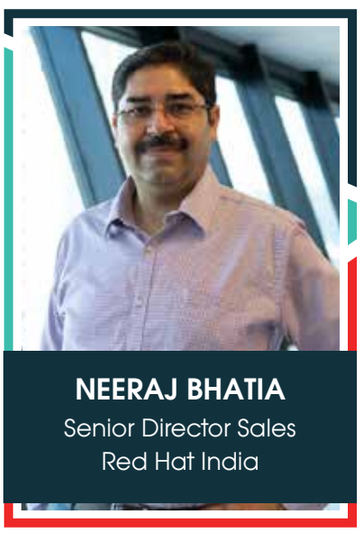
OPEN SOURCE, AN IMPERATIVE FOR DIGITAL TRANSFORMATION

With advancement of technology, businesses across verticals are emphasizing on fortifying their digital foundation and adopting strategies to ensure business resiliency and improve customer engagement. The ongoing pandemic has even necessitated the adoption of technologies.

At present every technology is software powered and these days almost every software is built on an Open Source platform. A paradigm shift has been observed in the field of software development and open source has formed an interconnected community of developers which extends across the world. With evolving digital landscape, Open Source helps organizations to keep pace with it and also helps in building an ecosystem that encourages innovation, enables an organization to scale up, modify and also add new features so that they can change according to customer demands and trends. With Open Source applications companies are able to solve business challenges and they are also investing in innovation.

To know more about how Open Source is influencing Digital Transformation we have garnered insights from the industry and also tried to focus on the security concerns associated with the platform.



NEERAJ BHATIA
Senior Director Sales
Red Hat India

Open Source allows organization to build an ecosystem that promotes faster innovation, enables to scale up, modify and add features

Open Source: A disruptive technology

Open Source helps organizations to keep pace with a constantly evolving digital landscape. It allows an organization to build an ecosystem that promotes faster innovation, enabling them to scale up, modify and add new features according to the changing trends and customer demands.

Open source projects are hotbeds of innovation where constant change and developments happen. Enterprise customers value this innovation, but they also rely on stability, security and long-term support that a product can give. As a result, Enterprise open source has become a preferred choice for organizations around the world for their IT architecture and development model. According to Red Hat's The state of Enterprise Open -Source 2021, 90% of IT leaders surveyed are using enterprise open source today, and 79% expect their use of enterprise open source software for emerging technologies to increase over the next two years.

Advantages of Open Source

At Red Hat, we use an open source software development model to create our enterprise open source products and solutions. Red Hat developers actively participate in hundreds of well known open source projects like Docker container engine, Kubernetes and OpenStack and many more.

Our collaboration with open source communities has helped us bring various open source innovations to market in products like Red Hat Enterprise Linux, Red Hat OpenShift, Red Hat Ansible Automation Platform, Red Hat Data Services, Red hat Enterprise Linux CoreOS and more. As the world's leading provider of enterprise open source solutions, Red Hat offers a tested & certified, portfolio of enterprise cloud, infrastructure and application development solutions, which are supported by Red Hat enabling the adoption of innovation & technology for the enterprise & mission critical workloads. With Red Hat our customers get the advantage of a secure, tested & scal-

"Digital revolution radically accelerated the convergence of next generation exponential technologies powered by Open Source"

BISWAJIT MOHAPATRA
Partner, Executive Director, Hybrid Cloud Transformation Services, IBM

Open Source rewriting Digital Transformation
Open source tools and technologies are the connecting glue which binds varied technology stacks and whitespaces through portable, interoperable, responsive and vendor neutral solution patterns for successful digital transformation. Digital revolution has radically accelerated the convergence of next generation exponential technologies powered by Open Source. The emergence of Intelligent workflows leveraging community-driven open and innovative development is enabling enterprises to move beyond routine process automation to AI/ML powered automation. Enterprises need to build cloud-based Digital open platforms augmented with Data Analytics, AI/ML, Blockchain, IoT, AR / VR and other exponential technologies on the path to Digital Transformation.

Open source is the vehicle of choice for creating the Cognitive Enterprise of the future where business decisions are centered around data, customer experience is propelled through customization at scale and customer engagement is managed through virtual contactless delivery.

Open Source: Opportunities
1. Innovation: Since open source software builds with contributions from large distributed groups of developers with wider expertise, innovation is a more likely outcome. Process and Technology Innovation are going to drive the next stage of digital transformation for Enterprises.

2. Transparency: Transparency and visibility into source code, development and operation processes empowers users to experiment iteratively. Increased transparency also creates opportunities to build stable, secure, and reliable software across a multitude of deployment environments adhering to open source DevSecOps tools such as Docker, Jenkins, Nagios, Ansible etc.

3. Lower Total Cost of Ownership: The Open Source software is typically free for use, allowing experimentation and promoting unhindered innovation in Digital Adoption.

4. Avoid Vendor Lock-ins: Open source software helps Enterprises to avoid vendor lock ins facilitating customization at scale in the transformation journey.

HEMANT GAUR
Head of Presales & Solutions, STS, Pitney Bowes

The community aspect of Open Source allows organizations more agility around innovation

Open Source: A disruptive technology
Open source acts as an enabler for inclusiveness for businesses. Organizations use open source to serve small and medium businesses with low cost products and build a competitive advantage through cost and volume over dominant players who are focused at enterprise segments. The strong community aspect of open source may allow organizations more agility around innovation and also allow addition of newer segments of the market around the products and services. In different words the strongest aspect of open source is that people or communities can innovate for themselves rather than waiting for a business to do it for them.

Advantages of Open Source
We at Pitney Bowes provide all our customers, ranging from eCom sellers to 3PL companies, digitally integrated new-age commerce solutions. An engaging customer experience is central to these solutions and allows our customers agility to respond to evolving markets. These solutions will be democratizing the shipping and mailing for small and medium businesses by leveraging power of community(ies).

We are leveraging open source softwares like Linux, Android, Jetty, Tomcat, Postgresql for crafting affordable, digital first shipping solutions and services. We are also enabling some of the biggest Indian and south Asian 3PL providers with digital transformation of their operations including parcel collections, tracking and load management for increasing their efficiency and viability.

Open Source & organizational strategy
Open source allows significant innovation at different levels like technical, product and organization and has advantages of network effects for its users. The perception that it is singularly contributing towards just lowering the development costs of (new) products is not precise as because of the strong community the features, limitations and performance of the products are highlighted quickly.

With the greater penetration of open source in the market, enterprises are now forced to review missing market segments and low end consumers more often than earlier. Enterprises are aware that they may be disrupted very quickly by a combination of good enough product and big enough community and not necessarily the best product or a bigger/richer organization. With the advent of cloud and 'pay as you use' infrastructure, there is democratization of infrastructure that complements open source technologies very well and allows startups to disrupt businesses.

Yet another dimension for enterprises in today's world of xAAS (anything as service) is that customers are now paying for the service and value and not the software. This allows for higher open source technologies adoption.

Open Source transformed software development and created interconnected community of developers

MANEESH SHARMA
Country Manager
GitHub India

Open Source: A disruptive technology
Today, 99% of software projects are developed using open source. Open source has revolutionized software development, and created an interconnected community of developers that is deeply collaborative and extends across the world.

Every line of code that is being written, builds on the code of millions of others. Now, more than ever, open source brings together developers from all over the world to solve challenging problems, create important technologies and make a difference.

Advantages of Open Source
GitHub is the de facto collaboration platform and resume for developers all over the world. GitHub is also the DevOps platform for the private development of some of the most innovative companies and leading enterprises. GitHub's mission is to build the global platform for developer collaboration - nothing important will ever be built without software and without open source, so we want to ensure it is secure and prosperous for many years to come.

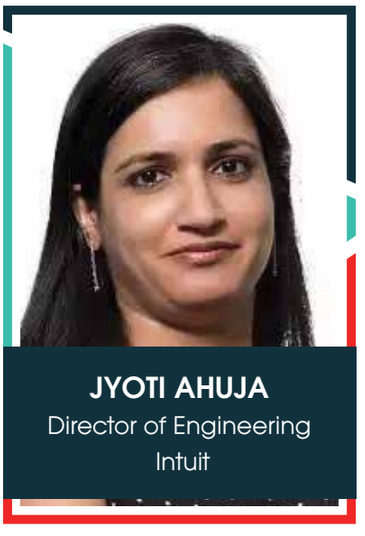
The foundation GitHub is building will allow leaders from across industries to come together and further drive secure innovation, faster.

Open Source & organizational strategy
Open source is at the foundation of every software project on earth. Companies from around the world are looking to the open source community to learn from the best practices, the tools and the processes, especially in the remote era we all live in, to build as effectively as possible, the best technology.

Enterprises can learn about how open source works, and contribute back. Today, developers drive innovation within their enterprise. So to become a digital company, every company must build a culture that empowers developers to collaborate and achieve more. No one company can outcompete the brilliance, skills, energy and innovating power of the millions of open source developers that are working across the world, together.

Building secure code is critical to ensuring a faster pace of innovation and a safe and healthy open source community isn't just good for open source, it benefits the millions of critical technologies that depend on it - securing the world's code is a collective responsibility and one that we take very seriously at GitHub.

Open Source: An integral part of Intuit engineering culture



JYOTI AHUJA
Director of Engineering
Intuit

Open Source: A disruptive technology
Open source is at the core of digital innovation and has seen an explosion of enterprise-ready and developer-friendly projects. With the proliferation of open-source applications, companies are addressing major business challenges, and are investing in innovation regardless of scale. Intuit has long been a consumer and beneficiary of open-source projects, and believes in tapping into and sharing knowledge to address the urgent financial issues of its customers.

By tapping into the collective knowledge of developers, we prioritize innovation, and encourage creative problem-solving by including developers from different industries and with diverse backgrounds. Open source is a natural fit for Intuit and is an important part of our Intuit engineering culture, resonating with our mission of powering prosperity around the world. From a practical perspective, a more open approach also helps us develop better products.

From Intuit-led projects like Argo, Karate, and Truffle Shuffle to our employee contributions to many other projects, we have never been more committed to the principles and practice of open source. This includes exploring new ways to innovate in software development, such as open source, aiding us in giving back to the community and solving for our customers' most pressing financial problems with speed and agility.

It enables engineers to work on diverse technology stacks beyond their teams' domain and helps increase overall engineering group awareness to solve code-based problems. We have been an active contributor to the broader community of technologies and products used in production.

Open sourcing a project helps us speed up development and highlight any potential blind spots we may have missed. We actively encourage our teams to contribute to open source and host many activities to engage engineers to contribute. In fact, this last year we encouraged our engineers virtually to contribute to Open Source projects and last October, we had a month-long celebration of Open Source – Hacktoberfest which was an opportunity to connect with and celebrate the open source community and increase involvement from diverse contributors, around the world.

"Fortinet's Open Fabric Ecosystem allows participating partners from an array of industries to seamlessly integrate their solutions with the Security Fabric"

RAJESH MAURYA
Regional Vice President,
India & SAARC
Fortinet

Open Source: A disruptive technology

As organizations face the rapidly expanding digital attack surface, customers increasingly seek to achieve an integrated security approach. Various IT solutions working in isolation are not enough to address the critical gaps that contribute to increased security risks. Lack of integration and automation across products hinders visibility, making life very complicated for IT and security departments. Enterprise deployments can often be comprised of 30+ point products, mostly from different security vendors. These independent and often isolated systems may not share threat intelligence or take coordinated security policy actions to respond to fast-moving cyberthreats, resulting in greatly reduced overall security effectiveness.

The Fortinet Security Fabric has an architectural approach to security designed to connect traditionally disparate security solutions into a unified framework, allowing them to dynamically adapt to the evolving IT Infrastructure in order to defend its rapidly changing attack surface. Fortinet's Open Fabric Ecosystem allows participating partners from an array of industries to seamlessly integrate their solutions with the Security Fabric, thus extending the benefits of the Security Fabric through pre-validated and documented joint solutions with advanced security. The Fortinet Security Fabric enables organizations to achieve an integrated platform approach for complete visibility and comprehensive security without compromise across every network segment and device, and across hardware, virtual and cloud environments.

Advantages of Open Source

With over 400 technology integrations, Fortinet's Open Fabric Ecosystem is one of the largest cybersecurity ecosystems in the industry. The ecosystem is comprised of Fabric-Ready technology alliance partners, collaborations with threat sharing organizations and other technology integrations, delivering comprehensive end to end security. These ecosystem integrations enable threat intelligence sharing to detect, monitor, block, and remediate attacks across the entire attack surface, ensuring rapid and coordinated policy enforcement. Fortinet's Fabric-Ready Partner Program, launched in 2016, plays a key role in the Open Fabric Ecosystem. The Fortinet Fabric-Ready Partner Program acts as the enabler and brings together the community of technology alliance partners to deliver powerful complementary solutions in the Open Fabric Ecosystem. Partners are provided with program infrastructure, resources, and tools to integrate with the Security Fabric, develop joint solutions, and become part of the ecosystem. Fortinet's open ecosystem approach extends the capabilities of the Security Fabric to the Fabric-Ready partner solutions and enables integration of new solutions into the Fabric.

Open Source & organizational strategy

Customers can leverage a wide array of integrated ecosystem solutions to best fit and secure their infrastructure while preserving their existing security investments. Through threat intelligence sharing and coordinated policy enforcement across products, ecosystem solutions provide customers with effective security. Pre-validation of ecosystem solutions enables customers to make purchase decisions with more confidence and gain faster time to deployment with reduced systems integrations costs. Ecosystem solutions extend the benefits of the Security Fabric, and are a testament to the openness of the Security Fabric and the inclusive philosophy of the Fabric-Ready Partner Program.

DHANANJAY GANJOO
Managing Director
India & SAARC, F5

"F5 understands the need to enable customers to power and protect apps from code to customer while maintaining the flexibility and agility provided by open source offerings"

Open Source: A disruptive technology

Today every organization is focusing on establishing its digital foundation and strategies to ensure business resiliency and enhanced customer engagement. As open source technologies become more prevalent, there is a flywheel effect leading to increased confidence in using open source at scale. In fact, according to the 2020 State of Enterprise Open Source report a survey of 950 IT leaders indicated that open source is a critical consideration in the enterprise:-95% of respondents indicated that open source is important to the business.

However, for users of open source, it can be a challenge to stay apprised of what vulnerabilities have been identified and how to remediate those vulnerabilities. Cybercriminals have access to the same websites that researchers do, and they are also increasingly turning their attention to open-source malware tools to use for criminal activities. As Open source software (OSS)'s advantages can be exploited as disadvantages, and its strengths can be exploited as weaknesses. While the community approach benefits (OSS), it also provides an attack surface to exploit hitherto unknown vulnerabilities. The end consumer of the (OSS) is now responsible for end-to-end security which cannot be overlooked. As a provider of an open source web server that powers more than 400 million websites, F5 understands the need to enable customers to power and protect apps from code to customer while maintaining the flexibility and agility provided by open source offerings. With F5 and NGINX, we have been able to help enterprises with an end-to-end, consistent set of application services to address one of IT's most pressing needs- fast, frequent deployments across a varied set of application architectures residing in multiple cloud properties while enabling the community to enjoy the benefits of open source.

"The evolving development landscape and resultant threats to the enterprise make it imperative that Development and Security leadership work together"

ROHAN VAIDYA
Regional Director – India
CyberArk

Open Source: A disruptive technology
Digital transformation, with open source as one of the building blocks, is disruptive in that it requires faster and more frequent deployment of applications and features. As a result, organisations are adopting new development strategies such as continuous integration and continuous delivery (CI/CD) and DevOps methodologies. For example, IT functions such as provisioning and managing compute resources are more efficiently handled with automated tools such as Ansible. This infrastructure is often based in the cloud and the new tools and applications require coding and development expertise – very different from traditional IT admin skill sets.

What we are seeing as a result, as an unintended consequence of this disruption, is that IT operations and security executives are finding that processes that once ran through their offices, or at least required their review and approval, are now happening outside their purview. As this transition continues, developers need – and are taking – increasingly powerful, expansive privileged access via applications, tools, consoles, etc. And while organisations are waking up to the new realities, attackers are exploiting these vulnerabilities.

Open Source & Security concerns
Talented developers, both internal and external, are key to successful digital transformation initiatives. With more automated software development and delivery processes and access to cloud- based open source tools and repositories, they can deliver more code faster. But these advances have implications; they also expand the attack surface. There are more vulnerabilities along the software supply chain, from coding with open-source components, to automated builds and testing, to cloud- based deployment. This is especially evident with insecure privileged accounts, credentials, and secrets, e.g., API calls, encryption keys, access tokens, certificates, passwords, etc. The evolving development landscape and resultant threats to the enterprise make it imperative that Development and Security leadership work together.

MANASI SAHA
Founder & Owner
Macaws Infotech

"Open source technology has the potential to deliver state-of-the-art risk mitigation and rapid innovation"

Open Source: A disruptive technology
In today's digital age, as organizations seek to endeavour a digital transformation journey, they face major challenges as well, especially in minimizing costs and increasing revenue. Without having the right enterprise technologies in place, businesses can miss the mark even with the best-planned software strategy. This is where the open source technology is implemented by a majority of enterprises these days as they are increasingly shifting their focus on bolstering digital foundation and strategies in order to ensure business resiliency and enhanced customer engagement.

Open source here is delivering the robust foundation of the modern IT landscape. This has the potential to even address companies' business strategies to drive innovation. This technology has been around for quite some time now and gaining rapid momentum in the modern day of the digital transformation journey.

With the commercialization of the industry started and become competitive, developers began to advocate the idea of free software. In general, open source allows a company to develop an ecosystem that can foster faster innovation and enables them to scale up, adapt and add new features as per the changing trends and customer demands.

Open Source & Digital Transformation
Implementing digital transformation typically involves the realization of SaaS-based platforms; modernization of legacy platforms and systems; interpretation of IT application landscape, and standardization of infrastructure. This also encompasses the development of analytics capabilities, conveyance of consumerization of IT, and adoption of agile and learn fast methodology.

In order to support their digital transformation, enterprises significantly leverage new tools and modernize their infrastructure. Open source simply sheds light on the emerging technologies transforming the business landscape. For some businesses the deployment of open source technology is not just about cost but also about getting the best product.

With rapidly changing times, open source technology has the potential to deliver state-of-the-art risk mitigation and rapid innovation. Previously, open source software was the developers' area of interest and begun to go mainstream by the mid-2000s. This significantly provided a cost-effective way to drive innovation. Moreover, leveraging open source, developer teams within organizations can quickly model innovative ideas, experiment with novel technologies, and build on these trends.