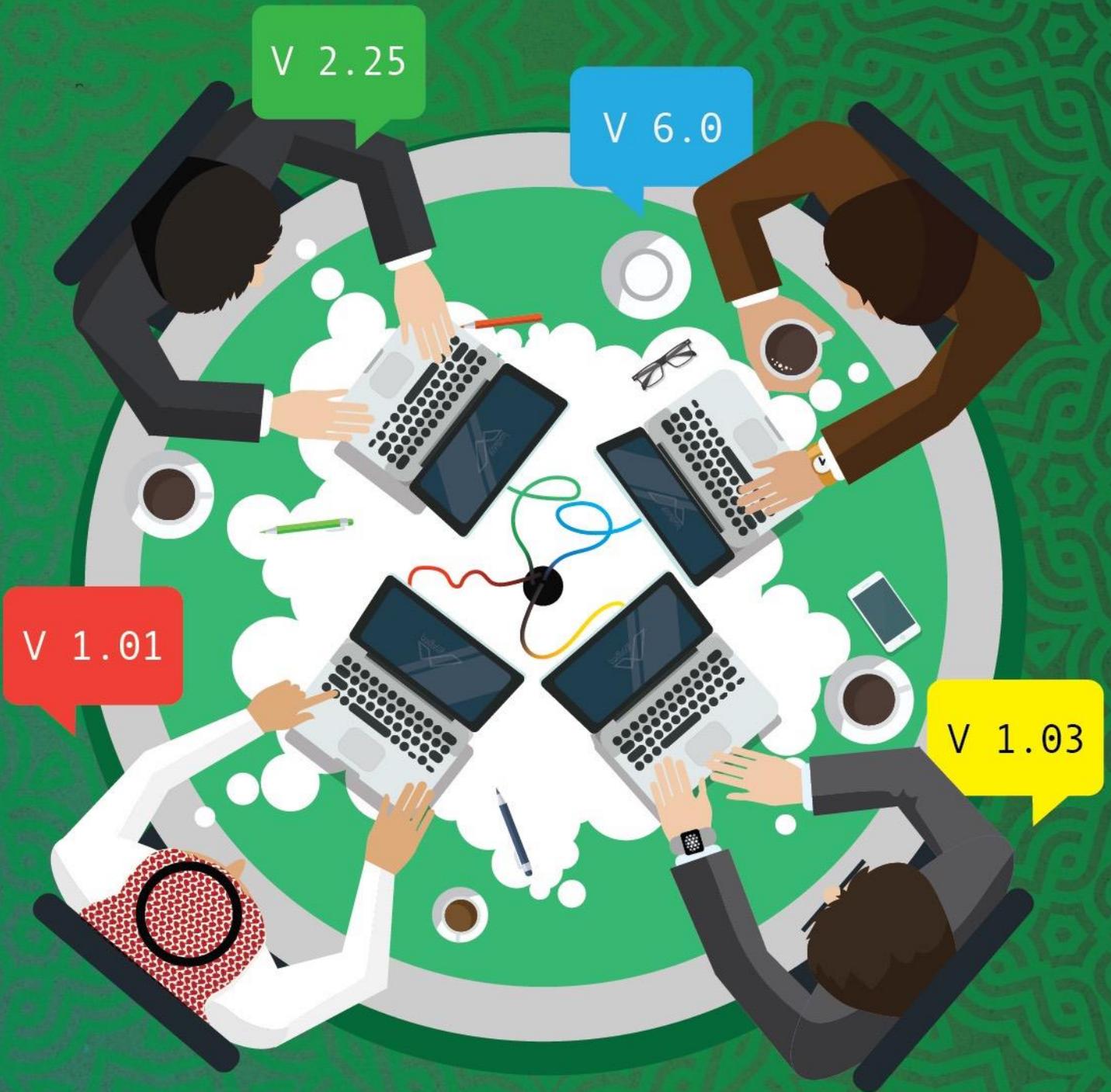


Open Source Testing in Saudi Arabia

A WAREEF WHITE PAPER



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INTRODUCTION / HISTORY

Open source is a term used to describe the free use of software. Before the 60s, very few academic and corporate researches contributed to what is called “public domain software”. Developers and users were frequently modifying the software themselves and fixed faults and bugs. Their contribution however, was very limited and restricted due to the high costs of software production.

In the early 1970s, AT&T launched the first version of the UNIX operating system at no cost to government and academic researchers., but the users were not able to change code nor to redistribute their own versions. After UNIX became more widespread in the early 1980s, AT&T stopped the free distribution and charged for system releases. As it was quite difficult to switch to another architecture, most researchers paid for a commercial license. Vendors and software companies then started following the same approach and “program products” with legal restrictions and copyrights came into the picture.

Due to these changes, and as a reaction to what happened, the GNU project was launched in 1983 and became the starting point for all later open source projects. GNU then released a general public license to ensure that the following may be observed: (1) that the freedom to distribute copies of free software is allowed (or charge these software if the individual wishes to), (2) that the individual may receive the source code or attain it if they want, (3) that they can change the software or use bits and pieces of it in making new free programs and (4) that the users may know that they can do those things. It also guarantees the protection of

your rights and prevents others from denying or surrendering those rights. After which, developers started publishing their software under the GNU general public license. Contributors got the freedom to change the code, provide fixes and even launch their own versions under the same license (Ref GNU Project).

Because of this, the open source community is currently one of the biggest in its domain. Contributors provide free applications in different fields such as databases, ERPs, software testing, configuration management and the like.

OPEN SOURCE SOFTWARE AUTOMATION TOOLS

Test Management tools are essential to any test team. These tools are used to acquire requirements, design test cases, map the test cases to the requirements, automate the test, test execution, reporting and many more. The main purpose of these tools are improving productivity and providing more visibility. In order to achieve these, organizations use one to many tools which range from very expensive commercial tools to the totally free open source solution.

Commercial tools are where the user has to pay for the license, installation, configuration and support. On the other hand, open source is available at no cost. Giant companies like HP and IBM invest in software quality management and produce multiple products and software to help in improving the quality for applications and to find solutions. Their portfolio contains functional, performance, and security testing. They sell these tools in different license schema with multiple cost categories. Quality consultants need deep knowledge and special requirements in order to master these tools. Furthermore, customers have to study their needs carefully and analyze the value and how much return on investment will be generated before buying these tools due to high license fees.

Open source community provides flexibility and freedom with multiple options to achieve the intended quality. Free automation tools are available at all testing levels, types and categories. The testing team can select any product and even try it before commissioning any activities.

COMPARISON: COMMERCIAL VS OPEN SOURCE

Opensourcetesting.org is one of the best known open source testing website. It contains a database for more than 300 testing tools for different purposes starting from functional testing up to even link checkers. This paper will address the most common ones and compare them to the best known commercial tools. (Refer to Opensourcetesting.org)

Selenium:

It is a well-known open source testing tool for web application testing. Testers can use this tool to record and playback testing even without the need for learning test scripting language. Multiple adaptors are available to run the testing and view the results in several IDE like Jenkins, Visual studio, Testdroid, etc. This tool is considered as the best replacement when it comes to price and scalability compared to IBM Functional Tester and HP UFT. Wide open communities and support are also available for free.

Apache Jmeter:

When it comes to performance, Jmeter is one of the best open source tools that measure the application performance without any restriction to the number of virtual users like HP LoadRunner or IBM Performance Tester. It can also be used for mobile performance testing and facilitating load testing of web applications. To do this, JMeter generates varying quantities of dumb-load and then measures the response times of the server during those loads. This enables the administrators to detect glitches and take remedial action immediately. Its ability of undertaking performance testing from any required online asset – like web service, database, FTP or

web server, or using a single tool – is one of its biggest advantages. It can also be arranged to test those applications that run in the cloud.

SoapUI:

It is the world's top open-source functional testing tool for service-oriented architectures SOA and web service testing. These web services can be SOAP web services, RESTful web services or even HTTP based services. Its convenient graphical interface and robust and scalable features allow you to easily and quickly create and execute automated functional, regression and load tests. Though it is a completely free tool, SoapUI can provide complete test coverage. Its functionality covers the following: web service inspection, functional testing, load and compliance testing, invoking, development simulation and mocking

Bugzilla:

Bugzilla as its name implies is a bug or defect tracking system. It helps keep track of outstanding bugs in the product and allows code changes. It also allows communication between the team, submitting and reviewing patches and managing quality. The tool has integration with most of the open-source testing and development environment. It's faster and enables the process between project team members and provides management with comprehensive results of project status. Successful projects are products of successful organization and communication where Bugzilla is the tool that can help you achieve both.

QABook:

It is a test management tool for software development projects and has modern web user interface and many advanced features for efficient testing. QABook enables the creation, management and editing of requirements, test cases, test set planning, case execution and reporting, test runs, environments and more. Its dashboard also gives you a real-time

view of the historical trends, key performance indicators and current status of testing.

OPEN SOURCE IN SAUDI ARABIA AND 2023 VISION

In Saudi Arabia, based on a survey conducted by King Abdulaziz City of Science and Technology (KACST) in 2013, free and open source is still a relatively new concept. The study found that nearly 60% of those aware of concept, but not yet using it said that they first heard of it in the last five years. Usage numbers are low. The lack of technical support and lack of skills, respectively, are the primary inhibitors to greater use. On the other hand, IT professionals in Saudi Arabia are generally aware of the benefits of free and open source software such as modifiability, stability, cost-effectiveness and security, but adoption may be still in the initial phases. Professionals understand that free and open source can contribute to internal IT efficiencies and obviate the need for license fees.

In May 2016, Saudi Arabia government has launched the new transformation program. The program focuses on improving productivity where cost reduction will be a result. Part of this program is to set a framework to enable free and open source systems. King Abdulaziz City of Science and Technology will be responsible for regulating this initiative. The objective of this initiative is to reduce cost and expose the IT consultants to the open source community as a first choice alternative. (Refer Saudi NTP 2016)

CONCLUSION

Taking into consideration Saudi Arabia 2023 Vision and the mission statement of KAUST which is to advance science and technology through bold and collaborative research as well as to catalyze diversification of the Saudi economy while addressing the challenges that would be of regional and global significance to render service to the Kingdom, region and the world at large, we have to consider our options and plans that would

contribute to and fulfill this goal. Reducing costs while still maintaining if not improving the quality is one of the major challenges thrown. Old methods may be unable or insufficient to meet both goals, thus, we should consider new alternatives like open sourcing. Not only is it free and without any vendor's restriction, but it encourages collaboration and innovation among the developers and users thus promoting growth and constant polishing of their knowledge, skills and abilities especially when building complex pieces of software. Also, to help with diversification and innovation of the Saudi economy, KAUST may consider exploring open source as a base for building an economic engine. Through increasing awareness and understanding of the internet as a platform for innovation and encouraging open standards, new ways to guide investments and policies may arise.

Ergo, open source though relatively new to Saudi Arabia can guide us to a strategy for economic development. It can nourish innovation, as well as business development and become a tool not only for solving problems but in moving organizations forward towards the actualization of their missions of diversifying the economy.