



White Paper

# Transformational Solutions to Solve IT Workforce Resources, Talent Shortage, and Empowerment

ATARC Workforce Transformation Working Group

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**ATARC would like to take this opportunity to recognize the following Workforce Transformation Working Group members for their contributions:**

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## IT Operational Complexity

Today's hybrid-cloud environments are highly complex ecosystems and consist of infrastructure and operations spread across numerous owned data centers, colocation data centers, edge deployments, and/or leased from Cloud Service Providers (CSP). This infrastructure is made up of millions of components and software that are responsible for providing reliability and performance for the applications they are running. Many public and private stakeholders rely on this infrastructure, like Warfighters for example, who critically depend on these components, so missions continue unobstructed. This white paper is intended for stakeholders struggling with current workforce shortages, rapidly accelerating workplace transformations, and those seek enabling solutions to these critical concerns.

Managing this complexity is a huge challenge that is human resource intensive, highly reactive, and fraught with pitfalls. The Covid epidemic further complicated these challenges as the workforce transitioned from onsite to the remote and work from home environments. IT operational complexity was dramatically changed as workers were away from their offices and working remotely from home. In addition, there was a host of new tech changes through the addition of numerous complexities and layers driving IT communications, video meetings (such as Zoom) that further strained individual and organizational operations and workflow.

At the heart of this intricate IT ecosystem lie millions of components and the software that runs on them, deeply embedded throughout the infrastructure. Each component plays a critical role in providing application performance and reliability to meet user demands. Components are essential for mission success; however, they fail frequently, and the consequences result in application and mission failures. On the other hand, a healthy and well-managed component fleet ensures high-performing and reliable applications, meeting the needs of public and private organizations and optimizing infrastructure asset utilization. Yet, despite the importance of this knowledge, both commercial and public organizations lack a comprehensive understanding of their infrastructure ecosystems. This includes items such details about the hardware components in their environments (vendor, model numbers, serial numbers, interface types, speeds, etc.), or software on them (BIOS, OS, Kernel, or Firmware versions), or whether those parts have failed or are about to fail, or what the reliability metrics are for the hardware and/or software on it. This necessitates having accurate and up-to-date information automatically, without human intervention. Access to instant observability, visibility and health insights becomes fundamental for gaining command and control over the growing infrastructure demands. Armed with knowledge, IT teams can adopt a strategic approach, analyze operational issues, identify areas for improvement, and make swift decisions for preventive maintenance, ultimately enhancing mission success.

Gaining command & control across on-premise, multi-cloud, HPC and edge environments is challenging and an area that both commercial and public markets struggle with. The common band-aid solution has been to over-provision humans and infrastructure. Unfortunately, this fix has increased the complexity and cost of the problem. Additional IT workforce challenges include empowerment, minimizing burnout, and solving for the industry's massive shortage of IT resources and talent. New innovative, transformational and hyper-automation tools are needed.

## Industry Workforce and Talent Shortage Driving Automation

The ability to find talent has been a growing issue with far more demand than resources to fill it. In 2022 the Bureau of Labor Statistics<sup>1</sup> showed 1.6 million unfilled IT jobs in the US. Lt. General Skinner (Director of Defense Information Systems Agency and Commander of Joint Force Headquarters for DoD Information Network), believes the true number of unfilled IT job requisitions far exceeds this number. Regardless, it is agreed that there is a major lack of resources. Intelligent automation tools are a necessity.

It's no secret that the public market has a difficult task of attracting and retaining talent as they are competing with a private market that is willing to offer higher wages, significant benefits, bonuses, stock options and access to new innovative technology. The public sector's inability to compete for skilled workers forces them to adopt other methods to fill open positions. Finding other factors to draw talent into the public sector, such as a call to public service and the impact value, have proven unreliable. A commonly used practice is to hire unskilled and entry level workers and train them on the job. This is an expensive and time-consuming fix. In the long run it is hard to retain those employees when their newfound training and experience makes them more attractive to the private market.

A more efficient method to solve this public and private sector organization and IT problem would be to invest in new, innovative AI automation and orchestration tools that self-manage operational duties. This would free-up significant IT resources and talent across the industry, while enabling opportunities to leverage non-skilled workers to perform critical IT roles and activities with minimal training. However, many barriers prevent this change from rapidly occurring. While public and private sectors look to automation, repeated worker concerns around work displacement hinder progress. There are a few ways to mitigate these hurdles. Benchmarking progress across various public and private sectors can provide vital information as a starting point for organizations beginning this automation journey.

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<sup>1</sup><https://www.bls.gov>

Determining which tasks can and should be automated, and involving end users can increase adoption and ensure the correct tasks are automated can reduce employee burnout - a type of prolonged stress - by allowing focus on more meaningful, complex, and variable tasks. As companies take the approach to identify areas where automation and AI can complement human workers rather than replace them, buy in is expected to increase. Additionally, as these same IT organizations struggle with employee burnout, automation can offer some relief. If organizations look to automate everything they can, lessening workloads and subsequently stress, instances of burnout will be lower and employees can become engaged and involved in more productive, results-oriented work.

## Workforce Empowerment

Workforce turnover rates throughout the US are increasing and the IT market is no exception. In 2022, CompTIA estimated<sup>2</sup> there to be 2,010,882 IT employee separations that equates to over 37% annual turnover rate. On top of the turnover rate is the replacement rate, which averages 7% or another 411,622, plus the overall market growth rate, which CompTIA expects to be “twice the rate of overall employment across the economy”. As employees depart, they create not only a gap in production, but also a gap in knowledge about the company’s IT environment. It can take years for replacement workers to gain the knowledge back that was lost. Maintaining that knowledge in tools would be a more effective and efficient method for storing, maintaining, and leveraging that data, ultimately providing available resources to take on organizational initiatives.

According to Arete Research<sup>3</sup>, one of the primary worries for numerous CIOs is the need to alleviate IT support burdens. The persistent IT environment failures place significant pressure on the workforce, leading to a rapid decline in morale. Moreover, the industry's shortage of skilled workers exacerbates the situation, resulting in amplified employee burnout, an increase in human errors, and a general sense of demotivation among the workforce.

Enhancing employee well-being through stress-reducing strategies can effectively reduce turnover rates and boost overall morale. By transitioning employees from routine tasks to more strategic responsibilities and equipping them with valuable data for informed decision-making, organizations can empower and motivate their workforce offering more meaningful and results-oriented work while reducing previously unmanageable workloads. This, in turn, leads to increased retention rates and a more engaged and productive team.

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<sup>2</sup> "State of the Tech Workforce"

[https://www.cyberstates.org/pdf/CompTIA\\_State\\_of\\_the\\_tech\\_workforce\\_2023.pdf](https://www.cyberstates.org/pdf/CompTIA_State_of_the_tech_workforce_2023.pdf)

<sup>3</sup> "Outlook '23 - The Division Bell" <https://www.arete.net>

## Solution

Applications are imperative for both commercial and governments to run their businesses and missions. These applications rely on infrastructure to provide the performance and reliability warfighters need. The health of the component fleet equals the health of the infrastructure fleet, which in turn delivers reliability and performance for applications. A new innovative solution needs to self-manage the health, service, and knowledge across fleets of hybrid-cloud infrastructure and software, while also integrating into existing service workflow tools to seamlessly blend in without disrupting the flow of operations.

Potential key autonomous infrastructure management solution requirements to consider:

- Maintain and update an accurate list of infrastructure fleet hardware and software assets
- Intelligent AI for delivering visibility, observability across infrastructure
- Automate infrastructure health with predictive and preventative maintenance
- Maximize operational efficiencies to free up skilled resources
- Maximize asset efficiencies
- Curated analytical reliability metrics and knowledge on machine, component, and software fleets
- Self-managed capability such that it does not take a team of “experts” to “make it work”
- Supported use cases of on-premises, government cloud, HPC, edge and extreme edge deployments (vessels, planes, vehicles, etc.)

## Solution Benefits

Maximizing efficiencies is essential to deliver business and mission demands, however this has been difficult-to-impossible to do since humans, in many cases, are the default solution. IT has the unenviable task to keep up with new mission needs while, at the same time, continuing to support existing deployments and their growth. This means increasing both OPEX and CAPEX budget demands to maintain and grow service levels. Unfortunately budgets rarely keep up with these demands. Adding even more complexity is the constant battle of finding and retaining critical workforce in a market where there exists a massive shortage of both workers and talent. This challenge is amplified when budgets fail to match market pricing demands needed to attract talent. The need for automation is more critical than ever.

Automation is crucial; however, it is only the first step. Additional capabilities are needed to greatly expand the benefits of automation. Intelligent analytical knowledge is another key ingredient in increasing awareness by keeping knowledge in tools rather than in workers heads – intelligent data drives accurate and fast decisions. Orchestration provides an additional layer of automation, leading to substantial enhancements in efficiency, as well as overall health of infrastructure. It possesses the ability to rapidly identify and resolve issues caused by human factors in real-time, thereby empowering non-specialized IT personnel to handle critical IT tasks.

Today's IT environments are ever-changing and more complicated than ever before. Covid amplified these challenges as staff moved offsite. Having curated and accurate knowledge is needed to maintain control. Data, for the sake of collecting data, is of no benefit or value, but having tools that understand what the data means enables new capability for managing infrastructure strategically and proactively. Intelligent analytics at your fingertips is powerful and empowers personnel to take proactive and strategic measures.

By embracing the advantages of preventive and proactive infrastructure maintenance and intelligent insights for strategic management, IT organizations can fully optimize their operational and asset efficiencies. Here are some key high-level benefits that such a solution may offer:

- 1) Rich knowledge for empowering workforce
- 2) Reduced workforce burnout
- 3) Enhanced workforce well-being and retention
- 4) New innovative technologies that excite workforce
- 5) Frees up skilled workforce to perform exciting strategic and mission critical needs
- 6) 10X (or greater) increase in operational efficiencies
- 7) Improve application reliability and performance
- 8) Minimize failures

The aim of this white paper on workforce shortages and empowerment was to delve into the intricate connections between the challenges and solutions related to transforming the workforce in the present and future American workplace. By gaining insight into the nature and extent of workforce transformation issues, we can be better equipped to formulate inventive and future-ready solutions for the steadily increasing and evolving problem. This holds especially true as the advent of AI, automation, and remote work adds further complexity and accelerates the pace of workforce transformation. The future workplace is likely to differ significantly from the work environments of the past, and our goal is to provide guidance to both public and private employers on the most effective strategies for addressing persistent workforce shortages and bridging capability and skill gaps. In doing so, we aim to enable workers to fully realize their potential in their roles. With the discussions and potential



solutions presented here, we hope that organizations and individuals can further enrich, deepen, and embrace the workplace of tomorrow, ultimately mitigating the negative impact of workforce transformation on the human experience.

***Disclaimer:*** *This document was prepared by the members of the ATARC Workforce Transformation Working Group in their personal capacity. The opinions expressed do not reflect any specific individual nor any organization or agency they are affiliated with and shall not be used for advertisement or product endorsement purposes.*