Carnegie Mellon University
Software Engineering Institute

Accenture: An Automation Maturity Journey

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July 2021

http://w w w .sei.cmu.edu

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About Accenture

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- 537,000 Accenture employees worldwide
- 6,000 clients served throughout more than 120 countries
- 7,900 patents and patents pending worldwide
- 200 cities with Accenture locations and operations, across 50 countries
- 185 partners in our ecosystem
- 100-plus innovation centers
- 40-plus industries represented by experts

Accenture Technology is the global leader in the most vital technologies today—technologies that are underpinning the world's accelerated digital transformation and that are critical to growing and rebuilding our global economy, including artificial intelligence (AI), intelligent automation, cloud, security, data, and analytics. Accenture is at the heart of thousands of businesses, driving immediate response and longer-term transformation that will define the future. This is evidenced by our leadership in software engineering, application management, infrastructure, the most pervasive intelligent platforms (such as SAP, Oracle, and others), a massive research and innovation engine of labs and investments, the largest innovation delivery operation in the world, and our unparalleled expertise in more than 40 industries, from healthcare to finance to consumer goods.

Executive Summary

Accenture began a journey more than six years ago to transform its software development and application delivery lifecycle through intelligent automation and intelligent technology assets. In that time, we have globalized and industrialized an end-to-end automation framework, practices, and technology platform called Accenture myWizard® across Accenture to address one of the biggest automation challenges: implementing a future-ready, mature level of automation throughout the software engineering lifecycle at speed and scale.

Early 2015 marked the beginning of a profound change when more and more of our clients started embarking on their digital transformation journey. From cloud adoption and data-driven strategies to new ways of working and emerging technologies, keeping up with fast-changing technology is vital to Accenture's business and the business dynamics of our clients. We recognized that automation and reimagining the way we deliver information technology (IT) and build IT systems would need to play a significant role in these evolutions.

The possibilities that automation presented for companies were expanding. The expectations from clients were shifting the paradigm to (1) view automation as a key enabler to differentiate the customer experience through seamless human plus machine interactions and (2) use automation to increase innovations and get a competitive edge in the market.

To become the best partner to our clients in their digital transformation journey through automation, we needed to fundamentally change how IT organizations built, implemented, and operated systems. But this required a change in the way automation was being implemented in the early days. There were several underlying organizational challenges facing organizations that prevented them from realizing the full potential of automation to drive business transformation or reinvent the way we work:

- Automation was being implemented in a siloed manner as point solutions in functional and vertical areas.
- Automation was viewed as more of an individual efficiency improvement mechanism than an enabler for enterprise-wide transformation.
- Automation was not defined as a technology skill or supported by a dedicated workforce.

To embrace changing technology at speed and make automation an advantage, organizations' practices had to be stable and scalable to constantly adapt to the agility of the market, the business, and ever-changing customer expectations. Hence, the automation journey itself needed a structure to lay a strong foundation and enable continuous evolution. We determined that process maturity leveraging the Capability Maturity Model Integration (CMMI) High Maturity (HM) model would be a strong foundation for driving automation as a transformation lever. Leveraging the CMMI HM model, we mapped an automation journey structure built on the following stages:

- Identify what to automate using our Automation Opportunity Finding Framework.
- Industrialize automation through automation platforms.
- Measure value from automation.

- Continuously automate.

This structured automation approach worked very well in driving automation at scale across Accenture and our clients. There were clear benefits and outcomes that this brought to our clients, for example[1]:

- 5-8X increase in speed to market of software releases
- 50-60% reduction in ticket incident volumes
- 40-60% reduction in IT costs for clients from productivity improvements
- Over 10,000 automation process improvement opportunities in the five years from 2016 to 2020

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[1] This data is derived from Accenture project implementations as examples of best-case results. This is proprietary data not publicly available.

Abstract

Accenture, an early adopter of the Capability Maturity Model Integration (CMMI) framework, faced numerous challenges related to a rapidly changing market. Its clients were looking to Accenture to help them "hyper-drive" system transformations to achieve greater cost effectiveness, faster speed, better quality, and continuous innovation to stay relevant in the market. To achieve these goals, Accenture launched an automation journey built around what it calls "The 4S Model": Simple, Seamless, Scalable, Sustainable. The process produced intelligent tools to automation for transformation that enabled Accenture and its clients to transform rapidly and meet the challenges of a changing market and business landscape. Process improvement initiatives are now implemented across more than 50% of Accenture's industry client base, with new automation opportunities identified every three hours. Automation strategy, process, and technology programs established have shown an impact on client value delivered, delivery performance, and people performance. Some of the key metrics that have shown a significant improvement consistently are productivity, quality (defects), effort, and schedule. In 2020, the Carnegie Mellon University Software Engineering Institute and IEEE recognized Accenture with the Watts Humphrey Software Process Achievement Award. For more information on the SPA Award, visit https://resources.sei.cmu.edu/news-events/events/watts/.

1 Origins of Our Automation Journey

Accenture is one of the early adopters of the Capability Maturity Model Integration (CMMI) framework and has greatly benefited from adopting its best practices, processes, and standards. Doing so was one of the enablers for us to provide world-class services to our clients. Our delivery capabilities bring together industrialized assets with deeply skilled technology and industry professionals focused on generating measurable business value for our clients through reliable, cost-effective, and consistently high-quality solutions. Continuous improvement pivoted on CMMI practices helped us drive higher levels of productivity, precision, and predictability.

However, our clients were facing never-before-seen levels of competitiveness, digital disruptions, cost pressures, shareholder expectations, and regulatory challenges. Since the market was changing very rapidly, clients were looking to Accenture to help them "hyper-drive" system transformations. It became imperative that we look beyond delivering quality products and meeting client expectations. There was a high demand for greater cost effectiveness, faster speed, better quality, and continuous innovation to stay relevant in the market.

Automation stood out as a natural choice to become a game changer for us. Consequently, we started stepping up our automation game—from intelligent tools to automation for transformation—to enable us and our clients to transform rapidly to meet the challenges of a changing market and business landscape.

2 Objectives and Goals of Our Automation Journey

Building on our CMMI foundation, Accenture began its automation journey to help strengthen our process maturity and realize the full value of automation efforts. We kept the following objectives in mind:

1. **Strengthen process maturity**: Having a robust process—and adhering to it—is paramount to successful automation and the adoption of any new technologies. Automating an inefficient process multiplies the inefficiencies, which can lead to failed efforts without understanding the cause of the failure. The full potential of automation is only achieved if the processes are designed effectively. Very often, this requires a process assessment and process re-engineering to make it more efficient and resilient. Once the process becomes more mature, the implementation of automation solutions starts to become more rewarding and results in higher adoption.

2. **Integrate solutions**: When starting an automation journey, point solutions are often implemented that are largely decoupled. Such a piecemeal approach hinders scaling and efficiency.

3. **Establish a holistic automation implementation structure**: A fragmented approach to automation (identifying individual opportunities as they arise and implementing specific tools to solve a specific problem) creates unnecessary complexity and can also hinder the ability to scale.

4. **Reduce duplication and increase re-use**: Processes evolve over time, and a structured framework is needed to access the utility of the automation solutions over time.

5. **Infuse new ways of working into technologies and processes**: Many organizations continue to depend on the traditional waterfall model for design, development, testing, and deployment of IT applications. Doing so leads to long turnaround times for automation solutions. Mature intelligent automation embraces modern engineering practices, such as rapid prototyping and agile development and/or deployment, that include tolerance for failing fast.

6. **Strengthen organization automation culture**: To increase the speed of adoption and the effective use of automation on the ground by the practitioners, there is a need for clearly communicating changing roles and processes, embracing continuous innovation and continuous improvement, and championing excitement about the opportunities and value that automation can bring.

Accenture's goals were to develop, scale, and strengthen process improvements to

*   enable implementation of automation at scale with high ease, speedy deployment and high-quality

*   drive faster time to market, higher quality, and predictability

*   increase efficiency and reduce operational costs for clients through higher application stability, reduced technical debt, and high operational efficiency

*   future-proof the software engineering framework and automation journey with a solution and approach that transforms IT into a future system (boundaryless, adaptable, and radically human)

- drive business return on investment (ROI) for clients with IT service delivery that is value focused and business aligned

3 Our Solution: The "4S Model"

3.1 The "4S Model"

We designed an automation solution called the "4S Model" to scale and sustain intelligent automation at an enterprise-wide level. 4S stands for Simple, Seamless, Scalable, and Sustainable—based on four underlying key principles.

Table 1: The 4S Model

Simple	Seamless	Scalable	Sustainable
Make automation simple by identifying the right opportunities/use cases with the biggest impact to business	Make automation seamless for use and adoption, so there is an ROI to the business	Make automation scalable across the enterprise so there is full realization of the automation value for the business	Make automation sustainable and continuously evolving to ensure continuous value generation

3.1.1 Simple

The very first step is to get your business processes right by applying techniques like lean principles and Six Sigma to eliminate work and eradicate unnecessary processes. Do not automate inefficient processes because, once automated, inefficiency will just run more efficiently. And you do not want to get into that situation! Eradicate, optimize, and automate.

Once you have eliminated wasteful, inefficient processes, you need to figure out where you are on your automation journey. This is a very important step. Watts S. Humphrey, the "Father of Software Quality," said, "If you don't t know where you are, a map won't help." Performing a baselining and benchmarking exercise lets you know where you are and how you are progressing. Accenture's Automation Opportunity Finder is a structured framework to identify a company's current Automation Maturity Index and opportunities to eliminate, optimize, and automate. This is based upon industry-leading practices like the IT Infrastructure Library (ITIL), CMMI, Control Objectives for Information and Related Technology (COBIT), lean methodology, VeriSM, and Six Sigma. Accenture's Automation Opportunity Finding Assessment covers the people, process, and technology aspects of the IT organization to discover and design a sustainable and evolving future-proof automation ecosystem for our clients. The Automation Opportunity Finder suite enables delivery by finding automation opportunities and estimating the ROI for every automation use case, prioritizing based on business value. It also establishes an approach for reporting, governance, and tracking benefits. It's all very simple, yet very critical.

One large company faced challenges in its commercial operations, particularly with a high volume of month-end unpaid invoices. Accenture used the Automation Opportunity Finder to perform process analysis and deployed automation solutions in the business development authorization and reporting processes. A standardized monthly billing calendar was aligned to the company's accounts payable schedule with weekly reporting of receivables highlighting overdue bills. With a consistent weekly cadence of automated chasing, escalation, and support to control owners, there was significant improvement, including around a 50 percent reduction in month-end overdue receivables, and the quality assurance compliance score became consistently green.

3.1.2 Seamless

The second important principle seeks to ensure that you can introduce new innovations to your technology and tooling landscape without causing a wave of disruption. You need seamlessness between the existing technology ecosystem and the automation layer. If you are using Service-Now, for example, your automation enablement must be in line with your ServiceNow strategy. If you are using Elasticsearch, Logstash, and Kibana (ELK) as an open source software for your analytics and artificial intelligence (AI), you need to have open source plug-and-play application programming interfaces (APIs) that you can connect to. You need to integrate your automation layer using APIs, microservices, and containers, as opposed to pushing one more tool or asset into the existing technology environment. A seamless, accurate data fabric is also critical.

At Accenture, we built Accenture myWizard®, an intelligent automation platform that uses open, microservices-based architecture, APIs, and a seamless data fabric that allows clients to plug in new innovations and tools all the time without disrupting the existing tooling landscape. Irrespective of the tools and technologies our clients use, myWizard offers API gateways and plug-ins on top of a seamless data lake and AI core engine to enable seamless integration into the environment they are operating.

3.1.3 Scalable

But how do you scale? By building capability and expertise. Scaling AI and automation capabilities at an enterprise level requires a holistic strategy that cuts across all types of talent segments and skills. Within Accenture, we established an Automation University that offers automation certifications and training to our people—starting from Automation Prime, Automation Architect, and Automation Coach to Automation Champion. An Automation Prime, for instance, has deep expertise in a set of tools such as Splunk or Kubernetes, while an Automation Architect has the skills to build automation across every aspect of software, from development and testing to maintenance and infrastructure. An Architect can then graduate to become an Automation Coach and help clients implement and deploy automation. Throughout this journey, the goal is to constantly build expertise not just in automation and AI but also in Agile and design thinking.

3.1.4 Sustainable

Change is the only constant, and this is true of automation, too. To keep pace with relentless change, you need a sustainable way to harvest new ideas and continuously invest in automation. Whether this is through hackathons, AI-thons, or any other continuous innovation initiatives, your own people can provide the best ideas and can help you track industry trends. Secondly, user experience is often overlooked in automation initiatives. But bad user experiences can be a deal breaker and hindrance to successful automation at scale. Invest in design thinking and human-centered design to ensure success. Finally, you need a way to monitor business value. Track every dollar of investment and saving. Value realization and measurement are essential to sustain automation. One way we to realize and measure value is to hold regular co-creation sessions with clients to continuously strengthen the automation implementation.

We also do design-thinking exercises. For example, one way we work with companies to build a human-centric culture of automation in their business is we ask employees to identify each task they do. We then ask them to categorize each task and identify which tasks they find monotonous

or repetitive and which tasks they enjoy or value. We take the tasks they don't like and automate them. This helps make the case for prioritizing automating tasks that are not highly valued and creates buy-in with talent about the automation process. This also helps create a culture of "automation-first" thinking where automation becomes an integral part of day-to-day operations.

This, in a nutshell, is our approach to automation: eradicate, optimize, and then automate in a simple, seamless, scalable, and sustainable manner.

4 Implementing the 4S Model

4.1 Automation Integrated Across the Software Engineering Lifecycle

Infusing automation means incorporating automation and AI into the modern engineering and service lifecycle management methodology. This enhances quality, user experience, business satisfaction, self-service capabilities, security, compliance, and productivity.

We have applied automation to the entire software delivery lifecycle, including the software application development and application and infrastructure management phases. Some examples of how automation is weaved into the application development lifecycle include the following:

- With automation, we have realized 25-30% efficiency improvement[2] in program planning and management by having digitized, real-time, and bidirectional roadmaps; integrated analytics; and in-built workflows for tracking milestones, deliverables, and dependencies.
- We have achieved 20% more efficiency in requirements management and a 30% reduction in requirements defects with a robust and intelligent requirements management that fosters continuous shift-left requirements quality control, change impact analysis, and AI-enforced corrections to avoid defects in product releases.
- We have achieved delivery agility by infusing automation in the release planning and execution phases. Automation includes (1) adding a virtual scrum master role to augment the role of scrum master, (2) implementing CI/CD early during the project startup phase, and (3) using real-time predictive and descriptive analytics during the project execution stages and optimizing test suites.

Automation has revolutionized application and infrastructure management, making IT predictive, self-servicing, and self-healing. Examples include the following:

- Automated solutions proactively identify and correct potential issues before they cause problems.
- Automation solutions have been implemented for monitoring, event correlation, ticket management activities, and service management activities.
- Deep-dive analytics continuously drive service improvements.
- Virtual Agents and automated alerts and recommendations continuously manage process changes, helping improve efficiency while minimizing delivery risks.

All help to deliver maximum, business-aligned outcomes and improve customer satisfaction.

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[2] This and following data are derived from Accenture project implementations across software engineering and various industries. This is proprietary data not publicly available.

4.2   Integrated Automation Platform and Delivery Assets

Scalability and "future-proofing" automation was the need of the hour. We determined that implementing automation at a large scale and driving consistent results across the enterprise required a platform-centric approach. So we conceived and built Accenture myWizard as an end-to-end delivery automation platform that drives the automation process and maturity in delivery. Accenture myWizard brings the best of AI-driven automation and technology assets together across the software delivery lifecycle to help enterprises reimagine IT. An innovation platform that integrates all the capabilities needed to manage the software delivery lifecycle, it drives delivery excellence, executes the IT function, and drives intelligent automation across the enterprise.

4.3   Contextualized Implementation Model

When implementing automation at scale, developers need to take into consideration that every automation solution poses unique and contextual implementation challenges. Our approach to implementing automation solutions depends on use cases, such as the complexity of implementation, the user base exposure of the solution, business criticality, and the level of human + machine interaction [Daugherty 2018]. Although the base activities of the implementation model are the same, the model must be tailored to the nature of automation use cases. We engage associated subject-matter experts (SMEs) right from the start. If the automation will impact a considerable number of users, we plan for training, learning opportunities, and detailed user guides. Business-critical automations will have even tighter controls with thorough stage-gate reviews.

4.4   Agile Automation Practices

Automation requires rapid prototyping and agile development and deployment, including tolerance for fail-fast and learn-fast modes of execution. An automation implementation model that is iterative, adaptive, and collaborative in nature is essential to effectively and efficiently implement and scale automation solutions. We have adopted an innovation-led Explore-Experiment-Expand (EEE) automation framework to improve adoption of automation that features fast feedback cycles that help users quickly adapt to the changing requirements, security, and regulatory compliances. The EEE framework employs an iterative approach comprising three phases in which value is consistently pursued, communicated, and scaled:

- **Explore**: We start by conducting an in-depth analysis of automation and innovation trends across the industry and its ecosystem. We constantly challenge the status quo and preconceptions to tackle the broad underlying issues.
- **Experiment**: Employing agile methods and a fail-fast and learn-fast mindset, we begin to build rough and rapid prototypes, continuously refining them until they become a workable and minimum viable product (MVP).
- **Expand**: Once satisfied with the product, we move quickly to scale the solutions through our automation platform.

4.5   Measure What Matters

One of the ways to track and improve the automation adoption is by collecting data associated with the automated solutions. In fact, a key governance factor is the continuous monitoring of the performance of the process. Once the automation solution is implemented, we gather and evaluate

the key metrics or the business key performance indicators (KPIs) of the processes. Insights from the data collection, such as the process turnaround time, failure instances, and the number of people using the automated solutions, are used to further improve the solution or enforce adoption through training.

We establish the governance process with all stakeholders and enable intelligent tracking, reporting, and governance for all intelligent automation initiatives. Our governance structure clearly defines authority, decision-making responsibilities, execution ownership, oversight requirements, stakeholder alignment, and risk management approaches to ensure that automation is consistent, is scalable, and adds value. Our governance mechanism can be broadly classified into two levels: Program Governance and Automation Governance.

- **Program Governance**: We deploy tried and tested methods to manage the overall program delivery. We build efficient steering committees, automation councils, compliance boards, internal audit committees, and project management offices to govern the day-to-day operations of the engagement. We ensure the participation of our clients in these committees in order to maintain complete transparency.

- **Automation Governance**: We implement monitoring systems across all application systems in the ecosystem and track performance against targeted KPIs. We continuously monitor the overall security of the deployed bots and other automation systems. We also ensure that proper rollback mechanisms are in place for every deployed system in the event that it might not perform as expected. We constantly track the performance of the automated solutions against targeted KPIs to stay aligned to the business and realize maximum value.

5   Outcomes

Built on a foundation of process maturity and CMMI, Accenture brings the best of data-driven insights and thought leadership, integrated by process, people, and technology, to deliver the automation journey to Accenture and its clients. It does so through

- an enterprise-wide holistic automation strategy (the "4S Model") that integrates process improvement, technology (AI-infused intelligent assets), and people (culture-change management and talent transformation)
- a structured process improvement framework that includes governance and measurement tied to ROI
- a customer-centric automation journey with IT and business-aligned automation that is value-driven and measurable
- continuous automation process innovation for software engineering and service delivery through data analytics and real-time assessment of people (culture), processes, and systems
- an automation-first mindset as the foundation for building automation culture in Accenture using design thinking, co-creation, ongoing trainings, hackathons, and idea harvesting
- the creation of the myWizard platform and assets to institutionalize Accenture's end-to-end automation journey
- AI-driven automation infused into the software engineering lifecycle to drive efficiency, agility, and predictability

Process improvement initiatives are now implemented across more than 50% of our industry client base, with new automation opportunities identified every three hours. Automation strategy, process, and technology programs established have shown an impact on client value delivered, delivery performance, and people performance. Some of the key metrics that have shown a significant improvement consistently are productivity, quality (defects), effort, and schedule.

The following sections describe the results we've achieved.

5.1   Delivery

Accenture has been transformed by building process improvement and an automation-first culture into the fabric of the organization and, therefore, into the DNA of how we deliver for our clients:

- 35-45% improvement in productivity
- 20%-30% faster ticket resolutions year-on-year and 5% faster every quarter
- >40% reduction in production defects
- >95% on-time software releases

5.2   Value Creation, Schedule Adherence, and SLA Compliance

With increased in adoption of automation, we saw significant improvement in release cycles and mean time to repair. Consequently, service-level agreement (SLA) compliance in application maintenance projects also improved:

- **Impact of automation on cycle time and speed to market**: Automation has shown an impact in increasing on-time releases across industry and technology. With focused automation in delivery, the percentage of projects delivering on time has risen over time (see Figure 1).
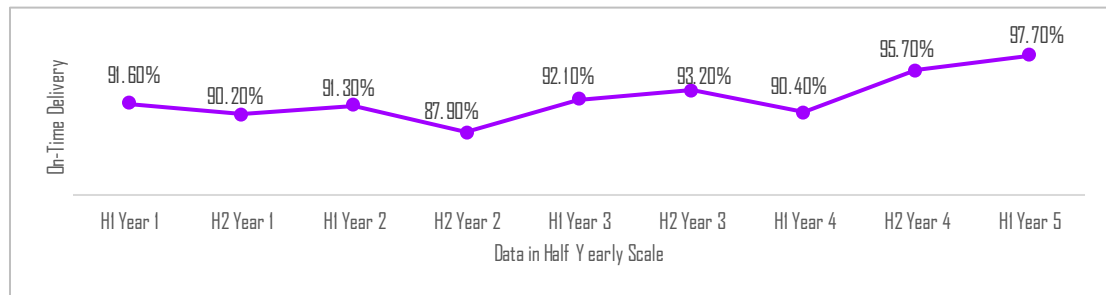

Figure 1:   Percentage of Projects Delivering on Time

- **Impact of automation on SLA performance**: Automation has had a positive impact on SLA performance. Average SLA performance has been consistently more than 99% (see Figure 2 and Table 2).
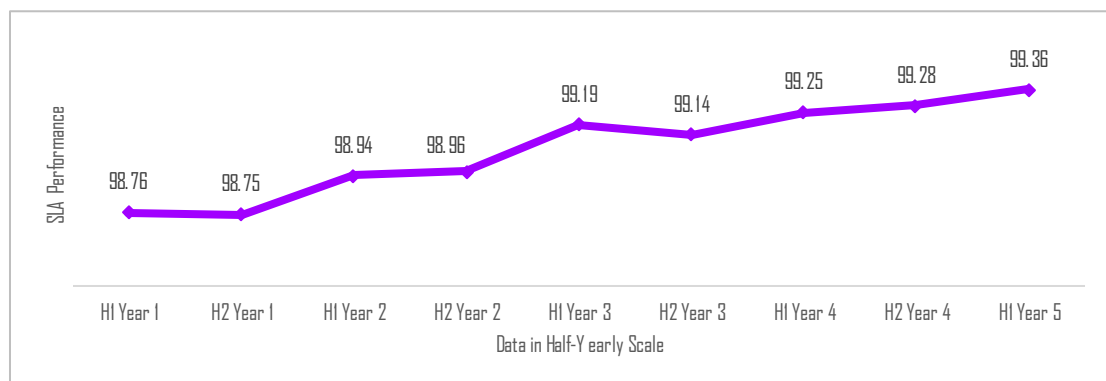

Figure 2:   Service-Level Agreement Performance

Table 2:   Service-Level Performance by Business Group

	H1 Year 1	H2 Year 1	H1 Year 2	H2 Year 2	H1 Year 3	H2 Year 3	H1 Year 4	H2 Year 4	H1 Year 5
SLA performance - Business Unit Group1	99.4	99.42	99.47	99.6	99.52	99.35	99.42	99.58	99.3
SLA performance - Business Unit Group2	99	99.02	99.51	99.74	99.43	98.21	98.79	99.43	99.38
SLA performance - Business Unit Group3	99.58	99.57	99.65	99.41	99.52	99.46	99.75	99.75	99.71
SLA performance - Business Unit Group4	99.63	99.31	99.55	99.78	99.71	99.73	99.87	99.8	99.66
SLA performance - Business Unit Group5	98.29	98.17	98.23	98.35	98.73	98.57	98.7	98.7	98.66
SLA performance - Business Unit Group6	98.11	97.67	98.29	98.76	99.12	99.6	99.49	99.4	99.31
Overall	98.76	98.75	98.94	98.96	99.19	99.14	99.25	99.28	99.36

- **Increase in application availability (by percentage)**: Application availability across projects (of similar nature and/or start and end dates) has shown a consistent increase from 89% to 99% across the project tenure (see Figure 3).
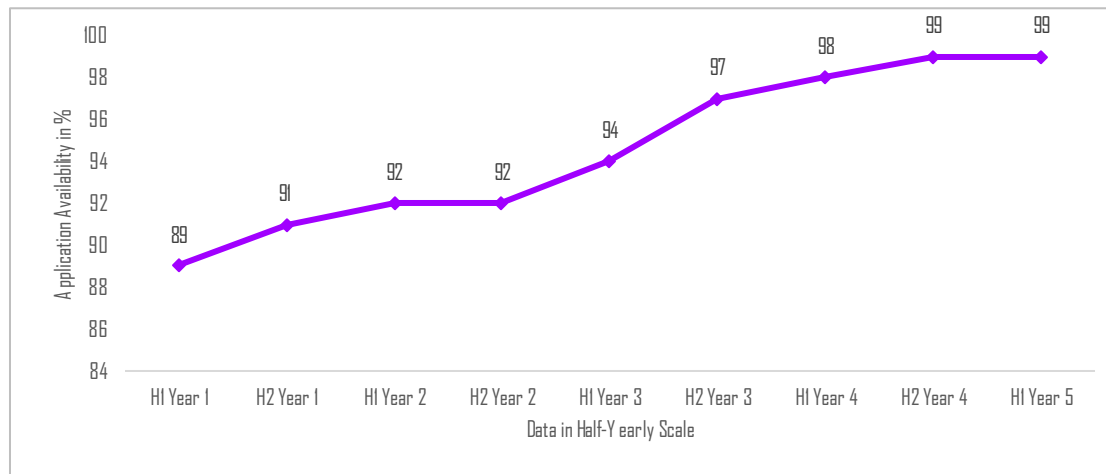

Figure 3: Application Availability

5.3 Effect of Automation on Quality and Cost

Automation proved beneficial in identifying and eliminating defects and improving quality of releases, especially in the requirements management phase and testing phase.

- **Cost of rework (%)**: Cost of rework has reduced across the years, reflecting that the automation efforts are contributing to first-time-right deliverables, especially in the requirements phase. With the delivered defect rate coming down and zero-defects delivery increasing, cost of rework is naturally coming down year on year and has reduced significantly with automation efforts (see Figure 4).
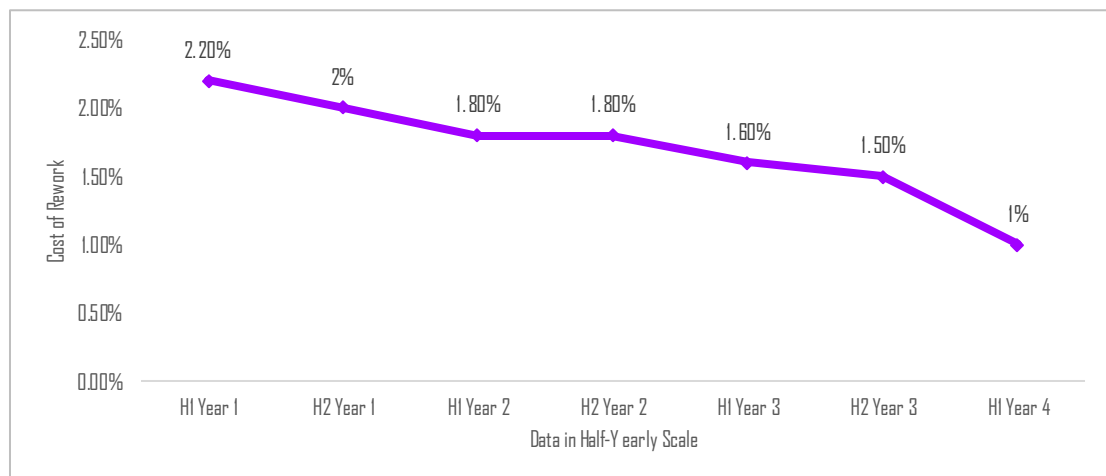

Figure 4: Cost of Rework

5.4 Effect of Automation on Culture Change

- **Impact of automation talent training and certification to cost savings**: Client accounts that have automation-certified resources (automation specialists) reported more than 75% average savings per client. An improved culture of automation through building automation specialists in every project has resulted in 7 times more cost savings (see Figure 5).
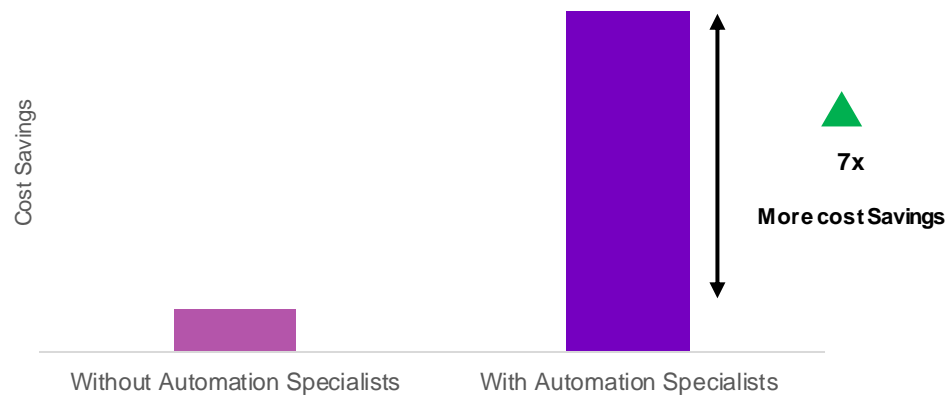

Figure 5:   Automation and Cost Savings

- **Automation adoption increase**: From an adoption rate of 9%, automation adoption has increased significantly to a staggering 96%. This was a result of consistently focusing on upskilling and reskilling talent with automation skills. The % in the graph indicates the % of projects where automation is meaningfully implemented (see Figure 6).
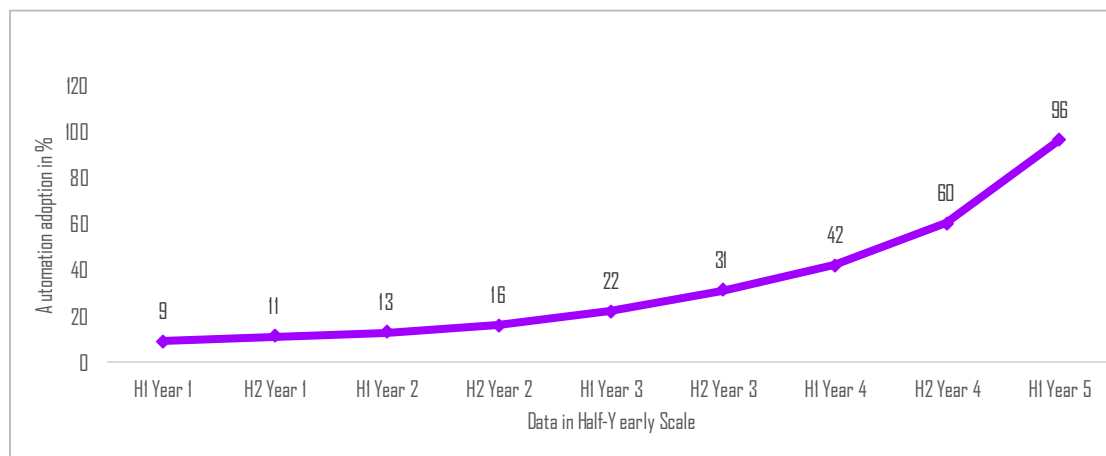
Figure 6:   Automation Adoption

- **Culture of continuous innovation in automation resulted in more asset harvesting**: With a strong focus on building talent and skills to create an automation-first culture, there have been more automation solutions built by practitioners. The adoption rate of assets that were harvested from the field went up from only 6.20% to as high as 67.60% within a year. Automation design-thinking workshops and the ideas-harvesting framework enabled us to achieve

this result. Figure 7 indicates how the asset harvesting had exponentially grown within one year.
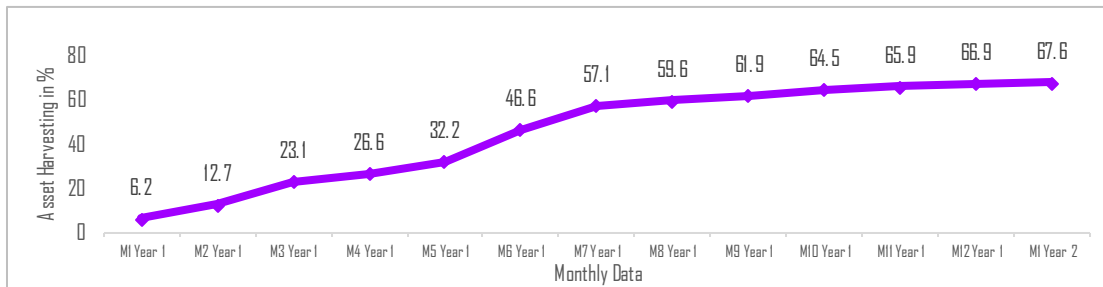
Figure 7:   Growth in Asset Harvesting

5.5   Analyst Recognition

Accenture is proud to have been recognized as a global leader for our intelligent automation and application management work by multiple industry analysts.

- Everest Group PEAK Matrix for Next-Generation Application Management Services 2021 – Leader [Joshi 2020]

- HFS Highlight: Accenture's myWizard is operationalizing the journey toward the OneOffice [Reuner 2020]

- Everest Group PEAK Matrix Application Transformation Services 2020 – Leader [Joshi 2019]

- HFS Top 10 Triple-A Trifecta Services 2020 [Christopher 2020]

- Everest Group PEAK Matrix Application Automation Services 2019 – Leader [Joshi 2019a]

- IDC MarketScape Worldwide intelligent automation Services 2019 – Leader [Harnel 2019]

6 How We Continuously Evolve the Automation Journey

Automation cannot be just a small team's responsibility. It has to be everyone's responsibility within the enterprise, with a top-down and bottom-up approach. Investing in talent and skills at an enterprise level, therefore, is very crucial to prepare the organization for the future and to build these capabilities at scale. There is a need to continually assess the utility of the implemented automated solutions. There needs to be a framework by which continuous assessment of the value chain is performed and necessary updates are made to the solutions. In building an automation-first, continuous innovation culture, Accenture has demonstrated its commitment to building our people's and our clients' technology quotient (TQ) through continuous training, learning, and certification in automation, AI, data, cloud, and emerging technologies. In automation, we have more than 8,300 certified full-stack automation architects and engineers, and more than 14,000 trained automation specialists and growing.

6.1 Automation Innovation Council

The Automation Innovation Council is a group of Accenture senior managing directors, led by Accenture's global automation lead, Rajendra Prasad (RP), that promotes co-innovation with clients, establishes thought leadership through intellectual property creation, and cultivates a culture of innovation at Accenture. The council helps clients automate at scale by creating sustainable competitive advantage and differentiated technology assets. To promote innovation culture, the council sponsors innovation contests, hackathons, patent and IP filing workshops, invention recognition programs, and co-innovation workshops with clients.

Through hackathons, we can strengthen the automation solutions by bringing in fresh concepts. These hackathons also help companies discover needs, problems, and solutions. And co-innovation workshops foster the design of innovation solutions through collaboration among technology experts, industry SMEs, automation architects, and clients.

6.2 Automation Storytelling Workshop

The Automation Storytelling Workshop introduces a simple, easy-to-use framework to engage, inspire, and communicate the automation journey with stakeholders. Storytelling is a critical skill that we have identified in the Accenture automation framework. The goal is to get our delivery teams and technologists, our clients, and their respective leaders and teams on board in the adoption of innovative ideas for process improvements and automation culture change. We train our workforce to learn the what, why, and how of storytelling for meaningful dialogue with our clients that is passionate and human-centric. These storytelling techniques help us engage with our clients and inspire new ways of thinking—an essential piece of transforming the way IT works and delivers.

6.3 Automation University

Automation University is a comprehensive learning program chaired by RP that focuses exclusively on automation specialization and certification for our people who help our clients achieve

their business objectives through automation. Over 500,000 learning activities have been completed. This learning program champions the importance of skilling, upskilling, and reskilling with relevant automation expertise in order to apply automation process improvement and adoption at speed and scale. The breadth of courses blends skills in IT and business processes, delivery methods, cloud, AI, robotic process automation (RPA), analytics, and DevOps.

6.4 Automation Career Model

The Automation Career Model was developed by RP as a pyramid training structure to enable our workforce with automation, data, and AI competency and proficiency. Team members can build and follow a learning road map, and earn certifications and recognition, across the software engineering lifecycle. This is key to delivering, scaling, and sustaining AI-driven automation, and it creates laser focus on user and/or customer experience and driving business value.

6.5 Accenture Innovation Hubs

Automation at the Innovation Hubs help our clients transform their business and lead in the new through innovation, intelligent automation, industry specialization, and new technology skills. Located in 10 major cities across the United States and connected to more than 100 Accenture locations around the globe, each Hub taps the local talent technology ecosystem, including startups, universities, and industry leaders.

6.6 Academic Partnerships

We are committed to learning, training, and development and research partnerships with leading universities, institutions, and industry groups. Accenture has intelligent automation-related academic collaborations, including Carnegie Mellon University, Stanford, IIM Bangalore, Stevens Institute of Technology, and the Turing Institute.

7 Conclusion

The most important driver of success in automation is the vision and commitment from an organization's senior leaders to embrace an enterprise-wide approach to change. To secure the gains that automation promises, companies need to play by new rules to scale their capability through changes to process supported by culture and technology. This requires a profound shift in how automation is perceived. Top-down communications will help to reinforce positive behavioral changes and are necessary to establish commitment from the entire organization, not only from the IT team. Specialized trainings, upskilling for employees, and innovation programs that support the automation vision help sustain those gains.

Automation follows a continuum of sophistication from custom scripts to RPA to more sophisticated AI. But that should not dictate how companies adopt automation. Do not start with the selection of automation technology and then look for opportunities to implement them. Prioritizing outcomes over automation technologies will improve the odds of success. Also essential is the identification of the most suitable and yielding tasks using a framework that runs on a continuous basis. Automation programs should focus relentlessly on measuring and reporting the business value and outcomes they generate. These are the keys to building successful, business-aligned automation solutions.

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REPORT DOCUMENTATION PAGE

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave Blank)	2. REPORT DATE July 2021	3. REPORT TYPE AND DATES COVERED Final
4. TITLE AND SUBTITLE Accenture: An Automation Maturity Journey		**5. FUNDING NUMBERS** FA8702-15-D-0002
6. AUTHOR(S) Rajendra T. Prasad		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Software Engineering Institute Carnegie Mellon University Pittsburgh, PA 15213		**8. PERFORMING ORGANIZATION REPORT NUMBER** CMU/SEI-2021-TR-008
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) SEI Administrative Agent AFLCMC/AZS 5 Eglin Street Hanscom AFB, MA 01731-2100		**10. SPONSORING/MONITORING AGENCY REPORT NUMBER** n/a
11. SUPPLEMENTARY NOTES		
12A DISTRIBUTION/AVAILABILITY STATEMENT Unclassified/Unlimited, DTIC, NTIS		**12B DISTRIBUTION CODE**

13. ABSTRACT (MAXIMUM 200 WORDS)

Accenture, an early adopter of the Capability Maturity Model Integration (CMMI) framework, faced numerous challenges related to a rapidly changing market. Its clients were looking to Accenture to help them "hyper-drive" system transformations to achieve greater cost effectiveness, faster speed, better quality, and continuous innovation to stay relevant in the market. To achieve these goals, Accenture launched an automation journey built around what it calls "The 4S Model": Simple, Seamless, Scalable, Sustainable. The process produced intelligent tools to automation for transformation that enabled Accenture and its clients to transform rapidly and meet the challenges of a changing market and business landscape. Process improvement initiatives are now implemented across more than 50% of Accenture's industry client base, with new automation opportunities identified every three hours. Automation strategy, process, and technology programs established have shown an impact on client value delivered, delivery performance, and people performance. Some of the key metrics that have shown a significant improvement consistently are productivity, quality (defects), effort, and schedule. In 2020, the Carnegie Mellon University Software Engineering Institute and IEEE recognized Accenture with the Watts Humphrey Software Process Achievement Award. For more information on the SPA Award, visit https://resources.sei.cmu.edu/news-events/events/watts/.

14. SUBJECT TERMS Software process, process improvement, automation, system transformation		15. NUMBER OF PAGES 28
16. PRICE CODE		

17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL