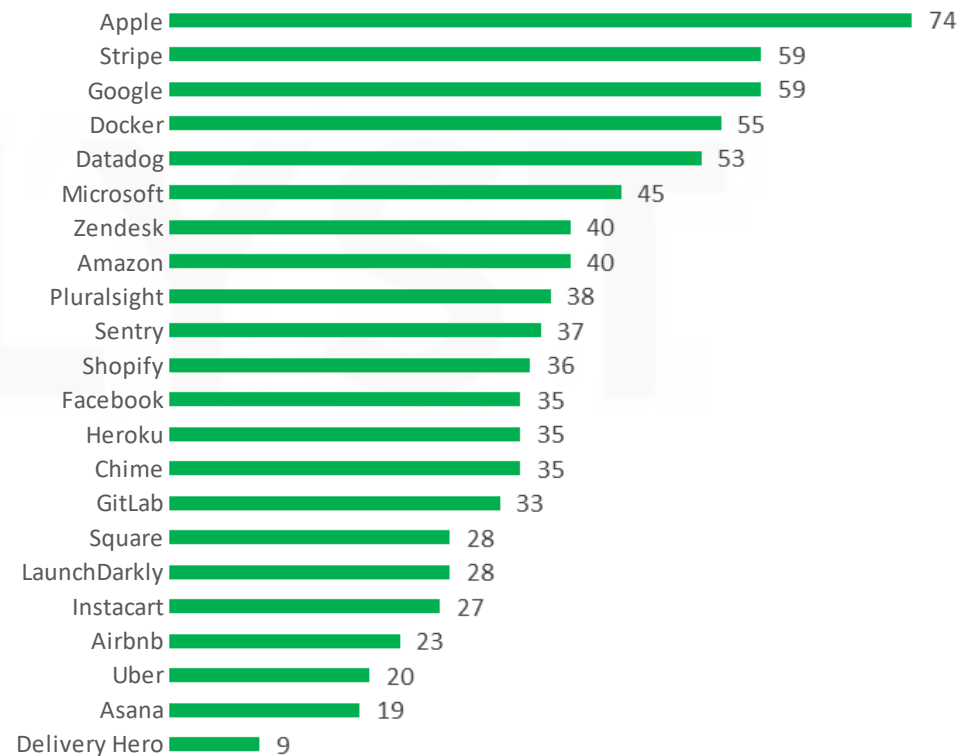
Lower barriers to adoption, manifesting themselves through credit card sign-up options for developers and increased interoperability with other tools via open APIs, has caused the number of tools used by DevOps teams to skyrocket

- IDC estimates that the DevOps software tools market reached \$5.2B in 2018 and expects it to grow to \$15.0B by 2023, citing CI/CD, infrastructure provisioning, DevSecOps, and monitoring and analytics for both production and testing as key value drivers^[3]

Within the SDLC, DevOps tools are concentrated in the development, testing, and deployment stages, and typically fall in one of the following categories:



Number of Tools Used by DevOps Teams^[4]



Sources: [3] IDC; [4] ICONIQ

Tailwinds Driving Growth



While the DevOps tools market is not new, the evolution of software development, deployment and its enabling technologies have created market tailwinds that are accelerating both usage and adoption

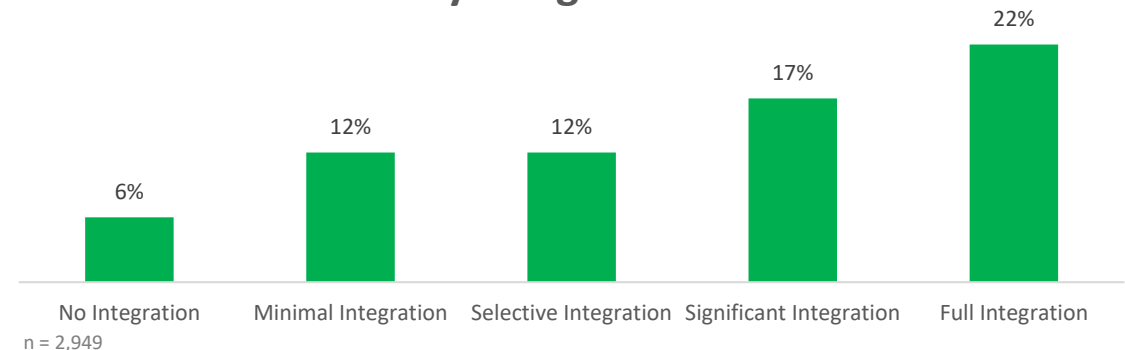
Some of the specific trends we have observed driving growth in the DevOps tools market are as follows:

- AI Automation of the SDLC has enabled faster innovation by providing greater leverage to DevOps teams
- Low-code/no-code development platforms have democratized the application development process
- Cloud-native apps have driven the adoption of containers/microservices, serverless computing, etc.
- Security awareness has led to the integration of security at every stage of the SDLC
- Continuous integration/delivery has reduced time to production and allows for continuous application uptime
- Device/infrastructure growth has increased the importance of cross platform development tools
- Diverse use cases have led to the emergence of new languages, frameworks, databases, etc.
- Hybrid and public cloud deployments have highlighted the importance of infrastructure provisioning

Many of these tailwinds are relatively new to the market and have yet to manifest themselves in tools that have reached mass adoption, implying that there is significant runway for sustained growth in the DevOps tools market

- For example, survey results indicate that only 22% of organizations have fully integrated security into their software development process^[5]

Level of Security Integration Within SDLC ^[5]



Sources: [5] Puppet, CircleCI, Splunk

Investment Considerations



When evaluating opportunities in the DevOps tools market, it is important to consider the following aspects when assessing the long-term viability and value of a solution:

Competitive landscape: there are certain tools that have become the de facto standard across the software development community for their respective function, which has increased the barriers to entry for certain segments of the DevOps tools ecosystem and made it difficult for new entrants to gain traction

Integrations with other tools (APIs): agile development methodologies are predicated upon short feedback cycles, which is only possible if the tools used at each stage of the software development lifecycle are able to communicate with one another and streamline processes for DevOps teams

Ease of use / adoption: tool adoption is often driven through a bottoms-up approach, with management soliciting input and requiring developer buy-in before making a purchasing decision; this can manifest itself in tiered pricing packages with an option geared towards credit card sign-ups that developers can use in a trial capacity

Demonstrable ROI: while tool adoption tends to be driven through a bottoms-up approach, final selection criteria is still defined in a top-down manner by key decision makers; the cost of more expensive tools can be overcome by demonstrating meaningful and tangible ROI

Cross-functional capabilities: as the number of application variables continues to expand, it is important to understand the specific capabilities of the tool, where applicable, with respect to factors such as application type (web vs. mobile), operating system (e.g., iOS, Android, Windows), and language (e.g., Java, C++, Python)

DevOps Tools Landscape



Project Management



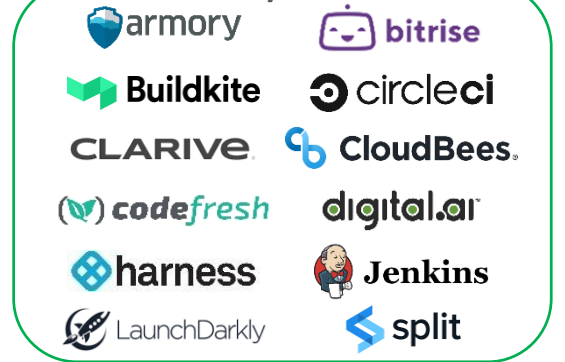
Development



Testing/Review



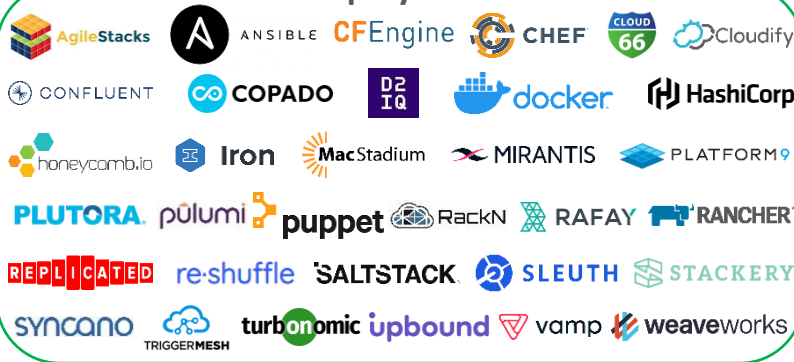
CI/CD



Monitoring



Deployment



Security



Sources: Company websites



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