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Editorial

We would like to wholeheartedly thank our honorable Chairman, Secretary, Executive Director and Principal for their continuous encouragement and constant support for bringing out the magazine. We profoundly thank our Head of the Department for encouraging and motivating us to lead the magazine a successful one right from the beginning. Ishare serves as a platform for updating and enhancing upcoming technologies in Information and Communication. We are grateful to all the contributors to this magazine so far. The magazine has been sent to almost 60 Institutions in and around Tamilnadu. So far we have received feedbacks and appreciations from various Institutions.

We would be very pleased to receive your feedbacks. Please send your feedbacks to ishare@ksrcas.edu

By,

Editorial Board

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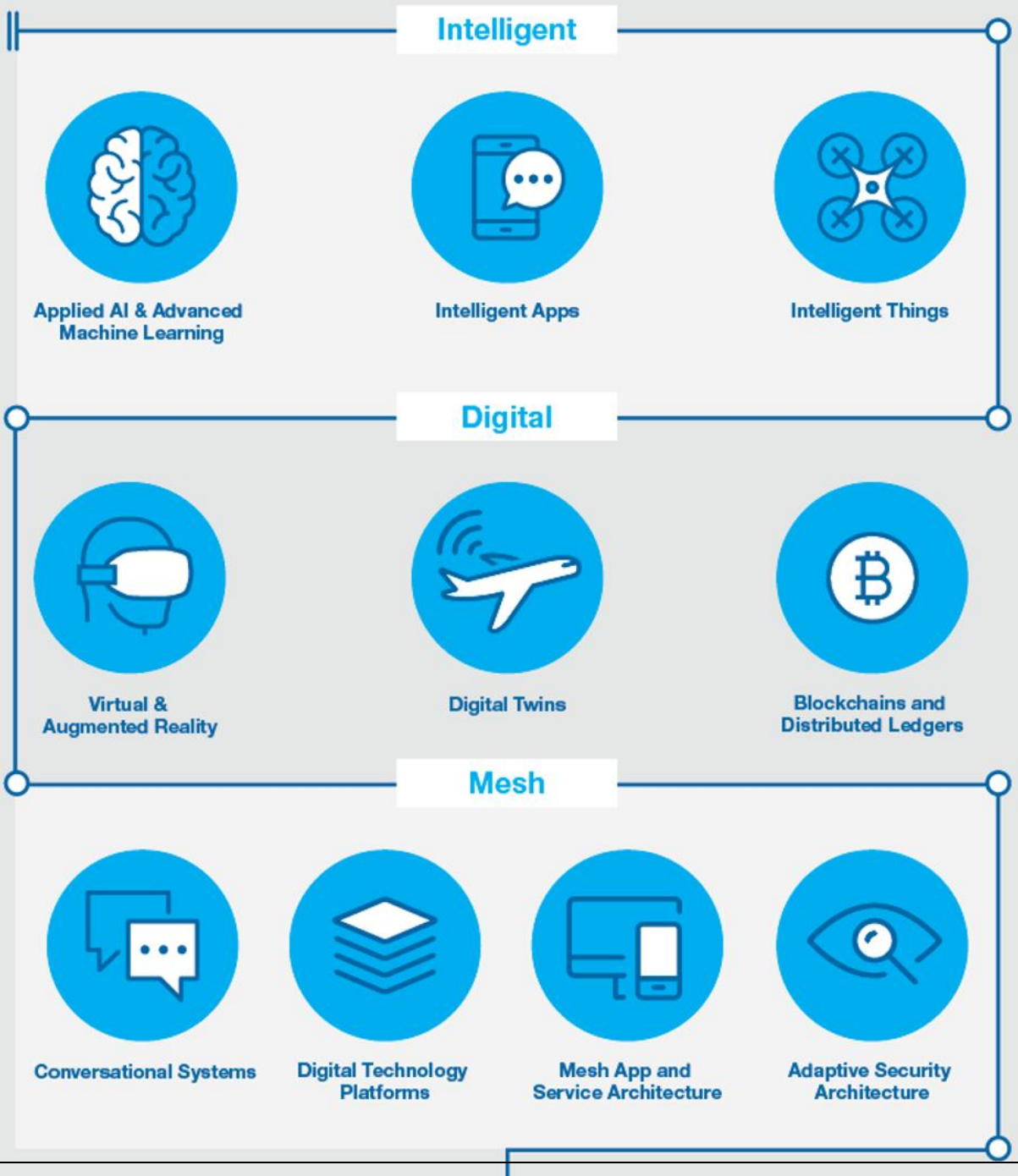
Gartner's Top Five Strategic Technology Trends for 2017

Increasingly, the world is becoming an intelligent, digitally enabled mesh of people, things and services. Technology will be embedded in everything in the digital business of the future, and ordinary people will experience a digitally-enabled world where the line between what is real and what is digital blur.

Rich digital services will be delivered to everything, and intelligence will be embedded in everything behind the scenes. We call this mesh of people, devices, content and service the *intelligent digital mesh,* and this forms the basis for our Top 10 Strategic Technology Trends for 2017.

Gartner.

Top 10 Strategic Technology Trends 2017



Intelligent

Artificial Intelligence (AI) and Machine Learning have reached a critical tipping point and will increasingly augment and extend virtually every technology enabled service, thing or application. Creating intelligent systems that learn, adapt and potentially act autonomously rather than simply execute predefined instructions is primarily battleground for technology vendors through at least 2020.

Trend No. 1: AI & Advanced Machine Learning

AI and Machine Learning, which include technologies such as deep learning, neural networks and natural-language processing, can also encompass more advanced systems that understand, learn, predict, adapt and potentially operate autonomously. Systems can learn and change future behavior, leading to the creation of more intelligent devices and programs. The combination of extensive parallel processing power, advanced algorithms and massive data sets to feed the algorithms has unleashed this new era.

In banking, you could use AI and machine-learning techniques to model current real-time transactions, as well as predictive models of transactions based on their likelihood of

beingfraudulent. Organizations seeking to drive digital innovation with this trend should evaluate a number of business scenarios in which AI and machine learning could drive clear and specific business value and consider experimenting with one or two high-impact scenarios.

Trend No. 2: Intelligent Apps

Intelligent apps, which include technologies like Virtual Personal Assistants (VPAs), have the potential to transform the workplace by making everyday tasks easier (prioritizing emails) and its users more effective (highlighting important content and interactions). However, intelligent apps are not limited to new digital assistants – every existing software category from security tooling to enterprise applications such as marketing or Enterprise Resource Planning(ERP) will be infused with AI enabled capabilities. Using AI, technology providers will focus on three areas — advanced analytics, AI-powered and increasingly autonomous business processes and AI-powered immersive, conversational and continuous interfaces. By 2018, Gartner expects most of the world's largest 200 companies to exploit intelligent apps and utilize the full toolkit of big data and

analytics tools to refine their offers and improve customer experience.

Trend No. 3: Intelligent Things

New intelligent things generally fall into three categories: robots, drones and autonomous vehicles. Each of these areas will evolve to impact a larger segment of the market and support a new phase of digital business but these represent only one facet of intelligent things. Existing things including Internet of Things (IoT) devices will become intelligent things delivering the power of AI enabled systems everywhere including the home, office, factory floor, and medical facility.

As intelligent things evolve and become more popular, they will shift from a stand-alone to a collaborative model in which intelligent things communicate with one another and act in concert to accomplish tasks. However, nontechnical issues such as liability and privacy, along with the complexity of creating highly specialized assistants, will slow embedded intelligence in some scenarios.

Digital

The lines between the digital and physical world continue to blur creating new opportunities for digital businesses. Look

for the digital world to be an increasingly detailed reflection of the physical world and the digital world to appear as part of the physical world creating fertile ground for new business models and digitally enabled ecosystems.

Trend No. 4: Virtual & Augmented Reality

Virtual reality (VR) and Augmented Reality(AR) transform the way individuals interact with each other and with software systems creating an immersive environment. For example, VR can be used for training scenarios and remote experiences. AR, which enables a blending of the real and virtual worlds, means businesses can overlay graphics onto real-world objects, such as hidden wires on the image of a wall. Immersive experiences with AR and VR are reaching tipping points in terms of price and capability but will not replace other interface models. Over time AR and VR expand beyond visual immersion to include all human senses. Enterprises should look for targeted applications of VR and AR through 2020.

Trend No. 5: Digital Twin

Within three to five years, billions of things will be represented by digital twins, a dynamic software model of a physical thing or system. Using physics data on how the

components of a thing operate and respond to the environment, as well as data provided by sensors in the physical world, a digital twin can be used to analyze and simulate real world conditions, responds to changes, improve operations and add value.

Software Testing Tools

Now–a-days we can get lots of **Software Testing Tools** in the market. Selection of tools is totally based on the project requirements & commercial (Proprietary/Commercial tools) or free tools (Open Source Tools) you are interested. Off Course, free Testing Tools may have some limitation in the features list of the product, so it's totally based on what are you looking for & is that your requirement fulfill in free version or go for paid Software Testing Tools.

The tools are divided into different categories as follows:

- Test Management tools
- Functional Testing Tools
- Load Testing Tools

Here is the most popular ***Testing Tools list*** used in the actual testing of the software application.

1) Open Source Tools

a) Test Management tools

- TET (Test Environment Toolkit)
    - The goal behind creating the Test Environment Toolkit (TET) was to produce a test driver that accommodated the then current and anticipated future testing needs of the test development community. To achieve this goal, input from a wide sample of the community was used for the specification and development of TET's functionality and interfaces.
- TETware
    - The TETware is the Test Execution Management Systems which allows you to do the test administration, sequencing of test, reporting of the test result in the standard format (IEEE Standard 1003.3 1991) and this tool supports both UNIX as well as 32-bit Microsoft Windows operating systems, so portability of this is with test cases you developed. The TETware tools allow testers to work on a single,

standard, test harness, which helps you to deliver software projects on time.

- Test Manager
    - The Test Manager is an automated software testing tool is used in day to days testing activities. The Java programming language is used to develop this tool. Such Test Management tools are used to facilitate regular Software Development activities, automate & mange the testing activities.
- RTH
    - RTH is called as “Requirements and Testing Hub”. This is an open source test management tool where you can use as requirement management tool along with this it also provides the bug tracking facilities.

b) Functional Testing Tools

- Selenium
    - Primarily, it is for automating web applications for testing purposes, but is certainly not limited to just that. Boring web-based administration tasks can (and should!) also be automated as well.

- Soapui
- Watir
    - Watir, pronounced **water**, is an open-source (BSD) family of Ruby libraries for automating web browsers. It allows you to write tests that are easy to read and maintain. It is simple and flexible.
    - Watir drives browsers the same way people do. It clicks links, fills in forms, and presses buttons. Watir also checks results, such as whether expected text appears on the page.
- HTTP::Recorder
- WatiN
- CanooWebTest
- Webcorder
- Solex
- Imprimatur
- SAMIE
- Swete
- ITP
- WET
- WebInject

- Katalon Studio

c) Load Testing Tools

- Jmeter
- FunkLoad

2) Proprietary/Commercial tools

a) Test Management tools

- HP Quality Center/ALM
- QA Complete
- T-Plan Professional
- Automated Test Designer (ATD)
- Testuff
- SMARTS
- QAS.TCS (Test Case Studio)
- PractiTest
- Test Manager Adaptors
- SpiraTest
- TestLog
- ApTest Manager
- DevTest

b) Functional Testing Tools

- QuickTest Pro

- Rational Robot
- Sahi
- SoapTest
- Badboy
- Test Complete
- QA Wizard
- Netvantage Functional Tester
- PesterCat
- AppsWatch
- Squish
- actiWATE
- liSA
- vTest
- Internet Macros
- Ranorex

c) *Load Testing Tools*

- WebLOAD Professional
- HP LoadRunner
- LoadStorm
- NeoLoad
- Loadtracer

- Forecast
- ANTS – Advanced .NET Testing System
- vPerformer
- Webserver Stress Tool
- preVue-ASCII
- Load Impact

Performance Testing Tools

Below is the comprehensive list of most widely used ***performance testing tools*** for measuring web application performance and load stress capacity. These load testing tools will ensure your application performance in peak traffic and extreme stress conditions.

1. WebLOAD

WebLOAD lets you to perform load and stress testing on any internet application using Ajax, Adobe Flex, .NET, Oracle Forms, HTML5 and many more technologies. WebLOAD's strengths are its ease of use with features like DOM-based recording/playback, automatic correlation and JavaScript

scripting language. The tool supports large-scale performance testing with heavy user load and complex scenarios, and provides clear analysis on the functionality and performance of the web application. WebLOAD has 3500 users worldwide and has won various awards. Another highlight of the tool is its flexible licensing mechanism and pricing.

WebLOAD System Requirements: Windows, Linux

2. LoadUI NG Pro

Creates sophisticated load tests with just few clicks. LoadUI NG Pro makes it easy to model real-world loads on your API. LoadUI supports REST, SOAP, JMS, MQTT and many other API formats. LoadUI's easy-to-use graphical interface makes it simple for new users to setup load scenarios, while also providing advanced scripting features for those with more experience.

This tool allows you to spend more time analyzing results than configuring and building tests by hand. You can learn even more about your application by making use of LoadUI's ability to report on server performance data. You can setup local or globally distributed load agents for your load testing scenarios. LoadUI NG Pro allows you to easily reuse your existing

functional test cases from SoapUI and SoapUI NG Pro. With just three clicks you can transform your SoapUI NG Pro test cases into sophisticated performance tests.

System Requirements: Windows, Linux, and Mac OS

3. ApicaLoadTest

Apica offers flexible self-service and full-service load testing able to test 2M + concurrent users, through a network of 50+ locations around the world. Test on demand or automate testing throughout development lifecycles. It is easily integrated into existing Dev stacks using their partnership integrations and their REST API.

Advanced Features include: AJAX/WebServices, XML/JSON Data Viewer, API data/Execution

4. LoadView

LoadView is a fully managed, on-demand load testing tool that allows for completely hassle-free load and stress testing. Unlike many other load testing tools, LoadView performs testing in real browsers (not headless phantom browsers), which provides extremely accurate data, closely emulating real users.

Only pay for what you use and no contracts required. LoadView is 100% cloud-based, scalable, and can be deployed in minutes.
Advanced Load Testing features include: Point and Click Scripting, Global Cloud-Based Infrastructure, Real Browser Testing

5. Apache JMeter

It is a Java platform application. It is mainly considered as a performance testing tool and it can also be integrated with the test plan. In addition to the load test plan, you can also create a functional test plan. This tool has the capacity to be loaded into a server or network so as to check on its performance and analyze its working under different conditions. Initially, it was introduced for testing the web applications, but later its scope had widened. It is of great use in testing the functional performance of the resources such as Servlets, Perl Scripts and JAVA objects. Need JVM 1.4 or higher to run.
Apache JMeter System Requirements: It works under Unix and Windows OS

6. HP LoadRunner

This is a HP product which can be used as a performance testing tool. This can be bought as a HP product from its HP

software division. Also, it is very much useful in understanding and determining the performance and outcome of the system when there is actual load. One of the key attractive features of this testing tool is that, it can create and handle thousands of users at the same time. This tool enables you to gather all the required information with respect to the performance and also based on the infrastructure. The LoadRunner comprises of different tools; namely, Virtual User Generator, Controller, Load Generator and Analysis.

LoadRunner System Requirements: Microsoft Windows and Linux are the favourable OS for this measuring tool.

7. Rational Performance Tester

The Rational performance tester is an automated performance testing tool which can be used for a web application or a server based application where there is a process of input and output is involved. This tool creates a demo of the original transaction process between the user and the web service. By the end of it all the statistical information are gathered and they are analyzed to increase the efficiency. Any leakage in the website or the server can be identified and rectified immediately with the help of this tool. This tool can be

the best option in building an effective and error free cloud computing service. This Rational Performance tester was developed by IBM (Rational software division). They have come up with many versions of this automated testing tool.

Rational Performance Tester System Requirement: Microsoft Windows and Linux AIX good enough for this performance testing tool.

8. NeoLoad

This is a tool used for measuring and analyzing the performance of the website. The performance and the end result can be evaluated by using this tool and any further steps can be taken. This helps you in improving and optimizing the performance of your web application. This tool analysis the performance of the web application by increasing the traffic to the website and the performance under heavy load can be determined.

You can get to know the capacity of the application and the amount of users it can handle at the same time. This tool was developed by a French company named as Netosys and it was written in JAVA. It is available in two different languages; English and French.

NeoLoad System Requirements: This tool is compatible on operating systems like Microsoft windows, Linux and Solaris.

9. LoadComplete

It is an **e**asy and affordable performance testing tool. LoadComplete enables you to create and execute realistic load tests for websites and web apps. It automates creating realistic load tests by recording user interactions and simulating these actions with hundreds of virtual users either from your local computers or from the cloud. LoadComplete helps you check your web server's performance under a massive load, determine its robustness and estimate its scalability. It also provides detailed metrics and reports that help you get in-depth insights into infrastructure performance, application behavior, and end user experience.

System requirements: This tool works on 64-bit operating systems such as Windows XP professional and Windows 7 or later.

10. WAPT

WAPT refers to the Web Application Performance tool. These are scales or analyzing tools for measuring the performance and output of any web application or web related

interfaces. These tools help us to measure the performance of any web services, web applications or for any other web interfaces. With this tool you have the advantage of testing the web application performances in various different environment and different load conditions. WAPT provides detailed information about the virtual users and its output to its users during the load testing. This is considered to be the best cost effective tool for analyzing the performance of the web services. The WAPT tools can tests the web application on its compatibility with browser and operating system. It is also used for testing the compatibility with the windows application in certain cases.

WAPT System Requirement: Windows OS is required for this testing tool.

12. LoadImpact

LoadImpact is a load testing tool which is mainly used in the cloud-based services. This also helps in website optimization and improvising the working of any web application. This tool generates traffic to the website by simulating users so as to find the stress and maximum load it can work. This LoadImpact comprises of two main parts; the load testing tool and the page

analyzer. The load testing can be divided into three types such as Fixed, Ramp up and Timeout. The page analyzer works similar to a browser and it gives information regarding the working and statistics of the website. The fame of developing this load testing tool belongs to Gatorhole AB. This is a freemium service which means that, it can be acquired for free and also available for premium price. But, you have the advantage of many options and features when you buy them for premium price.

System Requirement: This works well on Windows OS and Linux.

13. Testing Anywhere

Testing Anywhere is an automated testing tool which can be employed for testing the performance of any web sites, web applications or any other objects. Many developers and testers make use if this tool to find out any bottlenecks in their web application and rectify them accordingly. It is a powerful tool which can test any application automatically. This testing tool comes along with a built in editor which allows the users to edit the testing criteria according to their needs. The testing anywhere tool involves 5 simple steps to create a test. They are object recorder, advanced web recorder, SMART test recorder,

Image recognition and Editor with 385+ comments. Originally, this testing software was developed by San Jose based Automation Anywhere Inc. Today, there are more than 25000 users for this product.

Testing Anywhere System Requirement: This tool is compatible with all versions of Windows OS.

14. Appvance

The first unified software test automation platform, Appvance UTP eliminates the redundancies created by traditional siloed QA tools that clog DevOps teams. By unifying tests with its advanced write-once methodology, a functional test can be re-used for performance, load, compatibility, app-penetration, synthetic APM and more, increasing velocity and productivity, reducing costs and finally allowing teams to work and collaborate together. Appvance UTP offers complete integration with Jenkins, Hudson, Rally, Bamboo and Jira, and also remains compatible with existing tools such as Selenium, JMeter, JUnit, Jython and others. You can also pass data between application and script types without any code needed.

15. QEngine (ManageEngine)

QEngine (ManageEngine) is a most common and easy-to-use automated testing tool helping in performance testing and load testing of your web applications. Many developers find it to be the most simple and easy tool to use for finding out any leakage in their web services or websites. The key important feature of this testing tool is its ability to perform remote testing of web services from any geographical location. Other than that, QEngine (ManageEngine) also offers various other testing options such as functionality testing, compatibility testing, stress testing, load testing and regression testing. This automated testing tool has the capacity to generate and simulate lot if users so that the performance can be well analyzed during the maximum load. This is free software available for the users online.

QEngine System Requirement: This tool works with the Microsoft Windows and Linux.

16. Loadstorm

Loadstorm is the cheapest available performance and load testing tool. Here, you have the option of creating your own test plans, testing criteria and testing scenario. You can generate up

to 50000 concurrent users by generating traffic to your website and then carry out the testing. Through this tool, you can bring an end to all the expensive performance testing tools. The cloud infrastructure is used in this tool, which enables you to send huge amount of requests per second. There are thousands of servers available around the world for this software. They are proudly known as the lowest cloud load testing tool. There is no need of any scripting knowledge for using this tool. You will be provided with many graphs and reports which measures the performance in various metrics such as error rates, average response time and number of users.

Loadstorm System Requirement: Windows OS.

17. CloudTest

CloudTest is a performance testing tool for web sites, mobile apps, APIs, and more. The users or the developers can use the cloud platform as their virtual testing lab. The developers can carry out their performance or load testing in the cloud platform in the cost effective way through this CloudTest tool. This CloudTest has the capacity to enable number of users to use the website at the same time. It also increases the traffic of the website to know the actual performance under stress and

heavy load. The credit of developing this software goes to an American Technology company, SOASTA Inc. They provide many services for testing the websites and other web applications and now they also help in testing the mobile applications. They are not free services;

CloudTest System Requirement: It runs on Windows, Linux and Mac OS

18. Httperf

Httperf is a high performance testing tool for measuring and analyzing the performance of any web services and web applications. This is mainly used to the test the HTTP servers and its performance. The main objective of this testing tool would be to count the number of responses generated from this particular server. This generates the HTTP GET requests from the server which helps in summarizing the overall performance of the server. Through this tool, you will be able to conclude the rate at which the response is sent from each server and thereby the efficiency can be calculated. The ability to sustain the server overload, support the HTTP/1.1 protocol and compatibility with new workload are the three key features of this performance

testing tool. This was originally developed by David Mosberger and many others at HP. This is a Hewlett Packard product.

Httperf System Requirement: Windows and Linux.

19. OpenSTA

Open STA stands for Open System Testing Architecture. This is a GUI based performance tool used by application developers for load testing and analyzing. This is believed to be a complex tool among the all other performance testing tools. It has proven capability in the past and the current toolset is capable of performing the heavy load test and analyses for the scripted HTTP and HTTPS. Here, the testing is carried out by using the recordings and simple scripts. To carry out the test successfully, results and other statistics are taken through various test runs. These data and results can be later exported to software for creating reports.

OpenSTA System Requirement: OpenSTA runs only on Windows operating system.

How to Write Good Test Cases!?!

Writing test cases is one of the key activities performed by the tester in the Software Testing Life Cycle(STLC). But the writing effective test case is a skill & which can be done by doing in-depth study of application for which writing the test cases and most important is the experience. The approach for writing good test cases will be to identify, define and analyze the requirements.

What is test case?

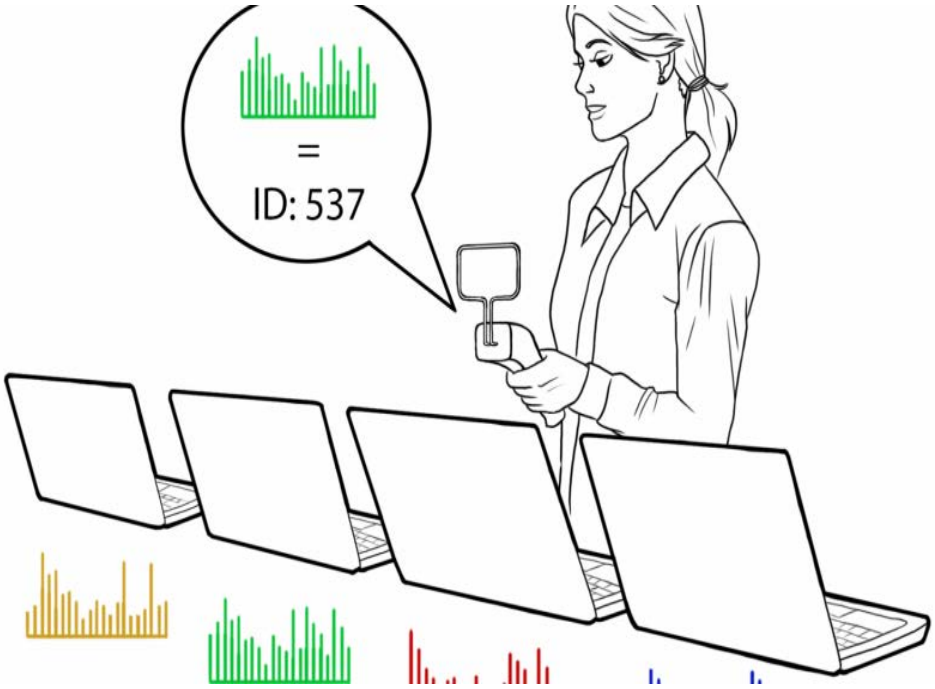
"**A test case is a set of conditions or variables under which a tester will determine whether a system under test satisfies requirements and works correctly.**"

Typically, test cases should be small, isolated and atomic. Test cases should be easy to understand and steps should be executed fast. They should independent with each other & fail/pass independently from one another. Fairly, each good test should have defined its expected result.

What all fields need to be included in test case?

Test Case ID	**Unique Test Case Identification Number**
Module to be tested	Module name or Requirement ID, generally used to prepare requirement traceability matrix between test cases and requirement.
Assumptions	If any
Test Data	Test data required for executing the test case.
Test Steps	Detailed steps for test case execution.
Expected results	How application should behave after executing the above testing steps.
Result	Pass or Fail
Comments	Add Additional information like screenshot, login credentials, for developer to get the exact information for developer.

EM-ID System



Radio frequency emission are considered incidental system noise in virtually all laptops, smartphones and other electronic devices, but scientists at Disney Research have found a way to use these spurious electromagnetic (EM) signals to uniquely identify even seemingly identical devices.

Their method, called EM-ID, can differentiate in most cases between devices of the same make and model.

The idea that these electronic devices have such distinctive RF emissions is astounding.

Previous research has shown that the electromagnetic (EM) noise emitted by most electronic devices is distinctive enough that it can be used to distinguish between general classes of objects - power tools, computers, household appliances, automobiles and more. The new research shows that it's even possible to use these spurious EM signals to differentiate between objects of the same make and model.

Electromagnetic emissions are highly structured and a direct manifestation of the circuits that generate them. But variations in the manufacturing of all components and in final assembly create differences in the EM signal that enable us to differentiate, for example, a laptop computer from another laptop of the same make and model.

Since the EM signature of a given device is an emergent statistical property and not designed to be a unique ID, it is possible that the EM spectrums may overlap, making it hard to identify some objects.

But even though we can't ensure that EM-IDs are always unique, we have a reliable algorithm for predicting the

identification success rate. So when a new device is registered and entered into an inventory system, it can alert the user whether the device's EM-ID is unique enough to be read or if an alternative strategy is needed.

Another limitation is that the device must be powered on and actively emitting the EM signals for the identification method to work.

The EM-ID system uses a low-cost software-defined radio as a reader. The EM signals are digitized and sent to a host computer, where the signals are processed to remove low-magnitude EM noise, leaving a number of frequency peaks that typically include between 1,000 and 2,000 elements.

Because of perturbations that can occur in the device's EM-ID from one reading to the next and variations in the signal sensitivity of different EM readers, the researchers developed a two-stage ranking process for identifying a unique device.

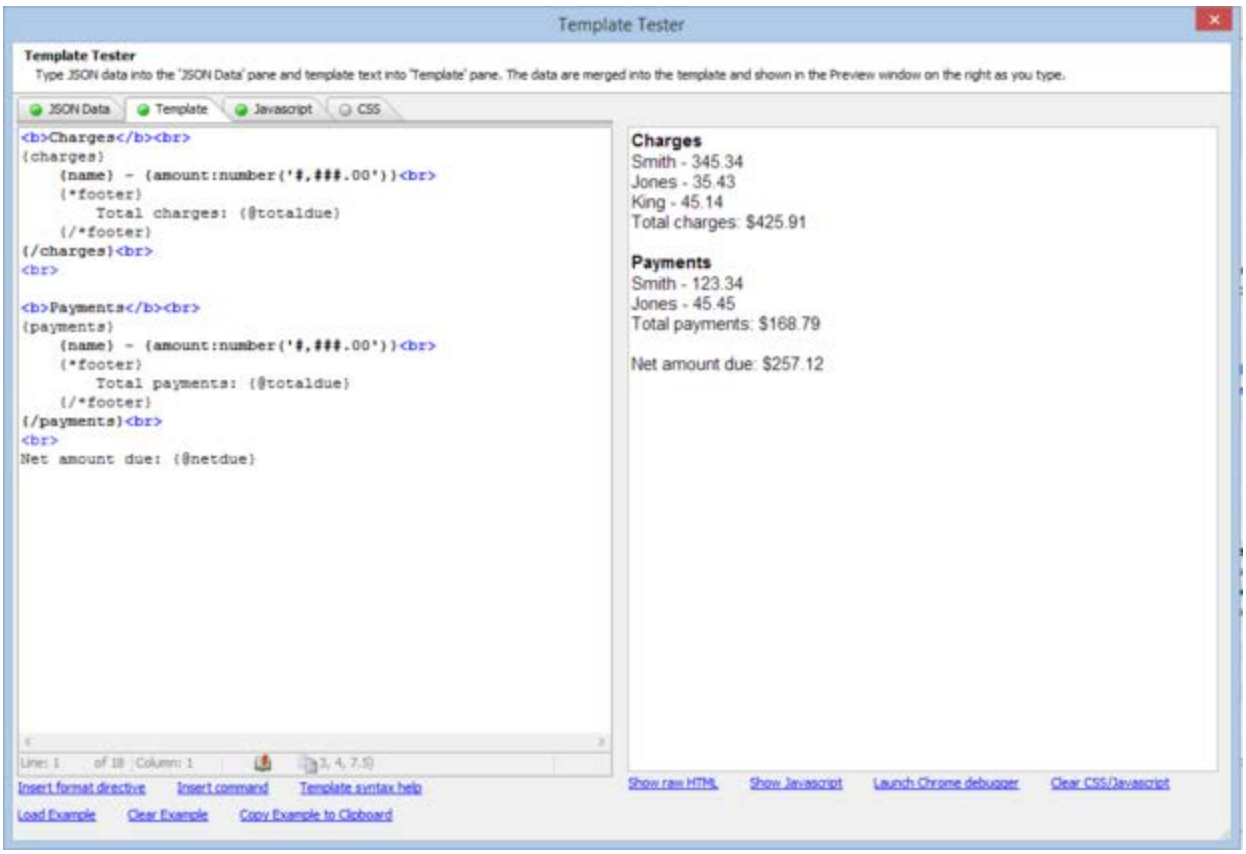
In the first stage, the frequency distribution of the unknown device is compared with those of different categories of devices. Once the device is classified - say, that it is an iPhone 6 - it is then differentiated from other iPhone 6 devices, a much more challenging task. Because the frequency

distributions tend to overlap within a class, both the frequency and magnitude are taken into consideration at this stage.

Ten Simple Tools for building Mobile Apps fast

1. Alpha Anywhere

Alpha Anywhere is undergoing two large transitions in its application servers. One effort is to integrate an IIS server with Alpha plug-ins, and this is currently in an open beta test period. The other is an effort to offer hosted Alpha cloud servers, and this is currently in a closed early beta test period, running on Amazon Web Services. The two efforts may eventually be combined, and the servers will probably be made available for other clouds besides Amazon.



Alpha Anywhere has a robust templating language that can turn JSON data into formatted HTML pages. The template tester allows you to refine the template interactively until the output looks as desired.

Alpha Anywhere is a "low-code" development product. There are people who use Alpha without writing much more code than the occasional relational or logical expression where necessary, and who spend the bulk of their development time using the IDE. On the other hand, there are "real" programmers who add large chunks of functionality to what Alpha already

offers by writing code in Xbasic, JavaScript, C#, HTML, or CSS.

Alpha has its own JavaScript client framework, which includes support for jQuery, but not for some of the newer frameworks such as Angular and Backbone.

Alpha Anywhere 3 is a RAD (rapid application development) tool that allows developers to quickly build Web, mobile Web, and hybrid mobile apps, with excellent support for managing online/offline data synchronization.

Pros

- Rapid development of mobile Web, hybrid mobile, Web, and desktop applications
- Excellent database integration
- Well-designed and well-implemented support for offline mobile operation with data conflict resolution
- Alpha Anywhere allows less-experienced developers to create sophisticated apps

Cons

- Alpha IDE and application servers currently only run on Windows

- Proprietary application server, although IIS support is in open beta testing
- Alpha Anywhere cloud servers are still in private beta testing

2. App Press

App Press is a Web-based, no-code app creator that targets iPhone, iPad, and Android applications. Aimed at designers, App Press uses a Photoshop-like user interface for assembling screens from visual assets, via layers.

3. EachScape

EachScape is a unified, cloud-based, drag-and-drop editor for native iOS and Android apps, as well as HTML5 Web apps. That might seem like an odd combination, but it works well. In addition, EachScape includes mobile back-end services for apps you build with its platform, Web preview for all apps, and an online build service.

The architecture that allows EachScape to build iOS, Android, and HTML5 apps from a drag-and-drop editor (the Cloud Studio) depends on blocks and modules, as well as layouts and actions. Under the hood, EachScape has implemented a set of classes in Objective-C for iOS, Java for Android, and

CoffeeScript for Web apps that correspond to ads, buttons, containers, controls, data connectors, data input, HTML, images, maps, media, navigation, placeholders, RESTful remote queries, social networks, and text. Advanced developers can build new blocks and modules for EachScape to extend its capabilities, using its SDKs.

4. Form.com

Form.com is a web-based enterprise platform for creating Web and mobile forms, combining a drag-and-drop forms builder and flexible back-end technology. The builder can create new forms or replicate existing paper forms, set up process-specific workflow and API integration, embed logical transitions, allow the capture of images within the forms, capture digital signatures, and enable form field autofill. Finished mobile forms can collect information when disconnected and transfer the collected information when the connection has been restored.

5. iBuildApp

iBuildApp is a web builder that offers customizable templates for iPhone, iPad, and Android apps and promises that

you can create an app in five minutes. For common app types, template-based systems such as iBuildApp can sometimes produce usable results, as long as the selection of widgets includes the functionality you need.

6. QuickBase

QuickBase is an online builder and platform for Web database and mobile Web database applications, with limited support for integrations outside its own database. QuickBase offers more than 800 customizable application templates. Users can also build QuickBase applications “from scratch” starting with a data design.

7. Salesforce1and Lightning

Salesforce developers at all skill levels can find good options for building mobile apps based on their Salesforce site. At the most basic level, you can configure compact layouts and both global and field-specific actions.

Salesforce’s new Lightning App Builder, Components, and Design System allows for easy creation of modern enterprise apps for desktops, tablets, and mobile devices.

The push from Salesforce is for developers to create a "Lightning experience," but they haven’t taken away any of the older technologies.

8. ViziApps

ViziApps combines an online visual designer and a number of customizable sample apps with code generation for mobile Web and both iOS and Android native apps. The ViziApps designer has form fields and charts, many user actions, 60 backgrounds, 4,000 stock images, a navigation bar, and a navigation panel. It also supports lots of customizations and JavaScript extensions, as well as more than 50 data sources. Template apps show how fields, actions, and data interfaces are used.

9. Appcelerator

Appcelerator combines an IDE, an SDK, multiple frameworks, and back-end cloud services into an enterprise-level system for mobile development. The Titanium SDK lets you develop native, hybrid, and mobile Web applications from a single codebase.

Titanium Studio is an extensible, Eclipse-based IDE for building Titanium applications and Web applications.

Appcelerator Cloud Services provide a wide array of automatically scaled network features and data objects for your app. Alloy is an Appcelerator framework designed for the rapid development of high-quality Titanium applications; it's based on the model-view-controller architecture and contains built-in support for Backbone.js and Underscore.js. Arrow combines a framework for building mobile APIs with an elastically scalable cloud service for running them.

10. AppGyver

AppGyver Composer 2 is a Web-based builder and hosting service for hybrid iOS and Android multipage apps. Based on the Supersonic UI framework, AppGyver offers native UI elements -- page transitions, modals, navigation bars, tab bars, drawers, and more -- to achieve a native look and feel in a hybrid app. You can create apps starting with one of a half-dozen templates, or from scratch using modules and components. If you want to write code, you can create custom modules. Your app can receive numeric and text data from a variety of sources.

When you are ready to publish your app, you can build and deploy it in the AppGyver cloud. A companion

app can be used for previewing and testing your work on an iOS or Android device. When the app is ready for prime time, you can submit your builds to Apple’s App Store and Google’s Play Store.

MAILING LIST – To Whom We Send

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How many different triangles can you count in the picture of the cat?