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Executive Editor Richard Harris
Art Director Austin Spurgeon

EDITORIAL
Associate Editor Michael Haynes
Copy Editors Christian Hargrave, Ron Beaman
Legal Editor Adam Grant

CONTRIBUTING EDITORS
Don Duncan, Janice Ryan, Hamesh Chawla, Eduardo Cruz, Hannah Levenson, Keshav Kamble, Josh Martin, Ulas Karademir, Simon Khalaf, Margie Kupfer, Josh Twist

ADVERTISING DEPARTMENT
Office: (1-844-277-3386) Ext 1 / Fax: 417-429-2935
advertising@appdevelopermagazine.com

CORPORATE OFFICE
Phone: 1-844-277-3386
Address:
App Developer Magazine
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Most enterprises take a disorganized approach to test data management, with roles and responsibilities poorly defined, if at all. Often, testers end up handling data gathering with little to no understanding of exactly what data is needed for the tests. In the process, ***testers likely spend 50% of their time—or more—gathering data for tests instead of doing their jobs.*** Orasi's professional services team assesses organizational test data management processes and helps develop and implement a mature methodology for gathering the right test data, on time and on budget. Better data means more effective tests, so teams can pinpoint and resolve more defects before application release to production.

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Native mobile ads outperform all other mobile ad units says new report

YouAppi has released research findings based on hundreds of mobile user acquisition campaigns in 2016, proving that native mobile user acquisition ads outperform, and more importantly, convert better than other mobile ad units.

Despite the challenges of customizing native ads to match the look and feel of the app or mobile web content in which they appear.

Native advertising has been gaining traction among app marketers for the following reasons:

- Mobile app and web design has standardized and accepted design guidelines, for example the 1200 x 627 pixel image, making it possible to run the same creative across multiple apps and websites with minimal or no customization.

- The improved performance of native advertising has made app and mobile web publishers increasingly open to accepting them because of the greater revenue per ad unit they provide.

- The growth of content marketing has provided app marketers with more content which is ready for a native ad format.

The research, conducted from several hundred mobile user acquisition campaigns run for apps in 2016, showed that native user acquisition ads generated a 30-40% higher CTR than other mobile user acquisition campaigns run by YouAppi in 2016. More important, the conversion rates achieved by the native mobile user acquisition campaigns were double the conversion rates achieved by the other mobile user acquisition campaigns.

The matching technology - leveraging three years of historical data and a pool of 1.5 billion mobile profiles - matches the right app to the right user. The company's media management team utilizes the power of the company's OneRun Platform to understand the client KPIs, optimizing each campaign to ensure that clients pay the right price for the right conversion.

YouAppi offers one single point to streamline mobile media buying based on results achieved running more than 15,000 campaigns for over 450 leading advertisers via 100 billion monthly impressions served in over 200 countries around the world over the last four years.

"Over the last three years, we've seen a tremendous increase in the acceptance of native ads on the part of publishers, while our app marketing clients can now run the same or moderately customized creative ad units across tens of apps and mobile websites," said Julie Ben-Nun, Vice President Media Management at YouAppi.

The complete API toolchain for developers

Postman, provider of a popular API toolchain, announced a major update to its innovative developer product, Postman Pro. Previously in limited release known as Postman Cloud, the product has been rechristened to reflect its more extensive features, numerous integrations and broad appeal.

With the product release, developers can leverage the power at every stage of their API workflow, from development & testing, through collaboration, documentation & publishing, to API monitoring. It began as a simple tool to make API testing faster and easier, and has expanded into a powerful, collaborative and user-friendly tool chain, allowing their customers to streamline and simplify every aspect of API development.

Covering the Entire API Workflow

The free, downloadable app is an effective tool for API development & testing, and is used by more than 3 million developers worldwide. It extends the tool chain through the entire workflow, with functionality for collaboration, documentation & publishing and even monitoring.

“Postman Pro is unique among API tools in providing this breadth of features,” commented Abhinav Asthana, CEO and co-founder of Postman. “Technical teams can now leverage Postman at every stage of development, streamlining their workflow and making API development faster, easier and painless.”

Key features include:

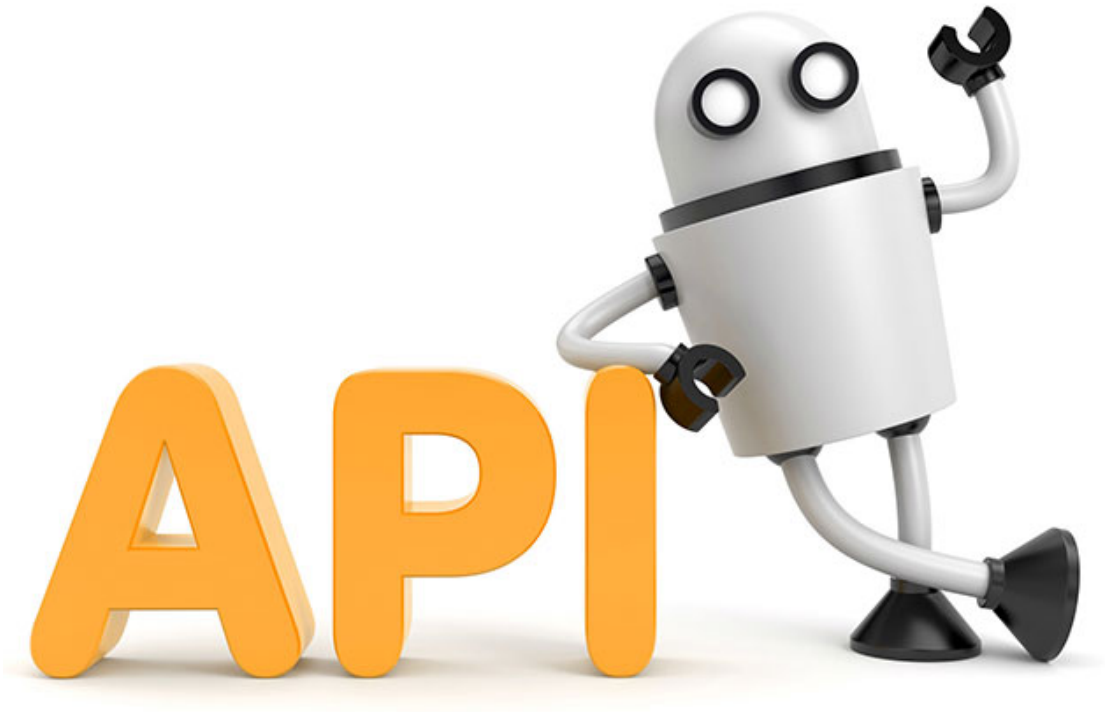
Collaboration:
- Share collections and environment within a common team library
- Access the most updated version of team assets automatically
- Examine changes and updates, tracked line by line

Documentation & Publishing:
- Extensive, easy-to-consume documentation format, including requests, collection descriptions and code snippets
- Viewable via web page, either internally or published publicly

Monitoring:
- Flexible monitoring of API request collections, to test for uptime, responsiveness, and correctness
- Dashboard of monitoring results, available for each collection and monitor

For the Developer

Postman was designed by API developers specifically to make the API developer's life easier. As a result, it has emphasized supporting, not replacing, a developer's existing workflow. It has the capability to import multiple API formats, and has released integrations with other tools to allow developers to use their products within their own custom work environment. Postman Pro is launching with five integrations, including connections to GitHub, Slack, and Jenkins.



MapR Ecosystem Pack program gets an update

MapR Technologies, Inc. has announced the next major release of the MapR Ecosystem Pack program, a broad set of open source ecosystem projects that enable big data applications running on the MapR Converged Data Platform while ensuring inter-project compatibility. These latest enhancements also add flexible access and provide new capabilities for streaming applications.

We're always looking to give our customers immediate access to cutting-edge tools they need to be successful in their big data deployments, said Will Ochandarena, senior director, product management, MapR Technologies. Spark and Drill continue to be two of the most widely adopted ecosystem projects, and this release makes them even easier to adopt for production use.

The MapR Ecosystem Pack removes the complexity of coordinating many different community projects and versions. MapR develops, tests, and integrates open source ecosystem projects such as Apache Drill, Spark, Parquet, Hive, and Myriad, among others. The new MapR Ecosystem Pack version 2.0 now includes:

Support for the Kafka REST API and Kafka Connect, opens up new ways to access event data in MapR Streams. The Kafka REST Proxy for MapR Streams lets customers use any development language in any environment that supports HTTP to work with streaming data. Kafka Connect for MapR Streams delivers a framework for standardized access between MapR Streams and the most popular data sources and targets. These capabilities further enable customers to build IoT-scale, global systems of record with MapR Streams by allowing embedded devices like microcontrollers to produce and consume data in real time using REST, while integrating data with other systems like RDBMSs and search engines.

What's new?

Support for Spark 2.0.1 adds new features such as whole stage code generation that make programs run faster and thus deliver quicker results. Also, the in-memory columnar feature stores data in an optimized format in RAM to allow faster analytical queries.

Low latency queries, optimized BI experience, and dynamic UDFs come to Drill 1.9. Key improvements speed up large scale I/O intensive analytics queries up to 33% and advanced filtering and pushdown capabilities reduce I/O by up to 70% for TPC-H queries. The new release enhances metadata query performance and introduces flexible JOIN syntax that optimizes Drill usage with industry standard BI tools.

MapR Installer Stanzas enable API-driven installation of MapR clusters on-premises or in the cloud. Part of the Spyglass Initiative, this feature helps users build a Stanza, which is a configuration file that describes a cluster and executes it programmatically to automate new deployments. This is especially useful for quickly deploying elastic clusters across the cloud.

Apple was the most gifted smartphone this Christmas

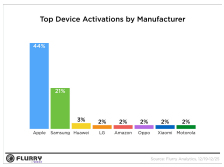
Editors note: Data from Chris Klotzbach, Director at Flurry and Lali Kesiraju, Marketing and Analytics Manager at Flurry

As the holiday season finally comes to an end, smartphones were once again predominate on everyone's wishlists. As Flurry does every year, they took a look at the most gifted smartphones and tablets this holiday season, examining phone and app activation throughout the week leading up to Christmas day and the start of Chanukah.

Developers must be able to effectively analyze and adapt to the new market practices and trends set by the year's busiest season. These user tendencies are keys to unlocking future success in development and are crucial insights into your customer's behaviors.

Here are some key takeaways from the report:

For every Samsung device activated, Apple saw two



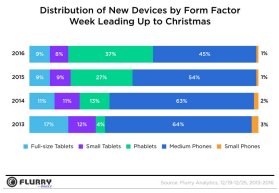
Apple remains completely dominant with the latest release of the iPhone 7. **44% of new phone activations were Apple devices with Samsung seeing an under-average 21%**.

In an article done by Chris Klotzbach, Director at Flurry, and Lali Kesiraju, Marketing and Analytics Manager at Flurry, they had this to say about their companies findings, "While Samsung is slowly growing in popularity throughout the holiday season, up 1% from last year, Apple devices continue to be the gift to give."

This news follows multiple scandals and recalls by Samsung's manufacturing over batteries spontaneously exploding inside devices.

Another thing to note is about the performance of Google's latest phones. **The Pixel and Pixel XI did not make it onto Flurry's standings** because "with only two devices and mixed market reception, Google struggled to drum up excitement this holiday season."

Medium phones (3.5in - 4.9 in) saw the most activation but continue to lose share to phablets (5in-6.9in)



In a picture infographic done by the Flurry analytics team, showing information from the last 4 years, the medium sized phone has reigned supreme. **But is medium sized phone's dominance soon to be a thing of the past?**

As Phablets(Part phone part tablet) grow in prominence, the data seems to agree that "[Phablets] will be the dominant form factor at the end of 2016."

The full-sized and small tablets, although on a downward trend, seem to have stalled out and remain consistent to 2015 Christmas data. Whereas the small phones category is dangerously close and continues to become completely extinct at a mere 1% total new device formats.

Christmas Day was the biggest day for app downloads.

It's a well known trend that Christmas day yields by far the highest amount of app downloads and the article above mentioned shows that "Flurry once again tracked two times as many app installs on Christmas Day as on an average day in December."

iPaaS market to be worth $2.9B by 2021

MarketsandMarkets has published a new report that shows the iPaaS(Integration Platform as a Service) market size is estimated to grow from $528.0 Million in 2016 to $2,998.3 Million by 2021. That's a 41.5% Compound Annual Growth Rate (CAGR) during the forecast period. If this prediction comes to fruition, we can expect to see the Cloud Services industry become an exciting hub for new innovation and technologies within a quickly maturing market.

The demand for iPaaS is driven by factors such as the need for business agility, faster deployment, scalability, increasing awareness about iPaaS among enterprises, and reduced cost of ownership. With the increase in adoption of cloud computing among enterprises, the iPaaS market is expected to gain major traction during the forecast period.

Here's an overview of the report:

Cloud service orchestration service segment is expected to contribute the largest market share

The cloud service orchestration segment offers enterprises the flexibility to scale up or scale down resource consumption depending on business requirements. The major factors that have been driving the adoption of cloud service orchestration are flexibility, growing demand for optimum resources utilization, and increasing need for self-service provisioning. The service provides additional benefits such as assistance in strategic decision making, improved productivity & performance, and decrease in business downtime & losses.

Media and entertainment segment is projected to grow at the highest rate during the forecast period

The iPaaS offers attractive solutions to media and entertainment enterprises to manage enormous volume of digital media and data generated across various applications, due to increase in video consumption. The integration services would enable media and entertainment companies to manage their processes and workflows more effectively as they are scalable, flexible, and reliable. The Small and Medium Enterprises (SMEs) and large enterprises operating in this vertical are rapidly getting inclined towards deploying cloud-based services to store and manage their business-critical data, which will drive the growth in this segment.

North America is expected to contribute the largest market share, Asia-Pacific (APAC) to grow at the highest rate

North America is expected to hold the largest market share and dominate the iPaaS market from 2016 to 2021, owing to the availability of technical expertise, large investments in research & development, early adoption of new & emerging technologies, and presence of a large number of players in this region.

The APAC region is in the initial growth phase; however, it is the fastest growing region for the global iPaaS market. The key reasons for the high growth rate in APAC are increased spending on IT infrastructure, rising cloud-based applications, and growing demand for automation of processes.

The major vendors providing iPaaS are Dell Boomi, Inc. (Pennsylvania, U.S.), Informatica Corporation (California, U.S.), MuleSoft, Inc.(San Francisco, U.S.), IBM Corporation (New York, U.S.), Oracle Corporation (California, U.S.), SAP SE (Walldorf, Germany), SnapLogic, Inc. (California, U.S.), Celigo, Inc. (San Mateo, California, U.S.), Jitterbit, Inc. (California, U.S.), Scribe Software Corporation (New Hampshire, U.S.), DBSync (Tennessee, U.S.), Flowgear (Johannesburg, South Africa).

Ransomware facts and the steps to prevent it on your device

As technology advances forward, so does its unintended consequences and evolution of bad people being able to exploit its weaknesses. Reports of one these exploits is sweeping across Europe, its name is ransomware. Ransomware is malware that allows hackers to take control of your computer and all its data, and then hold it hostage via encryption until a certain sum of money is exchanged. Victims of the hacking incidents are left helpless against a foe that lives in the shadows and destroys all of their virtual memories, account details, and personal information.

As the trend increases, Europol(the European Union's Law Enforcement branch) is looking to actions against the practice with their newest program called the "No More Ransom" initiative. The initiative is a conglomeration of public and private security firms teaming together help victims enact preventative measures to mitigate the risk of a ransomware attack and tools to help their user's decrypt files that hackers have rendered unreadable.

Bitdefender, a security software solutions provider, has joined the No More Ransom initiative contributing to the global fight against ransomware - the fastest-growing cyber threat to date. Their free decryption tools offer ransomware victims the possibility to decrypt their files without having to pay criminals to do so.

"With estimates of ransomware induced financial losses nearing the billion dollar mark by the end of 2016, traditional security mechanism and technologies have fallen short of a complete defense against this type of threat," says Bitdefender's Chief Security Strategist, Catalin Cosoi.

According to a Bitdefender study carried out in the United States last year, ransomware comes second among the top concerns of CIOs of medium and large companies - 13.7 percent of the interviewed companies perceive ransomware as a hard-to-tackle threat. Simultaneously, half of individual victims are willing to pay up to $500 to recover encrypted data.

The file-encrypting malware has not only become a growing threat for PCs, but also for devices running Android. During the first half of 2016, ransomware became the main threat on Android in the US, UK, Germany, Denmark and Australia. Overall, the largest number of ransomware reports came from the United States, with 19.09 percent of the total globally, followed by the United Kingdom (11.89%) and Germany (9.63 percent).

Cybercriminals have been deploying as many ransomware samples as possible, using diverse attack vectors, to make sure they infect a large pool of victims. While drive-by downloads may have infected some, infected attachments and fake installers seem to have also been deployed for ransomware infection.

No More Ransom was launched in July 2016 by the Dutch National Police, and Europol, among others, introducing a new level of cooperation between law enforcement and the private sector to fight ransomware together.

Here are a few steps that could help users stay safe from ransomware:

- Use a known, award-winning security suite

- Patch or update your software to avoid known vulnerabilities from being exploited and used to infect your system

- Back up your data

- Enable the "Show hidden file extension" option. This will help identify suspicious files that have been named ".ZIP.EXE" and prevent their execution

Companies, meanwhile, are strongly encouraged to:

- Use an endpoint security solution

- Patch or update all endpoint software and webservers

- Deploy a backup solution

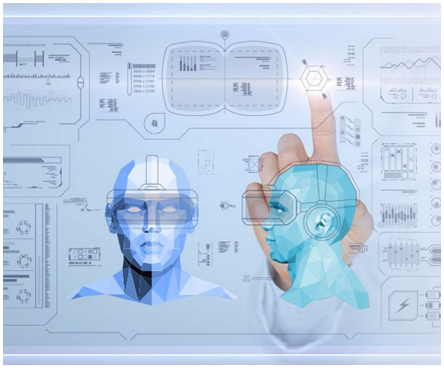
- Disable files from running in locations such as "AppData/LocalAppData" and deploy policies that restrict users from executing malware

- Limit users from accessing mapped network drives

- Protect email servers with content filtering solutions

- Educate employees on identifying spear-phishing emails and other social engineering techniques.

The exploratory research to see how VR can help children with Cerebral Palsy



Design Interactive, Inc. has announced that it received an Early-concept Grant for Exploratory Research by the National Science Foundation to use VR to help children with Cerebral Palsy. The grant falls under the NSF's General & Age Related Disabilities Engineering program that supports research that will lead to the development of new technologies, devices, or software that improves the quality of life for persons with disabilities.

They will be partnering with Florida Institute of Technology, BlueOrb, Inc. and the Conductive Education Center of Orlando to explore interactive virtual reality and game-based technologies for improving physical abilities of children with Cerebral Palsy. CP is a non-progressive disorder that alters an individual's ability to control their muscles, which affects approximately 1 in every 500 births.

DI's Chief Scientist Dr. Brent Winslow is "honored to be funded under the NSF's prestigious EaGER grant to develop tools to improve physical coordination and performance for children with cerebral palsy – the most common pediatric motor disorder."

They will be leading a strong interdisciplinary team that will leverage the team's strengths in virtual and augmented reality, human performance, and serious games to advance therapy and outcomes for individuals living with CP.

Rosene Johnson, Executive Director of CECO shared her excitement with respect to the impact this work could have. "While conductive education has demonstrated great results for thousands of people across the globe, this research will allow us to illustrate this in an objective and quantifiable way. This project has far reaching implications for policy, practice and sustainability in regard to innovations in health care and education for persons with motor disabilities."

The VR emersion trailer of your dreams

Jeff Hake, founder and Chief Executive Officer of JNT Company in Manhattan, Kansas has built a Virtual Reality InMotion simulator.

Hake relocated to Manhattan in 2006 and began his career as a Networking Systems Analyst with Morgan Keegan and then with Kansas State University before founding JNT. The company first started as a side project in February of 2008 but by September 2009, the company became Hake's full-time focus.

"The company began as a simple online solutions provider focusing on website design and custom application development and has quickly grown and expanded into other areas," said Hake. "Our carefully assembled team have a tireless work ethic and a commitment to innovation."

The simulator was created after JNT was hired to organize and plan a 3-day Festival of Lights event in Manhattan. The project was launched publicly on Dec. 3 and Dec. 10 at the festival and approximately 400 rides were provided. They have since held events at the Manhattan Chamber Christmas party for 108 individuals, a Cool Care Club Daycare of 50 individuals and provided rides to 141 St. John's students/teachers in Beloit. Approximately 700 rides in total.

"We were challenged to bring new ideas to the table for the event," said Hake. "I was researching virtual reality (VR) at the time and the idea of a virtual Santa sleigh ride was one of the ideas we came up with."

St. John's students, elementary through high school, took their turns lining up for the experience last Friday.

Some seventh graders departing the ride expressed excitement and said they wanted to go through the VR experience over and over again.

"It was like a Santa Claus test drive," they said.

Middle and high school teacher, Dave DiNuzzo, decided he was going to join his students.

"It was a neat technology experience," said DiNuzzo. "It was fun and enjoyable. No matter what you looked at while wearing the headsets, the screen didn't stop. You felt like you were in that world."

The ride is built inside a mobile trailer. Individuals are placed in seats on a horizontal platform that moves back and forth, providing motion to enhance the VR experience.

"Virtual reality by itself was "cool" but not "amazing," said Hake. "I wanted to sync the VR experience to motion. Not only that, I wanted to sync one experience but provide unique perspectives to multiple VR headsets. We decided to use the Oculus Rift platform and when asking the company for help, we were told that what we were trying to do was not possible. So, we invented a way to achieve the desired result and are working towards a patent on the technology."

He now helms an ever-growing team of talented and passionate individuals who share his vision and continue to work diligently to ensure the continued success of JNT Company.

"Where we are taking this technology and where it's going are two different paths," said Hake. "We are working with counties to provide/sell the experience as a thrill ride for local events and county fairs with hopes that this can help generate revenue for those counties/local governments. My end goal is to make the "VR InMotion" name/brand synonymous with a brand like "IMAX" and provide the most immersive experiences ever to theme parks, museums, and other tourist attractions."

When asked if any medical studies have taken place on individuals while on the ride, Hake said he would be interested in learning more about how this could help people and/or serve some medicinal purpose.

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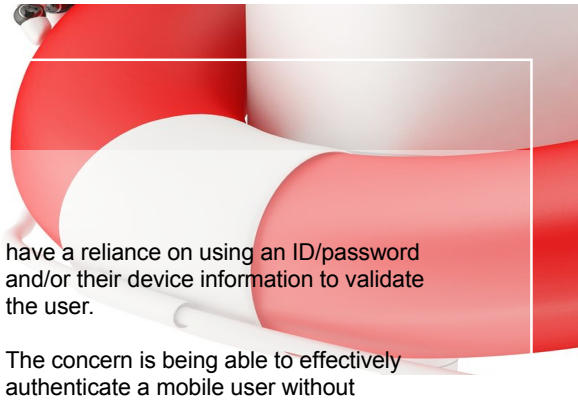
What's so tricky about Android security anyway?

BY DON DUNCAN



Android authentication can be a tricky business because it can help identify the user, but it can also open the door to hackers at the same time. It all comes down to the device administrator access which comes with a lot of benefits like.

Device administrator access provides complete device management access rights that include creating and managing policies, applications and configurations, usually involving advanced programmatic API access to the device. So vendors such as Google and Enterprise Mobility Management (EMM) solutions from IBM MaaS360, VMWare, MobileIron, Citrix and Samsung are typically used for the protection of corporate information on BYOD devices.

The vast number of applications found within the Google Play store does not require this level of access. If a recently downloaded application requires this level of access this should be red flag to users to abort the installation. It is precisely this level access that recent malware exploits have been using to gain device level access. Education is the best way to arm a corporate mobile user. Taking the time to download apps from known apps stores; not downloading from unknown sources; reading the reviews in the app stores; and checking with the corporate mobility team if there is any uncertainty are just some of the strategies that can be used to combat malware.

However, it is this level of access that also opens the door to malware and allows it to take control over a device pretending to be the user. This becomes a real risk when using a Bring-Your-Own-Device (BYOD) on the job where others can not only collect your personal information, but corporate data as well.

If a BYOD device is being used for both personal use and corporate work, then a MDM (Mobile Device Management) or EMM (Enterprise Mobility Management) solution should be provided by your employer to secure corporate information. Without this, there is no clear differentiation between corporate and personal data and it opens the potential for the device to be compromised by malware. Many solutions for BYOD devices now have access to a corporate application store with applications that have been reviewed and approved by their own internal IT and security teams.

As behavioral biometrics has not found its way into being a component of mobile operating systems, NuData has been working with eCom and financial services institutions to bridge this gap by incorporating behavioral biometrics into their B2C applications as part of their Mobile First strategy. ECom and FinService organizations understand the pressing need to protect the customer from fraud, like malware automation, and are using behavioral biometrics to combat the after effects of these daily data breaches on the consumer side of a BYOD device. Application developers, especially those in the mobile space, have the means to devalue stolen credentials and combat fraudulent activity by looking at behavioral biometrics as the mechanism to determine whether it is an actual user on the device or a script impersonating one.

Which is Which?

There is a challenge with device authentication, as it assumes that the person with the device and the information on the device represents a living and breathing user and hopefully the one who is intended to use the device. Device authentication is a carry-over from the personal computing era which doesn't map well to the new mobile world.

The days of one user to one device no longer exist; however, many of these security strategies have been carried over from that bygone era. Most users do not run anti-virus on their mobile devices; most don't even think to do so. Those that are aware of this don't run anti-virus because of the effect it has on their battery life. Also, many authentication solutions still have a reliance on using an ID/password and/or their device information to validate the user.

The concern is being able to effectively authenticate a mobile user without introducing latency in the form of time or frustration into the end user experience. Behavioral biometrics using a layered approach with multiple data points eliminates latency and friction. Taking many of the concepts from the business world, such as 'know your customer', allows application developers to understand whether they are dealing with a living breathing person or a form of automation masquerading as the user, or even a human bad actor. As no two people are alike, it is possible with behavioral biometrics to differentiate between the actual user and someone impersonating them eliminating the risk of being impersonated by hackers(s) or bad guys using information via the dark web obtained through data breaches.

Users have multiple devices in various forms, and it's important in this age of the Internet of Things (IoT) to determine if there is a real user behind the device or if it's an impersonator. For example; I may be driving the car, but that doesn't mean it's my name on the insurance slip in the glove box.

Will the Real User Please Stand Up?

The use of passive behavioral biometrics allows another level of authentication without introducing frustration into the user's mobile experience. The use of passive behavioral biometrics during the user engagement is not only with the device, but the mobile application, and addresses many of the gaps in the existing mobile user authentication process making exploits much easier to spot. This is true when the device is being impersonated, or with malware, or when the data is farmed via intercepted SMS messages and later used for identity crimes.

Passive biometrics and behavioral analytics can detect if it's the real human user interacting with the device or an imposter using the device. Hackers take over primarily at the user login, to initiate a transaction, credit applications, money movement, account changes, or opening new accounts. This enables corporations and financial organizations to make good risk decisioning at any of these stages because they have a fuller and more accurate understanding of the risk each user presents.

The journey from a hairdresser to a Salesforce Administrator

BY RICHARD HARRIS

We spoke with Cheryl Feldman, Assistant Vice President, Salesforce Administration & Strategy Allianz Global Investors, about how she went from hairdresser to Salesforce Administrator, and her advice for others looking to kick-start their technology career.

ADM: Prior to working in tech what did you do for a living? What made you want to switch careers?

Feldman: I was a hairdresser who spent 12 hours a day on my feet blowing out hair which resulted in an injured rotator cuff. My injury forced me to take on a less physically strenuous position as a secretary and from there I worked my way up to becoming a Junior Analyst, responsible for compiling business metrics reports.

All of the reports I was generating were from raw data gathered from a multitude of siloed systems. When I started to think about how we could make this more efficient, I thought it would be great if all of the data was in one system. It would save me days of work of having to combine data, so I suggested it to my manager. It was during that casual conversation that I was told we were moving to something called “Salesforce” and in that moment I was appointed to be part of our implementation project. I had no previous knowledge of Salesforce, but as soon as I learned how to create my first formula field I was hooked. To strengthen my skillset, I turned to the Salesforce community and with their support, I was able to teach myself advanced Salesforce skills, including the ability to build and customize apps, perform data modeling, and even customizing UIs.

I’ve gone from a hairstylist to an assistant vice president at one of the world’s largest global asset management firms, helping businesses and individuals alike scale and utilize Salesforce software. Today, I’m considered a Salesforce expert and have built my career and passion on the foundational skills learned through Trailhead.

ADM: At that time, did you have any experience with technology or with Salesforce?

Feldman: When starting out, I had no experience working in the technology field–to be honest, I didn’t even know what Salesforce was. It’s crazy to think that the skills I have today came from the support of the incredible Salesforce community, attending Salesforce’s annual user conference, Dreamforce and eventually, through finding Trailhead.

What made you decide to try Trailhead?

Many people start with Trailhead, Salesforce’s fun and interactive learning platform, because they want to learn new skills or learn how to do something. Of course, I wanted those things, but I first logged into Trailhead to see if I could use the platform for a training session we were putting together for new Salesforce admins in New York. I was thrilled that all of the content was there for us to use and that we could focus on explaining the concepts rather than writing the material ourselves. It was at that moment that I realized the true power of Trailhead–enablement. The technology can enable anyone without a coding background to learn Salesforce quickly. Also, Trailhead promotes a community environment.
Since we had the whole class doing the same trails, they were able to help each other as well as continue on the guided trails after the class ended.

At my previous company I was part of the original team that laid the groundwork for our Salesforce implementation and I didn’t have anyone to look to for training or coding support. Trailhead was the perfect resource and guide for me, because not only was it a hands-on and experiential tool that allowed me to digest all of this new information on my own schedule, but it was also free.

Since setting out on my first trail, I’ve learned that Trailhead isn’t exclusively about teaching new skills, it’s also about networking, naturally fostered through a community atmosphere where users get together at meetups to teach and learn from one another. Today, I’m a User Group Leader and MVP and host mentorship sessions as well as online Q&As to help new Trailblazers discover the newest Salesforce skills and strategies.

ADM: What did you find as your biggest obstacle in the beginning? How did you find time to make learning a priority?

Feldman: As Salesforce constantly improves and introduces new software functionalities, there are always new skills to learn. As the Assistant Vice President of Salesforce Administration, I need to master them all, which means learning is still a huge part of my day-to-day and Trailhead is still my primary training method.

Most recently, I had to quickly get up to speed on a Salesforce feature I hadn’t used before. When I realized I had a knowledge gap, the first thing I did was to go to Trailhead and hit the trails running. In under two hours, I was able get an indepth understanding of this feature so that I could make a recommendation on how we should move forward with it to my manager and our business stakeholders. Trailhead is an invaluable resource and I now hold every technology company to the Trailhead standard. If they don’t have an

interactive learning platform, I ask them why not, and point them to Trailhead and show them how learning and training should be done.

ADM: What skills have you been able to gain throughout your work on Trailhead?

I've learned a variety of skills with Trailhead, but my biggest personal achievement was learning how to properly use Cloud Flow Designer which lets you design flows without writing any code. I had the hardest time wrapping my mind around it. The only way I was able to make it stick was by running through the actual experience using Trailhead.

With your new skillset, what was your experience like looking for a job? Did you find that employers were looking for individuals with specialized skills?

Salesforce has become such a huge platform that has created an entire job market for Salesforce professionals (admins, developers, BA's, PM's, consultants, managers, etc.). I've been able to master Salesforce via Trailhead to the point where my career now revolves around consulting with other businesses about how to utilize Salesforce tools to optimize business strategy, and to help train new users on various Salesforce functions. It has been an absolute gamechanger for my career.

ADM: What is the one piece of advice you would give to someone who is looking to change their career like you did?

Feldman: Don't be afraid to make a career change just because you do not already have experience in a specific area. It can seem scary to jump into an entirely new industry, but with more and more tools like Trailhead being released all the time, you can unlock levels of potential that you didn't even know you had. I was able to transition from salon to boardroom by educating myself on a subject I knew nothing about and investing time in continuing to learn.

ADM: How would you compare Trailhead to other development experiences you've had?

Feldman: Trailhead is the best by far. Not only can I learn new skills, but I can help enable others to learn. This platform is not only a game changer for existing admins, it's a game changer for anyone interested in getting into the technology world.

ADM: What are some of the strengths and weaknesses you see with Trailhead?

Feldman: One of the biggest strengths that Trailhead has is the amount of content and trails they have and how many things one person can learn by just doing trails. I'm not sure if there is a weakness of trailhead, but if I think if one I'll let you know.

ADM: Do you have success publishing applications on any other platforms, if so which ones?

Feldman: I do Salesforce. There are other platforms? Why would I use one? In all seriousness, I have worked to build business apps on other platforms but I needed a huge development team to do so. I haven't come across any other systems that are quite as configurable as Salesforce, without code. With other platforms I was able to understand what could be done, but I would need a developer to actually execute.

"Trailhead is the best by far. Not only can I learn new skills, but I can help enable others to learn."

Privacy will be the name of the game in 2017

BY RICHARD HARRIS

Editors note: 2017 predictions by Alan Duric, Co-Founder and CTO at Wire

2016 has seen a huge rise in machine learning and connected devices from Amazon Alexa and Google Assistant; to Apple CarPlay and Android Auto. The world has become truly connected but not without the growing pains that any emerging industry is bound to face.

In December alone, DDoS attacks enabled by IoT devices with weak security protocols shut down sites such as Twitter, GitHub and Spotify and even briefly left some residents in Finland without a heating system. The data management and privacy practices of big players in the industry have been questioned and legacy industries like finance and healthcare have been found lacking, as emerging technologies brought convenience, but not necessarily security.

2017 will be the year that we address these issues and begin to patch up the holes made by the IoT and artificial intelligence. As areas like the connected car, artificial intelligence and digital health begin to mature, security concerns will have to be overcome, especially when it comes to the subject of privacy.

So, what exactly can we expect from 2017?

1. The IoT security nightmare will get worse before it gets better.
Data breaches are practically inevitable in today's digital society and the recent DDoS attacks powered by devices such as digital recorders and webcams with weak security protocols have proven to be extremely effective. Malicious hackers are getting smarter, exploits are being made publicly available or sold to the highest bidder – the end result is that these connected devices make the perfect micro-army for similar take down attacks. The growth of IoT will continue to accelerate and it is up to the hardware and software makers plus infrastructure providers to work together more efficiently to produce user friendly yet also truly secure devices. We believe end-to-end encryption has a big role to play in this.

2. AI voice interfaces will see a year of exponential growth
Voice interfaces like Google Assistant/Home, Alexa, Cortana and others will continue to gain popularity and the companies that own them will continue to amass data as the services are used. Apple's Siri remains one of the few that puts user privacy first. Always-on microphones in every room to answer our questions and wishes can make life easier.However, without proper attention to privacy practices, it's becoming another case of technology evolving faster than social awareness. Regulations, expectations, and our grasp on what's going on behind the curtain isn't catching up fast enough. With the expected growth of AI, creators will soon have to address this disconnect.

3. Chatbots will actually be good
2016 was the hype year for chatbots, followed by the inevitable user letdown as developers and publishers tested the new format. We'll certainly never forget Microsoft's racist, misogynist, Neo-Nazi millennial Twitter chatbot named Tay. Hopefully, 2017 will be the year when interaction models, suitable content and the right formats emerge for wider adoption. Of course, old institutions in legacy verticals— banking, finance, real estate, health, government— will struggle to join the bot race and security and privacy will remain huge concerns for bot APIs like that of Slack or Facebook.

4. A renewed focus on data security privacy-focused messaging platforms will emerge
2016 was the year that apps like Google Allo, Whatsapp and Facebook messenger finally added encryption in an attempt to show commitment to user privacy. However, with recent updates to Whatsapp's user policy and Facebook messenger's opt-in only encryption, many thought this to be a half-hearted attempt. Nevertheless, it goes to show increasing concern for privacy by both individuals and companies alike.

US President elect Donald Trump has given many comments on his desire for heavier government surveillance of minority groups and even the press. And the effects on privacy of a post-Brexit England might also become a considerable concern in 2017. The UK's recently approved Investigatory Powers Bill, known colloquially as the Snooper's Charter, creates a legal framework for mass surveillance. The bill authorizes state actors to hack into devices, maintain large amounts of personal data on ordinary UK citizens, and can even force companies to decrypt data on request.

Any forward thinking company, hoping to prevent the inappropriate use of its data, will need to think about how to keep its users secure and their data private in 2017. Tech companies will move to end-to-end encrypted model that do not retain personal data or metadata for more than a few days while companies in general will have to re-evaluate their current privacy policies to prevent data from falling into the wrong hands and also meet user demand.

We can't be sure what the next year will bring. It's not certain how government unrest like that seen in Brexit and this year's unconventional US Presidential election will affect the tech industry, but we can be certain that the skepticism and anxiety surrounding them will make us all look at our privacy policies and practices a whole lot more.

Predictions are fickle things, but if I had to make a few recommendations for 2017, I'd say protect your personal data, use stronger passwords and passphrases and buckle up tight because it's going to be another wild ride.


SOFTWARE

Why you should ditch traditional business software analysis

Competition between software companies is a fierce battle waged not with weapons, but with scalable, intuitive, and efficient solutions that can most effect their customer's lives. The importance of a well coordinated and strategic approach to how you choose to execute your solution is perhaps one of the most fundamental necessities required to succeed in markets.

That's why the need for products like Pneuron's latest business orchestration software has become more popular for the continual improvement of enterprise software. Traditional methods of finding the overarching answers to business questions are long and tedious, many involving long processes of big data analytics, business intelligence reports, and process management systems. Whereas Pneuron looks to do away with this process in search of a better solution. With their product, companies can leverage their existing applications, infrastructure, services and data to create and deliver actionable intelligence directly into customer operations. Their innovation enables businesses to reduce the duration of project development cycles and lower the costs associated to the development processes.

Founded in 2010, Their software allows organizations to run distributed 'pneurons' that leverage their existing applications, infrastructure, services and data to create and deliver actionable intelligence. Through their distributed approach, companies are no longer faced with the complex centralization and integration requirements of traditional approaches.

And with the latest release, enterprises are given an enhanced ability to innovate and make huge gains in their markets with new products, features and capabilities all with the security and scale modern business demands. Businesses using the product to create, deploy and manage intelligence, reports, applications, even operating models, can see great decreases in cost and time in comparison to competitive existing approaches.

"Pneuron has changed the game in terms of how enterprise solutions are designed and deployed -- cutting the time, cost and the risk of traditional centralized alternatives in half," said Simon Moss, CEO and president of Pneuron. "Release 1 exceeded every design, deployment and performance challenge it was given. Version 2 continues this remarkable breakthrough ability to solve business problems at a fraction of the time, cost and risk of anything before us."

Key features:

- Robotic capability. Scripted execution of website interactions to automate manual data entry and results extraction. This reduces the manual burden for information gathering and introduces consistency and efficiency through automation.

- Scalability. Enhancements to dynamic scaling and auto deployment into diverse cloud environments. This allows the Pneuron server to seamlessly blend additional capacity from internal and external cloud environments to fluidly match workload requirements.

- MS Sharepoint, MS Exchange, and Unix Shell Scripts. Makes it easier than ever to configure and extend Pneuron to support and connect the entire enterprise ecosystem without coding.

- Input file parsing. Extends support for additional delimited file types including selectable client configured characters.

- ECM. New UI which allows customer-specified logos and URL links, as well as forms capability for manual input and network launch.

- BEA WebLogic. WebLogic support has been added as an alternative Web Server for Pneuron's applications.

"The importance of a well coordinated and strategic approach to how you choose to execute your solution is perhaps one of the most fundamental necessities required to succeed in markets."

Enterprise mobile demand will outstrip IT's capacity to deliver in 2017

Editors note: 2017 predictions from Yuval Scarlat, CEO and Co-Founder, Capriza

A shortage of mobile developers and designers spawns a wave of mobile "citizen developers." Demand for enterprise mobile apps continues to surge, and analyst firms like Gartner have predicted that enterprise mobile demand will outstrip IT's capacity to deliver by a factor of 5 through 2018. Mobile design and development talent is scarce and generally expensive to apply to employee-facing apps. Next year, low-code and no-code technology will pave the way for non-technical professionals to create mobile apps and even share them with peers in communities of mobile citizen developers.

Forward-looking companies evolve from mobile-first to mobile-only. Organizations with large numbers of personnel at the edges of the enterprise, like field service workers or field sales people, have approached the purchase or development of applications with a mobile-first mindset. The combination of the success achieved with many of these efforts and the significant difference in costs for supporting a laptop-and-mobile employee vs. a mobile-only employee will get more organizations planning with a mobile-only approach for field and remote employees. For instance, organizations will start to provide employees with only a tablet or a smartphone, instead of a laptop. We've witnessed this evolution before: web-accessible applications evolved to web-only applications, and cloud extensions/alternatives became cloud-only in many cases. We'll see the same thing happen with mobility in 2017.

The post-app era comes into clearer focus. While we all love our mobile apps, it's hard to believe that they offer the optimal interaction model for every user, use case, task, and environment. Although there might be "an app for that," many consumers and organizations are experiencing app fatigue from the sheer volume of apps in the market. To address this, chatbots and the artificial intelligence behind them will offer new ways for mobile interaction with enterprise applications, along with voice, search, and others. Some consumer apps like Fandango are now offering a glimpse into the future, in this case, by allowing users to purchase movie tickets via text or Facebook without ever downloading an app.

Enterprises realize that SaaS alone does not solve the mobility problem. In 2016, some organizations were rudely awakened from a dream. The dream was that replacing an older legacy application with a modern SaaS/cloud application would magically deliver enterprise mobility and rapid mobile adoption. What they found was that the same enterprise application complexity that limits user adoption of desktop-based applications is also "portable" to mobile platforms. Beyond that, many large organizations will customize their CRM, ERP, and other business applications which can quickly break the out-of-the-box mobile apps from SaaS application providers.

IT leverages mobility to reassert its relevance to the business. The cloud wave made it possible for line-of-business functions to select and deploy applications with minimal IT support. In many organizations, that change left IT out of some important conversations and fed a perception that IT wasn't aligned to the business. Now IT is hungrier than ever to deliver high-business-impact wins and avoid another shadow IT epidemic. IT is going to "surf" the enterprise mobility and digital transformation waves more broadly to restore its relevance and value.

Building a Modern Growth Stack

BY JANICE RYAN

At the onset of building out any startup there are a number of challenges to face. Founders must focus on everything from raising capital and finding the right team members to identifying what to build versus what to outsource or who partner with to bring a product to market. Attention to these important first steps can either make or break a company in the short term and are key to ongoing success in the long term.

When we started building our business and fleshing out the details around our app, we strategized an early version of our growth stack - the tools we would be using to go from concept and development to launch and ongoing updates. As we grow and morph as a business, so does our growth stack. Recently, I had the opportunity to uncover some key insights at the GrowthStack conference in San Francisco:

In the beginning, focus on tools and services to drive growth and retention
In the outsource world, there are a number of service providers that every app developer (and startup for that matter) should be considering as part of their growth:

- Analytics providers are essential for knowing key activity metrics within your app or mobile website. At launch, look to Google Analytics, and, as you grow to the enterprise level, consider companies like Amplitude or Localytics. Keep in mind that at this level it can get expensive, so shop around to find the one that best fits within your budget.

- Marketing-automation partners manage the lifecycle of your users and are there to drive push notifications, in-app messaging, and email management. These services also help to ensure that you are sending the appropriate messaging at the right time. When you first start out, you may just use MailChimp or SendGrid on your own to manage emails, but as you grow and want to time all of your messaging to when and how your users are engaging with your app, you may need a more complete solution. Some of the best marketing automation companies out there include AppBoy, Kahuna, Iterable, and LeanPlum.

- Attribution partners are there to help when you're buying new traffic or looking to re-engage lapsed users. They can also track your paid sources properly to understand the quality of traffic and measure LTV by source. Otherwise, you can't determine what you should be paying by each source and optimize efficiently. Check out AppsFlyer, Adjust, Kochava, and Tune for possible partners to help out with attribution.

- Data visualization matters and having the ability to access and analyze it is critical to growing your business. This is for later stage companies with deeper pockets as these tools can be expensive if you're just starting out. Companies like Tableau and Looker, among others, can help you to dive deep.

Building vs. buying - what makes sense and what staff is needed
At times, building internally may make sense. For instance, if the feature or service you need is critical to operating your business, then it may make sense to build internally. However, if the feature is not a core competency, is going to be really expensive or cumbersome to build, and there are no cost efficient options available —then, of course, outsource.

At Lucktastic, all of our development work has been in house. We first started with an HTML5 web app over four years ago, and that was built internally. We then built our native Android app and hired an external front-end company to build it in order to get to market faster. We realized that it was better to build in-house, so we hired up for both Android and iOS in order to launch our native iOS app.

Balancing the outsourcing opportunity cost and what you should think about
Our team outsources analytics, marketing automation, and the customer service platform (although we also have customer service reps on staff). Cost really comes into play here when thinking about building vs. buying. Some questions to consider: Do you have the right resources to build these tools? Are these tools core to your business? What could the team be building instead? How fast do you need them implemented?

As you address each of these questions, remember that there is always an opportunity cost. For instance, building your own in-house campaign management solution also means you have to manage scalability, feature support, and maintenance. So you don't launch this tool and walk away, you're going to need to keep iterating/fine tuning, and this can be a real resource drain.

When outsourcing, we always consider our third parties as partners. We've found that we wind up driving a lot of their product roadmap with features we need to better operate our business and our suggestions help them expand their offering to their other clients. So knowing that our partners are receptive to and prioritize our feedback is really important. It creates "skin in the game" on both sides, and they always work a little harder and iterate based on our needs.

Evaluate annually and evolve with the marketplace
Every year we evaluate all of our partners and go through rigorous due diligence in all of our growth stack verticals. Why? The mobile industry has been growing and evolving so quickly with new service providers entering the market regularly. Our current providers are also expanding (or contracting) their services, so by not evaluating what is out there periodically puts you at a disadvantage.

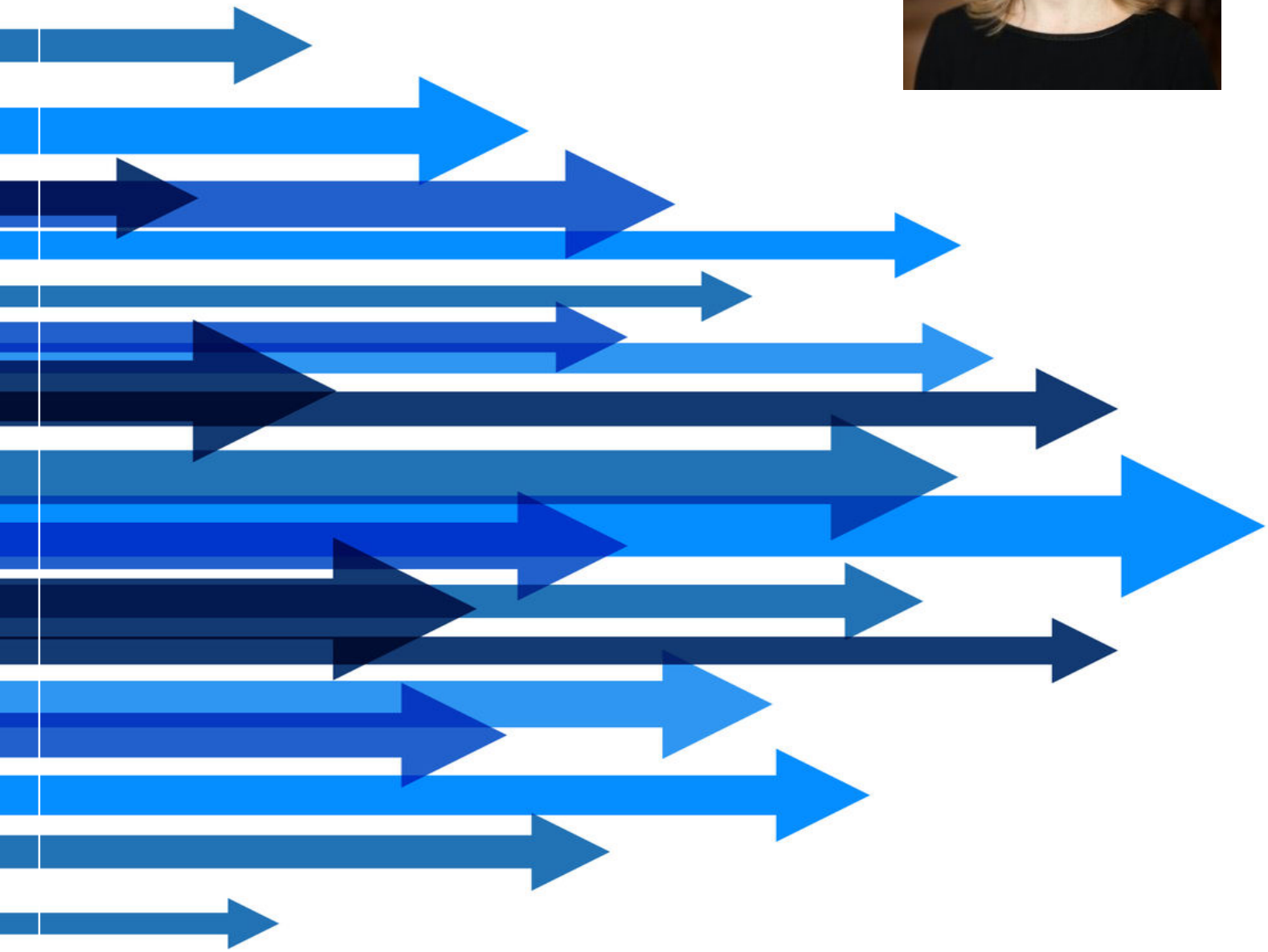
As you evaluate your partners, make sure that your existing roadmap and any future iterations align with theirs. Reach out to their customers for deeper insight into how they are working to drive success as well as the quality of service they provide. It's also valuable to get to know your partners face to face to establish a productive relationship. While a phone call or Google Hangout can accomplish quite a bit, it is always helpful to sit down and strategize in person.

One-stop shopping - does it make sense?
One-stop shopping can be a good solution, but we've seen some issues with that in the past. If a provider is expanding too fast into new verticals, they may not have the support or speed to expand the product

that we need to grow our business. One integration is certainly easier, but if you're giving up a lot of features that are critical it may not be worth it to go the one-stop route. Keep in mind as you evaluate providers in a world of APIs there are chances that one is leapfrogging the other, and with one-stop shopping it may be easier to make a switch.

At the end of the day, if you transform you business and decide to build in-house, you need to have the resources to support this switch. Most startups lack unlimited resources to iterate and scale their product as well as build home-grown solutions. There's constant prioritization that happens, and revenue generating product enhancements can often be prioritized ahead of other features that indirectly support revenue like reporting. On the flip side with partners, you may have less influence and be at the mercy of their roadmap and priorities. Understanding all of this and keeping a pulse on what makes sense to build vs. buy will ensure that your growth stack does exactly what you need it to do. Grow your business.

"In the beginning, focus on tools and services to drive growth and retention"



Agile Methodology in Large Enterprises

BY HAMESH CHAWLA

Agile methodology is the climbing framework for large-scale enterprises. How can you transition your large company into an agile framework? Below are simple and effective techniques for scaling agile methodology to your specific project, team and enterprise.

Start with a MVP

Continuous Delivery is a software development strategy that provides high-quality, accessible software to customers. The process of releasing minimum viable product (MVP) is important for earning early feedback and tracking usage patterns for testing hypotheses. MVP will save wasted engineering time and preserve features like gold plating among large software teams.

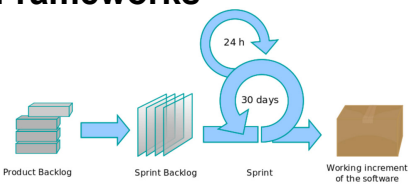
Create a Single Product Backlog

An agile product backlog is the set of tasks to complete before a code is released. Product managers should maintain one group backlog for all teams. One backlog will allow for high priority tasks to receive attention while providing access to all contributors at all times. This will prevent miscommunication and provide a collaborative project environment.

Building a Collaborative Culture

"Three Amigos" meetings will enhance agile teamwork. These meetings involve a product owner, a developer and a tester that review requirements and test feature requests on a backlog. The product owner expresses the business need, the programmer explains implementation and the tester considers potential problems. This encourages different viewpoints while providing group consensus on project status.

Large-scale Agile Frameworks

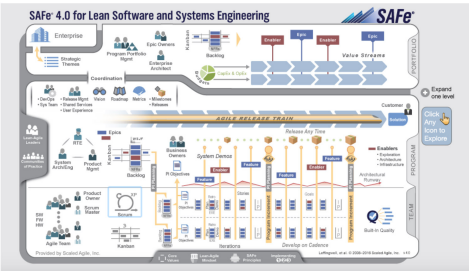


All three scaled agile frameworks build upon techniques used in scrum and agile, team-oriented frameworks. Image Source: Lakeworks

The three major frameworks used in large enterprises are the Scaled Agile Framework (SAFe), the Disciplined Agile Delivery (DAD), and the Large Scale Scrum (LeSS). With guided, multi-level training and certifications, they are ideal for small, expanding practices. Scrum of Scrums (SoS) is another popular approach due to informal training. (See Richard Dolman and Steve Spearman's comparative matrix for different agile scaling approaches.) One disadvantage is that these frameworks can lead to rethinking of hierarchical organization, which is challenging for larger enterprises.

The Scrum Process

The three agile frameworks are based on ideas originating in scrum testing. The SAFe framework has 5-9 people and uses Team, Program and Portfolio levels with two-week scrum processes in XP (Extreme Programming) methods. At the Program level, each team's scrum has 5-10 SAFe teams as part of an "Agile Release Train". The Portfolio level defines how executives and agile leaders can use processes like value streams to prioritize features.



This SAFe "Big Picture" graphic shows the three levels of SAFe and the roles involved in SAFe. Image Source: Scaled Agile Framework

Disciplined Agile Delivery by Scott Ambler and Mark Lines, is built on existing agile techniques and uses Inception, Construction and Transition phases. DAD helps in areas of architecture and design in the Inception phase and is ideal for deployment in the Transition phase. Large-scale Scrum (LeSS) by Craig Larman and Bas Vodde, consists of Framework-1 and Framework-2. Framework-1 is for smaller companies (10 Scrum teams, 7 members each), while Framework-2 is for larger. LeSS puts several feature teams on a single Product Owner (PO), expanding on the basic Scrum framework. LeSS is more flexible, non-proscriptive and most effective in smaller projects.

Training Courses and Certifications

The Scaled Agile Academy trains on Team, Program and Portfolio phases of SAFe with certifications for managers, executives, developers, testers, and consultants. For DAD, the Disciplined Agile Consortium trains for Disciplined Agilist, Certified Disciplined Agilist and Certified Disciplined Agile Coach. To learn more about LeSS, there is training for Certified LeSS Practitioner and Certified LeSS for Executives. Programs like Certified ScrumMaster or Professional ScrumMaster, help students to review basic Scrum knowledge.

Blockchain, IoT, chatbots, and connected finance: Built.io predicts 2017

Blockchain will play an integral role in improving IoT security
In 2016 we saw multiple hacks and data breaches, including the massive DNS attack that caused widespread internet outages. This latest attack was a wakeup call to start thinking about security in terms of the Internet of Things (IoT). Because of that, in the next year we'll start to see more security-oriented measures put in place for IoT and blockchain will play an integral role in that. One of the foundational premises of blockchain is to make sure that certain records and requests are accurate, just like an accounting ledger. When it comes to IoT, that is perfect because devices are widely distributed sometimes calling back to the server and sometimes not. However, if they don't call back to the server you want to make sure that the call any IoT device makes is actually the call it is supposed to make. By using blockchain on top of IoT, companies can implement a ledger methodology to any request that needs to be made to or from an IoT device and verify it is doing the right thing. Blockchain is critical in this because it is very difficult to fool blockchain and it creates a method of transaction verification. While this usage of blockchain is not widespread, in 2017 we can expect to see more uses of blockchain for IoT security measures.

Massive shakeups in the bitcoin developer community will further complicate the technology

Kurt Collins, Director of Technology Evangelism & Partnerships at Built.io

In 2016 there was a massive shakeup in the bitcoin developer community with developers splitting up into two different branches. One set of developers focused on developing the technology one way and another decided to take it in a completely different direction. This presents a problem for the standards established for bitcoin and they are no longer aligned. In 2017 we will see how this shakeup plays out and if the two different versions of bitcoin will be able to communicate with each other, a key aspect of what makes the technology successful.

Chatbots will become so mainstream we'll stop chatting about them
Chatbots were hot in 2016 and a key topic of discussion throughout the past year. But as chatbots become more and more engrained in our everyday lives, in both the enterprise and at home, they won't take up nearly as much of our focus. For example, Facebook is already making chatbots mainstream through its Messenger platform and we'll see more of that in the year to come. As such, our focus will start to shift away from the chatbot hype in the next year while seeing a surge in useful chatbot-driven applications.

Chatbots will be less about the services you use them for and instead be all about the ecosystem
In 2016, chatbots were built to automate specific tasks. In 2017, chatbots will evolve to help orchestrate how services interact. For example, using natural language processing, chatbots will reach across multiple domains, such as Amazon Alexa, Google, Cisco and Salesforce to connect entire ecosystems, rather than just enable point-to-point automation. The results will be near limitless orchestration of sophisticated workflows without requiring human interaction.

2017 will be the year of connected finance

Parthiv Patel, Technical Marketing Manager at Built.io

Over the past few years, things like smart cities, smart cars and smart arenas have really taken off. In 2017, the next industry that will get "smart" is finance. The potential, untapped benefits are enormous: For example, right now an international wire transfer takes days, because it must go between multiple banks that don't have the same legal or technical architecture, making two or three stops before the transaction is complete. By using APIs and blockchain, financial institutions can create an international ledger of where money is coming and going, making wire transfers both cheaper and faster. In 2017, we'll start to see this technology applied not just for consumers, but for businesses as well that make large scale financial transactions from purchasing stocks and bonds to making trades. By making finance smarter, it not only makes the process faster but it reduces the cost.

Content marketing will need to diversify beyond just responsive web marketing to support native apps and IoT devices. Going headless.
Responsive web has now become the norm in 2016. No one is doing desktop-only websites anymore, we are now in a world where design agencies just assume a mobile-first approach.

With the rise of IoT, many other devices have screens that need to show content too (VR headsets, smart watches, and more), so in 2017 we are going to the switch to the headless CMS model as the clear front runner for Content Marketing teams. A centralized platform with a decoupled front end and API delivery of content will future-proof any business looking to expand their content portfolio to the masses. As we see the market moving towards micro services and integrating everything via APIs, having a singular content platform to manage everything across the board just makes sense.

Greg Luciano, Director of Services at Built.io

2017
Prediction

More data will be created in 2017 than the previous 5,000 years of humanity

Editors note: Predictions sent in from Sencha's CEO Art Landro

In 2015, Art predicted that in 2016 the explosion of data would drastically transform the technology landscape, requiring organizations to visualize all incoming data from IoT devices for rapid decision making and insight into competitiveness and viability. He believes data will remain a key growth area in the coming year.

Read on to learn why, and find out what else Art thinks we have in store for 2017:

In 2017, we will create more data than ever before, creating new challenges around consuming that data to make strategic and tactical decisions.
More data was created in the last two years than the previous 5,000 years of humanity. In 2017, we will create even more data in one year alone. The type of data created is expanding rapidly across a wide range of industries: biotech, energy, IoT, healthcare, automotive, space and deep sea explorations, cybersecurity, social media, telecom, consumer electronics, manufacturing, gaming and entertainment – the list goes on. Yet, recent research has found that less than 0.5 percent of that data is actually being analyzed for operational decision making.

The focus in software will be getting your hands around all that data and being able to use it either strategically to make important long-term decisions, or in real-time to make operational decisions – as there is no value to the data being created if you can't use it. In order to get ahead and stay ahead of the competition, it will be critical for organizations to leverage web application lifecycle management platforms that have the capability to consume huge amounts of data and present that data in a way that helps them make the right decisions.

The desktop isn't dead – and it's here to stay.
Many people predicted that paper would be obsolete by now. It's not. The same is true for the desktop. In fact, the desktop will be around for another 30+ years. While mobile and tablets will remain important to our everyday lives and simple business processes, people simply do not want to view and analyze data on a small screen.

According to findings of a global survey, "The State of the Modern Web," recently conducted by Dimensional Research, 80 percent of development professionals believe desktop applications are "absolutely essential" to their business operations. Additionally, the survey found that 81 percent of desktop applications are maintained for more than three years, compared to just 55 percent of smartphone applications. These research results confirm that the desktop is far from dead. The desktop remains the most critical platform for business applications due in part to the massive explosion in the complexity and volume of data, which is driving increased demand for data visualization techniques as users seek to make more informed strategic and operational decisions.

Competition between enterprises and small businesses/startups will heat up.
The number of startups and small software companies building applications that are more flexible, more graphic and more intuitive to replace legacy ERP, CRM and Supply Chain Management (SCM) systems offered by large enterprises will increase. To stay competitive, large software providers such as Oracle, SAP, Microsoft, and Salesforce will need to be much more agile and flexible in building flexible, easy-to-use business critical applications and platforms. We'll see enterprises adopt a much more open-minded view toward partnerships and what partnerships mean in this digital economy.

CEOs will become more generalists, than specialists, and every company will need a CTO.
As we move deeper and deeper into the Digital Age and technology becomes more prevalent in all industries, CEOs will become more generalists who are focused on building the right teams to succeed, rather than being an expert in every topic. Every company in every industry, from agriculture, mining and manufacturing to logistics, financial services and healthcare, will become a technology company. Additionally, every technology company will need a CTO who has a deep understanding of the company's technological infrastructure, software development and support needs.

Software developers will rule the digital world.
While developing and building relationships with customers over the last year, I've learned that many executives' number one challenge is finding quality software developers. Today, we live and work in a world where there continues to be massive growth in technological advances and an explosion of technical choices. In this world, developers – specifically, software developers wielding web technology skills and tools that turn ideas into amazing applications which drive operations and businesses around the planet – rule.

According to the previously cited Dimensional Research survey, 76 percent of organizations plan to increase investment in web technologies in 2017. Hiring and retaining quality developer talent will become even more critical as organizations feel the increasing pressure to deliver sophisticated, complex and long-lasting applications quickly, while still providing high quality, long-lived products.

2017
Prediction

8 cyber security predictions for what's to come in Asia-Pacific

BY CHRISTIAN HARGRAVE

Cyber security received heightened interest in 2016 due to a spate of cyber attacks in the region. These included cyber attacks on the database of 55 million voters at the Philippines Commission on Elections (COMELEC), the National Payment Corporation of India (NPCI), US$81 million cyber heist at the Bangladesh Central Bank and the massive data leaks as shown by the Yahoo data incidents.

As evidenced by the above, cyber attacks can impact any industry at any time. In fact, as more industries become increasingly connected to the Internet due to the Internet of Things, it is more essential than ever to consider if your organization is cyber ready for 2017.

Frost & Sullivan's Asia Pacific Cyber Security practice analysts share their key cyber security predictions for 2017.

1.) Business Email Compromise (BEC) attacks will overtake Ransomware and Advanced Persistent Threat (APT) attacks

BEC generally happens when email accounts of key executives are compromised and involves payments made to fraudulent bank accounts. In Singapore alone, about S$19 million has been lost through BECs between January to September 2016. There was an increase of 20% in number of such cases as compared to the same period last year. Police investigations revealed that the scam usually involves businesses with overseas dealings with email as the main form of communication in the dealings.

"As BECs are relatively easier to execute and evades cyber defense tools better than other popular attack vectors such as ransomware and APTs, it can potentially be the main cyber threat in Asia," noted Charles Lim, Industry Principal, Cyber Security practice, Frost & Sullivan, Asia Pacific.

2.) DDoS attacks might cause the Internet to be down for an entire day in a country

Globally, Distributed Denial of Service (DDoS) volumetric attacks hit over 1 Tbps of traffic and shut down several popular online services in 2016. Whilst government authorities grapple with ensuring strict security regulations and manufacturers continue to deliver insecure IoT devices to the market, coupled with the fact that internal volumetric attacks to DNS servers for service providers are not well defended, cyber attackers will most likely attempt to exploit the vulnerability to the next level and bring down the internet in a country for at least a day.

3.) Greater enforcement expected for Internet of Things devices to meet cyber security standards

As authorities become increasingly concerned about the threats unsecured IoT devices will pose to the community, it will be illegal for these manufacturers to sell their products in countries that demand these devices comply with security standards. The recent Mirai botnets exploiting the vulnerabilities of IP cameras are an example of how manufacturers did not include a security process of changing default passwords when connecting the devices to the Internet.

4.) The healthcare sector will have more stringent regulations towards ensuring uptime of computer systems handling critical operations.

Globally, ransomware attacks on computer systems of healthcare providers in 2016 had infected computer systems and disrupted operations hence patients in need of immediate attention had to be diverted to other hospitals. While major healthcare providers in Asia had initiatives to comply with security standards such as HIPAA, their use of legacy security tools to meet minimal compliance standards could not keep up with the new types of cyber attacks.

These days, stolen personal healthcare records are worth more in the dark web than credit card information and medical machines are increasingly connected to the Internet which pose as a possible safety risk to patients. The healthcare industry needs a good 'cyber health check' before it is too late.

5.) New technologies such as Blockchain may be used to enhance trust between stakeholders and facilitate exchange of threat intelligence among industries

The setup of more Information Sharing and Analysis Centers (ISAC) will form platforms for both the private and private sector participants to share threat intelligence. However, participants are wary of exposing their weak security posture when contributing intelligence due to a successful attack, and there are issues of untrusted sources that may contribute the wrong intelligence. Blockchain may emerge

as the technology to facilitate the exchange as it authenticates the trusted party to contribute, obfuscates the contributor's detail with anonymity, and offers a tamper proof system that prevents unauthorized alteration of any data shared.

6.) More adoption of technologies that focus on threat actors and "hunting" for their next attack

Traditionally, enterprise security teams have adopted a "wait and see" posture, and try to build up their defenses to mitigate the possible threats they are aware of. However, more enterprises are working towards trying to know what the attackers are innovating in terms of cyber attack techniques, their next moves, and build up their defenses to counter the new attack vectors.

7.) More enterprises will offer bug bounty programs, which are seen as a measure to deter talents from taking up black hat hacking

The idea is simple yet effective: pay the attackers for finding and reporting major vulnerabilities in enterprise and/or developed applications. Enterprises will be able to strengthen their security defenses through the crowdsourcing model and encouraging potential hackers to discover more and do more of the good rather than the bad.

8.) More drones will be used to facilitate cyber attacks

A group of researchers from iTrust, a Center for Research in Cyber Security at the Singapore University of Technology and Design, demonstrated that it is possible to launch a cyber attack using a drone and a smartphone. In the future, it is expected that drones will be an easy way to scan for unsecured wireless traffic as a way of performing war driving attacks.

While more applications are developed for drones in commercial use, inevitably cyber criminals will think of new techniques in launching a cyber attack. Other possible types of attacks include delivering GPS jamming signals to a vessel or dropping USB drives containing malware to air-gapped critical infrastructures.

QuickBase predicts that developers are going to be redefined in 2017

Editors note: 2017 Predictions from John Carione, Product and Corporate Marketing Leader at QuickBase

Agility 2.0: a new era of decision-making in the enterprise emerges.
Agile methodologies have completely changed how companies evaluate and implement technology solutions. In 2017, we'll see a new wave of agile thinking enter the enterprise, this time with a focus on helping enterprises make strategic decisions more quickly. The days of lengthy research projects and teams of management consultants are numbered. Thanks to agile technology, employees - whether in IT, operations, or marketing - will be able to use tech like rapid application development and automated research tools to run quick tests and answer questions on their own. By more quickly understanding which processes and strategies are working and which aren't, employees will be empowered to make intelligent decisions and adjust their approaches on the fly.

Hiring managers will redefine "developers" and developer job roles.
In 2017, we'll see hiring managers start thinking outside the box to help fill their organizations' development needs. This will be fueled by a few market forces:

- The continuing shortage of skilled developers, as we know them today
- The increase in popularity of tools that allow for the development of software with little to no code, and greater familiarity with these tools among job candidates
- Managers looking for a programmer or developer "mindset" versus only relying on technical skills

While coding skills will continue to be important, in many cases they will no longer be the be-all, end-all for recruiters looking to fill development needs for the business. While the definition of "developer" won't change overnight, 2017 is likely to mark the onset. Even Gartner predicts that by 2020, 60 percent of all fast-mode application development projects will be done outside of formal IT teams. In the process, new challenges will emerge for technical hiring managers. How do you identify good developers? And, what should their performance be measured by?

A third wave of "digital" will take over enterprise budgets.
In the last decade, digital transformation has changed the way marketing and IT work, but there are still key areas of the business that remain relatively untransformed by digital. In 2017, digital transformation will finally hit a third critical department in the enterprise - operations. A recent survey we conducted showed that 23 percent of non-IT staff in operations business units are already developing the apps they need to make digital transformation in their departments a reality, but we expect that figure to rise - in large part driven by a shift in budgets and a commitment to serving customers better. Forrester recently reported that compared to the amount they have traditionally spent to transform customer experiences, enterprises like The Home Depot and Unilever will spend four times more on digitizing their operations.

More businesses than ever will be exposed to citizen-developed apps.
As citizen development becomes mainstream and companies get more comfortable using low-code tools internally, they'll more frequently experiment with creating apps that are external-facing. Citizen developers will still be creating these apps, but the use case will more often focus on serving partners and customers for tasks like asset tracking or joint project management. In fact, a recent survey of citizen developers that we conducted showed that more than one-third (35 percent) of app builders create customer-facing apps, up from 27 percent in 2015. For partners and customers, this shift will also mean they're likely to receive greater access to information they need on the fly through app-based solutions that serve their needs specifically.

The "citizen" worker will disrupt the workforce.
2017 will lead to the rise of the "citizen" employee - those who have not had formal training for specialized skills, but who can complete the same tasks with the aid of tech tools. We've seen that with citizen app development (using platforms like QuickBase), citizen video marketers (using tools like Animoto); citizen website builders (using tools like Wix); and citizen data scientists (using tools like Platfora), to name a few. As technology democratizes specialized skill sets, more "citizen" job opportunities are likely to emerge in the process. This includes the citizen data integrator, whose emergence will be driven—just like the citizen data scientist - by the growth of enterprise data and companies looking for more efficient ways to harness it.

3 reasons low code software is helping IT departments be superheroes

BY EDUARDO CRUZ

Although we've long since entered the digital age, many organizations remain saddled with legacy IT systems, unable to keep up with the growing and ever-changing demands of the business. Not only that, with resources stretched, many IT departments are left with no choice but to prioritize day-to-day management over business innovation. And yet despite considerable challenges like these, there's also good news: Low-code platforms are helping to bridge the gap between business needs and IT capabilities.

Low-code platforms give businesses the ability to create the apps they need quickly and simply, taking much of the pressure off IT. The result is secure, reliable apps that meet critical business needs while also ensuring that IT maintains control over key business functions such as data management.

With business units demanding new solutions faster than ever, adoption of low-code platforms is enabling organisations to rapidly close the divide between business demands and IT's ability to respond. Below I've outlined some of the key ways in which low-code platforms can help business units better use IT resources:

1. Speed

Speed is certainly the biggest benefit of taking a low-code approach to application development. With a low-code platform, business units can prototype applications in hours, rather than weeks or months. This allows IT to gain valuable feedback from end users and to adjust their solutions to meet evolving and mission-critical business requirements - improving collaboration between business and IT teams. That means that what ultimately gets built is actually a valuable application that the business teams can use. This enables a faster and more streamlined development process, positioning IT as an adaptive and responsive business partner for creating new processes, apps and initiatives, rather than a potential source of disruption to the business.

To help underscore the point, consider the case of AXA, a multinational insurance firm that sought to improve customer experience and reduce costs through rapid innovation. To achieve this, AXA decided to modernize its claims processing system by adding a web-based portal using OutSystems. The new portal, 'eServe', took just three months to build. It provides an elegant and highly functional front-end that works on mobile devices and desktop computers, and integrates with AXA's legacy system, ACS, an in-house platform based on Oracle and .NET. After building the portal, AXA was able to immediately cut the costs associated with managing its call centre while enabling brokers to self-service claims processing. In effect, the new, streamlined system has decreased the amount of time it takes for brokers to satisfy customer demands.

2. Improved IT productivity

Faster development means that IT departments can offload certain development projects to the appropriate business departments, allowing them to create basic applications without coding. As a result, small development projects are removed from IT departments' backlogs, freeing them up to focus on more business-critical tasks. Ultimately, businesses can accelerate their app development using low-code platforms to gain quick, incremental wins. It's a much faster and more efficient approach than outsourcing the work to third parties or waiting for IT organisations to complete it using traditional development methods.

Ricoh (Singapore) Pte Ltd., a global provider of image-processing equipment, is another great example. It's a business with many departments, each of which historically had its own custom-built applications. Unfortunately since there were no APIs, those applications were unable to talk to each other, which led to a lot of siloed information. But, when Ricoh partnered with OutSystems to replace several of its disjointed applications, it did more than just break down its siloed data stream. In fact, the company was able to avoid additional software costs, reduce its hardware costs, and increase developer productivity. Not only that, the company achieved an ROI of 253 percent, while also racking up annual savings of £106,458.

AXA and Ricoh are both examples of companies that built a responsive, custom app to solve the business issues they were facing quickly and efficiently, giving employees the right tools to complete the job successfully in the process. This meant that IT resources were able to concentrate on the functionality and user experience of the apps, rather than on routine code and delivery schedules.

3. Creating citizen developers

Business users have been trying either to build their own software-based solutions or customise existing solutions for years now, but with limited success. The visual tools of the 90s never lived up to their promise, and subsequent approaches like model-driven development and enterprise mashups typically over promised and under delivered on the ability for business users to build or modify their own applications.

Today's low-code and no-code visual app development platforms have come a long way from the 90s. Standards have matured, RESTful APIs are now abundant, and these no-code and low-code platforms are able to resolve many of the enterprise challenges the citizen developer faces as they seek to build and deploy applications in a secure, governed enterprise environment. These business users, usually in concert with IT, now can leverage a combination of trends and technologies to augment their ability to

create increasingly sophisticated applications.

These are just a couple of examples of how business and IT are working together to produce better processes and systems using low-code application platforms. With digital transformation on the agenda of so many of today's organisations, the demand for ever more enterprise apps shows no signs of abating anytime soon. Low-code platforms are certainly helping to bridge the resource, skills and agility gap and to ensure that IT departments are able to meet the demands of both the business and the end customer.

Stopping the crashes inside your app

BY HANNAH LEVENSON

If you are a mobile app developer (and we'll take a wild guess and say you probably are, or are at least linked to the industry in some way), then your apps have most likely been downloaded, used a bit – crashed – and then users deleted it.

We can confidently say this is the norm for many apps because:

Various market studies (like this one from Crittercism) have shown that 'most apps crash' – Almost half crash more than 1 percent of the time they're in use, and a third crash more than 2 percent of the time, which is enough for people to abandon the app. More than three quarters would give a crashing app just one more chance before deleting it from their device. Just 16 per cent would give it more than two attempts.

That's a lot of pressure - apps that crash are in a sense, "useless" to the users. Users need an app to solve a problem or need that they have, and crashing apps are only adding another problem to the list.

Crashing apps hurt usability and will make a serious dent in user experience, which might result in a series of negative reviews on app stores. So, there is a lot at stake here.

The tragedy is that developers simply can't eliminate crashes completely – they will pretty much always happen. Even mobile market reports will say – if developers can get their app's crash rates under 1 percent, that is considered having a solid, stable app. No one will ask for 0 percent- even though we will always strive for perfection, right?

Why do crashes happen?

Crashes are unavoidable because there are many reasons why they happen, many of which are moving parts. However, one of the biggest reasons is poor memory management. Developers build their apps as if theirs will be the only thing running on a device. They often think they'll always have all of a device's memory and processing power at their disposal. When released into the wild, where apps must 'compete' among themselves, memory resources get depleted quickly, which can lead to apps crashing.

Knowing crashes will always be a threat, you can (realistically) try to get to under that beautiful 1 percent, and the best way to go about the path is by keeping crashes in mind when developing, analyzing the finished product, and tweaking it as necessary.

The problem is – most mobile app developers are still using the same analytics tools that were available when mobile apps first hit the mainstream. These tools, known as quantitative analytics tools, while providing extremely valuable, numerical information, only tell one side of the story when it comes to user experience and crashes. There are new tools available on the market today, which we call qualitative analytics tools. When used with 'traditional ones', they offer a complete picture of the app and its life 'out there'.

Apps have moved on, analytics moved with them – and it is time developers moved, as well.

The difference

As you probably know already, quantitative analytics are all about numbers. Everything about your app that can be said in numbers, will be communicated through quantitative analytics, such as the number of app launches, times of day when the app is used, and in this case most importantly – how many times it crashed.

But the answer to one crucial question is missing, and there is no math in this universe that can answer that one – Why?

Why did the app crash? What was the user doing when it happened? Did he follow a particular sequence of events that led to the crash? Did he press too long on a button? Did he attempt to swipe left too many times? All these, and virtually every other similar question can be answered through qualitative analytics. With qualitative analytics platforms, there is typically a feature that helps answer these questions - user recordings. The name pretty much speaks for itself; these will allow you see exactly how users are experiencing your app, helping you get a better understanding of all the troublesome things.

User recordings

If users are going about the app in a way different to what you had in mind, that can lead to a lack of understanding and frustration on their part. They might perceive various app's elements as bugged or flawed, ultimately inching them closer towards tapping the uninstall button. Without knowing how your users use the app, you can't really do anything about this reality. They can't modify the interface, they can't change their onboarding strategy, they are literally left in the dark.

Obviously, the best way to 'turn on the lights' would be to watch them as they use the app, which is practically impossible. The second-best solution, however, is very much possible – watching both recorded, and real-time, sessions of people using the app.

That way you can see exactly where the issues lie and will discover if different elements (for example social media account login button) crash the app, and in how many cases – which is a metric impossible to find through quantitative analytics.

If you don't have user recordings, you probably would have to do a couple of things in attempt to understand the exact cause of a crash:

- Read through piles of text of crash reports (if users decide to send those in the first place)

- Read through user complaint emails (if users are bothered to send those in the first place)

- Read through online reviews of frustrated and annoyed people

That's a lot of reading. Worst part – that's a

lot of *reacting* - instead of being proactive. You would also need to sniff through quantitative analytics – basically crunching numbers, a practice that can sometimes make it impossible to relate crashes with the real cause of the issue.

Here's another example: it's been established that many shoppers abandon their mobile shopping cart, for various reasons. Again – qualitative analytics can tell you why. Maybe they are missing a crucial payment service, or the registration page crashes the app for some strange reason when users try to add PayPal information. All these questions can be answered by watching recorded user sessions, helping you create a functioning, fun and engaging app with an overall better user experience.

Eliminating friction

Mobile app crashes are a huge turn-off, as they can make users quickly quit and uninstall the app. While it's almost impossible to completely, absolutely eliminate crashes from apps, thankfully they can be reduced to an acceptable minimum, which is less than 1 per cent of the time users spend with the app.

This reduction can only be achieved by making sure the app is built properly, by effectively monitoring and analyzing app performance, and updating and tweaking it accurately to remove disruptive and poorly built elements. In today's ultra-competitive mobile app ecosystem, quantitative analytics, which are usually used by developers to track numerical data, do not suffice. Yet when combined with qualitative analytics, you can get the full story on your app's user experience.

Through quantitative analytics, you can understand when, and how often apps crash. But through qualitative analytics, by visualizing real user sessions, you can understand why it happens. Only then can you see the full picture and only then will you be able to boost your app to produce the ultimate user experience.

"Mobile app crashes are a huge turn-off, as they can make users quickly quit and uninstall the app."

Vantiv: An open ecosystem approach to integrated payments

BY RICHARD HARRIS

It's no secret, innovation within the payments industry is at an all-time high and there are no signs of slowing down. By providing developers with the tools to move the payments industry forward, Vantiv looks to be a driving force for growth in the years to come.

We recently sat down with Moin Moinuddin, SVP of IP product at Vantiv, to discuss Vantiv's open-ecosystem approach to payments, the importance of software developers within the payments ecosystem and what 2017 has in store for the payments industry.

ADM: In a sentence or two, please describe Vantiv's overarching approach to payments?

Moinuddin: Vantiv is one of the largest payment processors in the US. We at Vantiv care about offering friction free, low cost payment processing to merchants of all sizes and all channels. We want to facilitate growth payments in not just traditional scenarios such as retail or e-commerce but also in emerging scenarios such as health care, insurance, mobile, real estate, charity/donations, etc. As more and more cash-based scenarios migrate to card/electronic payments, Vantiv wants to be a leader in helping to facilitate and also enable new scenarios such as health care, etc.

ADM: Why an open-ecosystem approach? What are its advantages?

Moinuddin: Vantiv strongly believes in and open ecosystem and a variety of ways to develop. This is because as we want to provide friction free and low cost payment processing. We strongly believe in working with our partners, letting them focus on what they are good at, which is software solutions for various verticals such as POS, health care solution, etc. We do not believe in owning a vertical end-to-end but rather in focusing on what we are good at and letting partners focus on what they are good at which results in the best experience for customers. This also helps in growing our business by working with all partners. This leads to healthy eco-system and leads to innovation in the marketplace.

ADM: What have been the driving forces behind this approach? Both from the payments industry and consumers.

Moinuddin: Innovation and consumer demand for choice forces the continued growth of the open-ecosystem. Consumers prefer choice and do not like to be locked in to a single solution. This gives boost to developers to continue to design disruptive technologies and solutions. This in turn forces payment processors to continue to work with all developers and not lock themselves into a single solution. These factors help in keeping the open ecosystem active and healthy.

ADM: Overall, how has the industry reacted to this approach to payments/commerce?

Moinuddin: The industry loves this approach as it keeps the industry relevant and helps in growth. Any industry that is not active and growing will disappear. There are many examples of it. Letting everyone focus on their areas of strength while continuing to work together, helps keep the industry active and leads to more innovation.

ADM: Why is payments integration so complex for software developers?

Moinuddin: Payments deals with money, and as a result is a regulated industry. Unlike a message or video software/solution, the payments industry is heavily regulated by governments, card associations and banks. This is mainly to reduce fraud, protect everyone from money laundering and ensuring overall risk is reduced or mitigated. As a result, integration is not as simple as an API integration but is more involved due to complying with rules and regulations and obtaining certifications before transactions can be processed. So the actual API integration may be simple, but adhering to message protocols and going through the certification process does take time.

ADM: How does access to payments integration tools help developers meet challenges in the payments industry?

Moinuddin: Having SDKs, API documentation and code samples will help developers tremendously. It helps them quickly get started as they can use the code samples and build on it. API documentation helps them understand the how and what they need to send and what responses or error codes to expect from the Vantiv systems. In addition having detailed script for obtaining certification helps them speed up the entire integration and certification process so they can quickly onboard and begin sending transactions.

ADM: How important do you believe software developers are to the future of commerce?

Moinuddin: Extremely important! Developers drive innovation and ensuring they have all the tools and assistance will act as a catalyst in innovation. Payments, or for that matter any software eco-system, is solely dependent on the developers. So providing them with all the right tools including SDK, API documentation, scripts, code samples, etc. will help first to keep the eco-system active, and secondly to provide the much needed oxygen for its continued growth.

ADM: How has the Vantiv ONE portal been working with developers?

Moinuddin: Terrific. We have nearly 1,000 developers signed up and using the portal in just six months since we launched it. Many of these developers are new to Vantiv and can hit the ground running on incorporating payments into their design. Vantiv ONE is providing to be a much needed portal for developers.

ADM: What's next for software development in the payments industry? What does the future hold in 2017?

Moinuddin: The payment industry is going through tremendous disruption and innovation. Just looking at the recent VC funding trends its clear FinTech startups are in the top group for being funded. So there is lot of innovation happening in the payment space, including how payments are originated and how they are processed. Mobile payments continue to grow but more importantly scenarios where cash used to be the only way are being penetrated by innovative electronic payments. In 2017, mobile payments will continue to grow and P2P payments will continue to be conducted via electronic payments.

"The payment industry is going through tremendous disruption and innovation."

Sean Carron tells us about Team Smiles and Happiness-as-a-Service

BY RICHARD HARRIS

Happiness-as-a-Service is an application that allows kids awaiting a transplant, or those who received a transplant, to request a wish, and then connects them with benefactors who can fund their wishes. It enables users to nominate a critically ill child, see a child's wish in their local community, and donate - among other features. The users can create "moments" for children. These moments consist of anything from going to Disney on Ice to swimming with dolphins.

We decided to sit down with Sean Carron of Linium and Leader of Team Smiles in ServiceNow's CreatorCon Hackathon to learn more about what they have developed and how they plan to have an impact on kid's lives.

ADM: Tell us about Team Smiles and Happiness-as-a-Service?

Carron: Team Smiles . . . (Team Smiles was a collaboration between Linium and our customers National Gypsum, Horizon BCBS, and Honda.) We took part in ServiceNow's CreatorCon Hackathon, at their annual user conference, Knowledge 16 and came up with the idea to develop an app for critically ill children awaiting or having just received an organ transplant.

We wanted to do something that would bring joy to these children and to play off the "Everything-as-a-Service" concept and realized that happiness is what we're delivering.

ADM: What inspired you to develop this app?

Carron: The app was inspired by the Make-a-Wish Foundation. It is a wish-enabling platform for terminally ill children. Children undergoing a transplant have a long, tough road, so in collaboration with ServiceNow and Linium customer UNOS (the United Network for Organ Sharing) we set out to create an app that would make a difference in their lives and make them smile.

ADM: How did you create this app?

Carron: We created the app on the ServiceNow platform. Using SDLC to manage the project, our team was able to easily streamline the accelerated build out of this app within the 8-hour timeframe. We also leveraged the ServiceNow CMS portal for the user interface, integrated the app to social media channels, and utilized the service catalogue to manage services being offered.

ADM: What implications does this technology have? How can it continue to better lives?

Carron: ServiceNow has adopted the tagline "Everything as a Service" – one of our goals was to show just how far you can take that idea. The platform technology is what makes that possible – integrating core service themes like request-and-response with modern application concepts like geomapping, mobile and responsive design, and integrations to common application features such as PayPal and Twitter. People use applications with this kind of technology every day in their regular life for everything from ordering a ride to finding a restaurant review and table. Extending this feature-rich service paradigm to a ServiceNow app to help kids was the driving force behind our application.

ADM: What plans do you have for this app in the future?

Carron: Team Smiles agreed to donate both the application and our prize money to the United Network for Organ Sharing to allow them to stand up "Happiness-as-a-Service" for real – it is our dream that with this "leg-up" UNOS can make this application a reality.

ADM: What has been the outcome of Happiness-as-a-Service thus far?

Carron: The code and funds have been passed along to UNOS. As you can imagine, launching a project to make the application a reality has many implications including marketing, legal, corporate branding, staffing, etc. UNOS is working through this complexity now.

ADM: What has surprised you most about Happiness-as-a-Service?

Carron: The great reaction we received for this application from participants at Knowledge16. In the beginning, we just saw it as a cool thing we could do or Hackathon with some partners and for a great, worthy customer. But folks were so very supportive of both the concept and our execution of that for the Hackathon.

ADM: How long did it take to make the app, and can you talk a little bit aboutthe technical programming or engineering used? (Mention any SDKs, APIs, etc.)

Carron: Planning for the Hackathon started about a month before Knowledge16, and we had several virtual team meetings to iron out the function points we wanted to complete, collect the graphics we were using, and work thru important API-level integrations we would use. We completed the app in about seven hours (of the eight hour Hackathon window). We used the ServiceNow SDLC (now called Agile) application to keep track of our progress, and we did have to make a decision not to implement one of the function points we hoped to implement (a voice interface using Amazon Echo and Alexa). We did complete working integrations to Microsoft Bing Maps for geoplotting, twitter to allow tweets about Kid's Moments, and PayPal to allow the funding of Kid's Moments. These were all REST-based web service integrations.

ADM: Do you have any statistics regarding the apps usage?

Carron: Not at this point – UNOS is still working through the process of making the application generally available.

"We wanted to do something that would bring joy to these children and to play off the "Everything-as-a-Service" concept and realized that happiness is what we're delivering."

How do we simplify east-west security? The imperative path is upon us

BY KESHAV KAMBLE

Ahhh, the endless saga of streamlining hazards around application security: let's talk about the East-West component of the conundrum. But first, it's important to clarify the variances of 'East-West' vs. 'North-South' traffic in a typical data center environment. By definition: North-South traffic is the communication that occurs between server applications deployed inside data centers and internet based client applications. Theoretically, it can also include inter-data center traffic.

East-West communication can be loosely defined as traffic between various application instances within the data center. Most often, East-West traffic is an initial result of North-South traffic. In example, in a data center of a search engine, one search query from an internet based end-user can result in large amounts of internal communications between multiple application servers, attempting to resolve the query in the best possible manner.

Various studies performed on data center traffic statistics suggest that the ratio of North-South traffic to East-West traffic is 20%:80%. Clearly, data centers are designed to scale and perform swiftly by deploying faster computing, storage and connectivity solutions, which in turn is meant to provide quicker execution. Enterprise data centers are virtualized and multi-tenant based on various purpose-driven factors.

80% of total traffic in a data center is internally generated and consumed by assorted applications within the data center. A mere 20% of traffic comes from the outside (e.g. via the internet), and then makes its way back outside. Why do I bring this point to light? To emphasize the threat surface and vulnerabilities associated to a data center based application eco-system. Virtualized, multi-tenant data centers, be it Service Provider or Enterprise Data Centers, require complex internal hierarchies of services to secure and scale them. One can imagine the substantial complexities of deploying Service Function Chains (SFC) for all East-West traffic.

In 2014, we were designing connectivity solutions for within the data center, using 40GbE and 100GbE form factors on servers. As such, was the need for performance and bandwidth. It just so happened that to the contrary, the SFC performance was bottlenecking already virtualized computing and storage environments. Even the security services only chain was overwhelmingly frustrating, let alone the NAT and load balancers.

At one point, adding security SFC became more of a feeling as though we deliberately added choking points, knowing it was inadequate to protect the workloads. Inefficient application security and segmentation deficiencies have compromised applications in many ways. It was a matter of 'when' - not 'if' the deployment would get compromised. But then again, everything was done in the name of compliance.

Typical hierarchies of security services included Edge Firewall, Segment Firewall, Application Firewall, and DPI Services (IPS/IDS of limited set of functionality) Monitoring. I'll not mention the vendors and appliance names here, but many of the services were aggregated - and in some cases - the same appliance would perform different services, depending on the position of deployment.

Virtualized multi-tenant data centers unfortunately suffer, due to performance and expansion limitations of virtual security appliances, which are part of security services chaining. Furthermore, it does not stop there: architectural complexity further hinders scalability, manageability and increases costs.

How about an out-of-box approach?

How about one which provides same or better functionality - in a real-time deterministic manner, while removing performance bottlenecks, complexities and allows infinite scalability? Those with a good comprehension of scaled-out distributed systems would instantly understand this concept. The question is, where do you start breaking down - and how far down do you go? The answer is out there! (Just like the saying goes "The truth is out there!", this coming from the X-Files fan in me.)

Another way of looking at it is a little more complicated, but mathematical in nature. It starts with defining the term 'Threat Surface', which is the number of vulnerabilities (of each kind) associated with a software module under consideration. For simplicity, the unit I assigned is τ (τρωτό) (in English trotó). Consider a vast application eco-system with large numbers of diverse applications - interacting with one another. The Threat Surface of such a system is massive. Even a Next Generation Firewall (NGFW) would crumble under its own weight if the application environment is not streamlined. Therefore, security provisioning methods by appliances or chain of services (SFC) won't be scalable, deterministic, or real-time in nature.

What we need is an approach - and thought process, where the applications get a non-penetrable, deterministic layer of protection built into the application itself. The application can be legacy or new, simple or complex, web- or database tier, data center or cloud based; the intelligent segmentation and deterministic security capabilities can be selected by an Application Security Administrator working with DevOps. Once chosen, the application security springs into action whenever an application comes up, stays with the application, moves with the application and disperses with it. With that, the application not only defends itself from legacy and current sets of threats, but at the same time – addresses emerging threats.

It clearly is not as simple as I've spelled out here. It requires complex mathematical analysis which involves applications, their attributes, communications, security aspects, and more, including methods to parameterize them. The aim is not to simply inherit the technology used by Service Function Chains, namely the security services - but to develop more spoof-proof methods to protect resources -

in a real-time and deterministic manner.

And there you have it: your applications and systems of applications are protected! This can be a lifetime exercise, or even a PhD thesis for some. But what comes out of it is simplified security architecture with:
- Application Self-Protection capabilities, less the bottlenecks of security service appliances. Removing them entirely
- Applications are enabled to carry their own protection anywhere - namely private, public or hybrid cloud environments
- Infinite scale: as provisioning starts at the lowest level
- Speed of rise-to-action is as fast as the application itself. No more worries of micro-workloads or containerized workloads.
- Highly programmable while empowering auto-formation capabilities along with the application itself
- Costs and/or Total Cost of Ownership (TCO) is reduced by more than 80%

A Compelling Result

Now, your data center or cloud deployment for access layer becomes much simpler, smarter, faster and agile. It should take form as illustrated in the following figure.

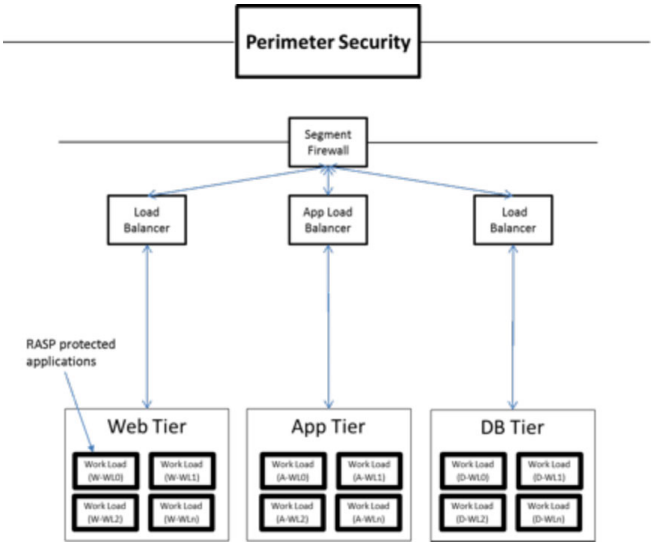
Other Advantages of vRASP?

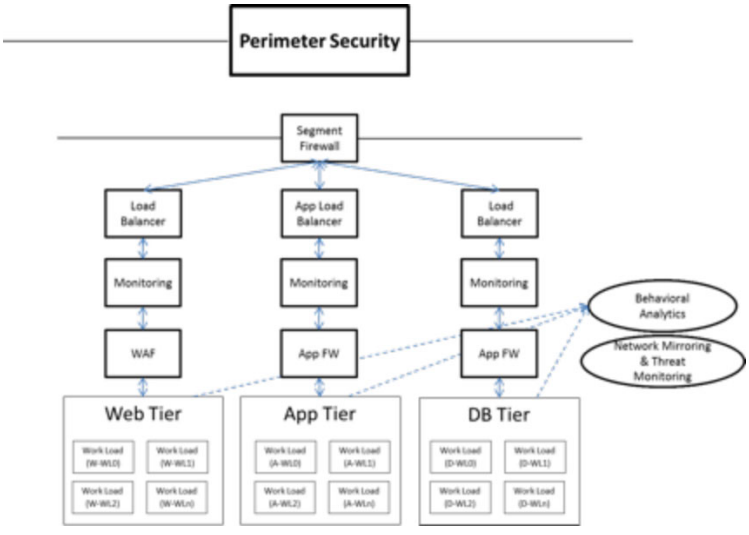
There are many, including:

- Simplified DevOps via OpenShift, CloudFoundary and others
- Deployments and upgrade management using Puppet and Chef
- Next Generation security delivered & managed in a simplified manner
- Provides more time for security engineers to focus on understanding emerging threats, vs. struggling with security layers
- Built-in intelligence sharing across hierarchies, including Application to Application, B2B, and B2C for business excellence
- Built-in forensic extraction capabilities: providing added capabilities for security analytics to share threat intelligence across organizations

Wrapping it all up

I believe the ultimate success of an Industry 4.0 phenomenon depends entirely upon how experts view the IT infrastructure and application security. Instead of trying to patch existing techniques in security provisioning, we must adopt emerging methods of security which are more effective, efficient, scalable and seamless. Cybercrime isn't going away: hence, the fact remains that we need to be aware and diligent – but we can heighten our defenses and revolutionize options to defy the hazards.





Inferior analytics may make your app extinct

BY JOSH MARTIN

Every worker is now a knowledge worker. Employees on the manufacturing floor are increasingly responsible for tracking production yield. Front line retail employees are expected to use data to be aware of inventory levels. Analysts must keep up-to-date with real-time data to make better decisions. We are all increasingly judged on how we use data to more effectively do our jobs.

But the tools on the market are not fit for this purpose. Vendors of self-service and data discovery solutions have spent millions of dollars simplifying their apps to help connect people to data. But while availability of these apps has increased, adoption has dropped. In fact, the 2017 State of Analytics Adoption Report showed a two-year decline in usage of self-service analytics tools.

The opposite is true of embedded analytics – which integrates analytics within the applications people are using every day. Why do people prefer embedded analytics? Because leaving current workflows and opening standalone applications to analyze data is inefficient and outdated. Eighty-four percent of business users agree, saying it's important for them to be able to access analytics embedded within the applications they're already using.

Now more than ever, software vendors are catching on. According to the 2016 State of Embedded Analytics Report, 94 percent of independent software vendors (ISVs) and 80 percent of non-commercial application providers say embedded analytics is important to their users. And application providers say 43 percent of their users use embedded analytics on a regular basis. That's double the adoption rate of traditional analytics tools, which has hit a ceiling of around 20 to 30 percent.

Most traditional BI tools are focused on data discovery. These tools are easy to use, have a great UI, and are easy to find, try and buy. But when users want to actually analyze business data, they need to switch from their standard application to a separate discovery app, which causes a lot of friction and contributes to that lack of adoption.

Nearly 67 percent of business users say they find themselves switching to separate analytics tools to get the data or analysis they need. This toggling is so wasteful that analysts have said individual business users can lose up to two hours per week of productivity. It makes employees less efficient, it frustrates businesses that demand efficiency and it inhibits the value of your software.

That's why many application owners – the product managers at software companies and IT leaders in enterprises – are focused on improving or updating the analytics in their product in 2017. Simply put: Without analytics at the core of your application, you risk extinction.

What Are the Implications?

Embedded analytics have come a long way from simple static report modules in a business application. Today, embedded analytics can be interactive, offer drill-down and drill-through capabilities and even provide self-service to end users that need to answer questions they haven't yet thought of. The future of embedded analytics goes beyond these capabilities – ultimately allowing for the analytics and the application to talk to each other and kick off workflows, further reducing the need for users to ever leave the app.

Let's consider the implications of not embedding. Say you develop point-of-sale software: Retail employees log transactions, data gets collected, and management relies on that data to analyze performance. If your software doesn't offer users the flexibility to drill into the data, create new dashboards, or adjust the data views to suit their needs, they'll just export the data to Excel – and your app will become an afterthought.

When users share that data with their CEO, they're sending the Excel file via e-mail or Microsoft PowerPoint. As a result, your software isn't be seen by the executives who will ultimately approve budget decisions. By ignoring this important aspect you risk your product being replaced – or, at best, make it very difficult to spread through organizations.

What Are the Benefits?

It's important to make sure you are not only driving usage of your application, but you are driving users back to your application. Historically, not offering embedded self-service led to an avalanche of ongoing ad-hoc requests. As a Product Manager you could either accommodate those requests, thereby bloating your core product and delaying execution of your roadmap. Or you could ignore the requests and risk customer churn.

Embedded analytics solves this problem while keeping users and those they share analysis with inside your application. It also creates an opportunity for product differentiation and upsell – both necessary to win and retain customers in the ultra-competitive software market.

Today, it's more important than ever to modernize the analytics your customers want in the application you're providing. But as an application developer or product manager, you're also facing the challenges of ensuring your product roadmap incorporates compelling features, is delivered on time, and stays ahead of the competition. This is where a developer-friendly platform for embedded analytics can help: With a strong platform as a foundation and a team of experts to take work off your plate, you can focus on your daily work while providing the modern analytics, visuals, and interactivity users crave.

So, as you finalize your product roadmap for 2017, you have to ask: Are my analytics good enough to keep customers in your app?

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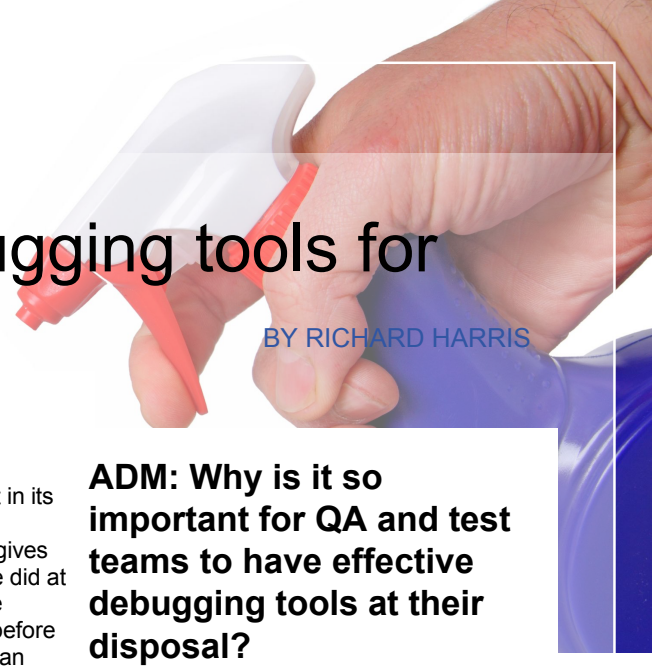
Undo talks about better debugging tools for your app



BY RICHARD HARRIS

Undo is a software development company that is looking to help arm developers with the power of rewind for their many debugging struggles. They have created tools that allow developers to record, rewind, and replay application scenarios so that debugging is more efficient and effective.

Located in Cambridge, United Kingdom, and born out of the founder's shed, Undo has a new way to reinvent the debugging wheel. We sat down with Undo's founder Greg Law to learn a little bit more on what the company is about and why debugging your apps doesn't have to be so laborious.

ADM: How did your company start?

Law: Undo was founded by myself and our CTO, Julian Smith, in my garden shed. Our goal was to create better debugging tools than the commercial and open source tools that were popular on the market. We also liked the intellectual challenge of attempting to invent a tool that could run backwards, something which academics and others had tried to invent but which had not yet been accomplished. When we were creating Undo the company, we wished we had been able to use UndoDB, our reversible debugging creation, because it would have been really useful to know exactly where the root causes of errors were in the software we were creating!

ADM: What does Undo offer developers?

Law: Following our initial seed funding round in 2012, Undo is now one of the leading commercial suppliers of software quality and reversible debugging tools for Linux. We help companies better understand their software. As software scales in complexity and size, it is incredibly hard to know exactly what happened in your code at every point in its execution. Our technology helps developers understand this better. It gives them full visibility into what their code did at every step by generating a CCTV-like recording of what their software did before it misbehaved or failed. Developers can leverage the power of reversible debugging to find the root cause of errors. They can effectively “go back in time” to find and fix bugs before they get rolled out into production. We are now expanding our product offering by making our technology compatible with Jenkins and other test systems and more exciting things are on the horizon for 2017.

ADM: How did this round of funding come about?

Law: In October, we closed on our Series A funding round for $3.3 million. This round was led by Cambridge Innovation Capital (CIC), with whom we have a very strong working relationship. As developers spend 50 percent of the workday debugging, a $312 billion industry problem every year, our investors could see the impact our technology could have on addressing this global problem. From the perspective of CIC, our products solve real-life, global and complex problems for thousands of developers. Freeing up worldwide development time for writing new code (and thus innovation) will help with the onward march of technological progress.

ADM: How will you use the funding?

Law: We will use the money to drive company growth via continued innovation in our core technology and specific investments and initiatives that further strengthen use of the technology in CI and other test automation for DevOps teams.

ADM: Why is it so important for QA and test teams to have effective debugging tools at their disposal?

Law: As software companies run thousands of more tests per day than they did even a few years ago, it is more and more important for them to have effective debugging tools at their disposal so that their products can be shipped on time. Even a 0.01% failure rate can be catastrophic if those failures were to make it into production (think of, for example, the recent security breaches or outages that have made it into global headlines in recent months). It is imperative that these issues are found and resolved during the testing cycle, which is where Undo can help. By integrating Undo's Live Recorder into a company's test suite, developers can capture an exact copy of the failure in a recording which can be automatically sent to Development to analyze, diagnose and resolve. It significantly speeds up the debugging process and enhances development productivity, and also helps QA and Development communicate more effectively with one another because the recording of the failure contains all the information needed to fix the problem. Software quality is a major issue for enterprise software companies today and Undo's technology gives them the guarantee they need to have confidence in the quality of their software when it is released. recordings (exact replicas) of test failures to be automatically sent to developers, therefore freeing up time that would otherwise have been spent re-running tests to try and pinpoint a problem.

ADM: How does Undo help software companies differentiate themselves?

Law: Through using Undo, software companies are able to confidently say that their software is of the highest quality it can be. Companies can be confident that when their software gets rolled out, their Test and QA departments did everythingpossible to capture and resolve even the most difficult of errors. Undo also gives companies an additional boost of confidence for when their software is deployed, as Live Recorder can be embedded in a deployed product and activated if an unforeseen error strikes. The recording of the failure can be sent directly to Development who can find and fix the error and deploy the new release back to their deployed product, minimizing the damage that can arise from software bugs that appear in deployed code. When you translate this to a real-world example, such as a software vendor trying to resolve an issue in its product that appeared at a customer site, or when a cloud provider experiences an error in the cloud which cannot be fixed without effectively turning its cloud service off, the value of Live Recorder is immediately clear. It is becoming a differentiating point between a company using traditional debugging methods and the next generation of software companies.

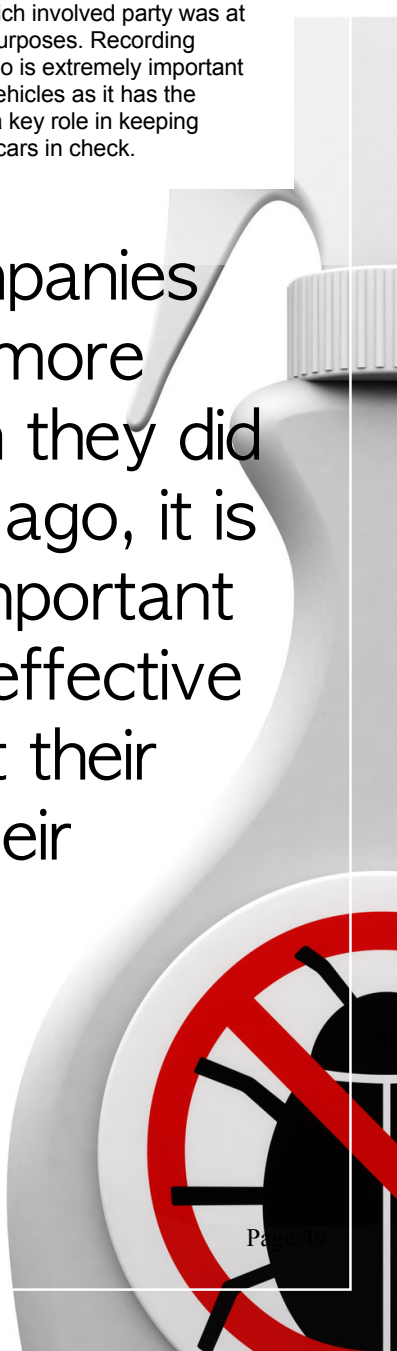
ADM: What is Undo's role in supporting the innovation of technology as an industry?

Law: The most important way that Undo supports the innovation of technology is that it frees up developer time. Time previously spent debugging can go into developing software that moves their enterprise forward with innovative and competitive solutions. Undo ensures that even as the technology industry becomes more and more complex, software maintains high levels of quality and functionality.

ADM: What's next? Where do you see the future of automation heading?

Law: The future of automation will lead to very complex software, which will be applied to new techniques like machine learning and artificial intelligence environments. The biggest area (both in physical size and in importance) that automation will manifest itself in is the invention of autonomous vehicles. These vehicles depend totally on software to run, and when it fails, it is important that it happens when the car is not in any danger to the driver and that the manufacturers are able to understand exactly what happened, and how to fix it, quickly. To complicate matters even further, if there is an accident, insurance companies will need to know which involved party was at fault for liability purposes. Recording software like Undo is extremely important in autonomous vehicles as it has the potential to play a key role in keeping drivers safe and cars in check.

"As software companies run thousands of more tests per day than they did even a few years ago, it is more and more important for them to have effective debugging tools at their disposal so that their products can be shipped on time."



Why developers should consider collaboration tools

BY ULAS KARADEMIR

Software development is a game of teamwork. In the ideal scenario, autonomous teams tackle separate objectives while remaining engaged with the functions of every other team. Teams methodically track their individual goals, record their progress, and remain aligned with the overall work plan. Then these teams come together to produce a final product. Sometimes, this ideal situation is not the one that pans out – and that's where developers need to evaluate the collaboration mechanisms they have in place.

Unity, a leading game development platform, offers an effective model for optimizing team-based collaboration. Rather than functioning in a top-down structure, the company is very distributed, with autonomous teams working across offices worldwide. To support this distributed architecture, Unity embraces a diversity of working styles, with each team choosing its collaboration tools. In order to build on this transparent and engineering-empowered culture, a group at Unity decided to collaborate with Favro, an online planning and collaboration tool.

Using software to unify collaboration

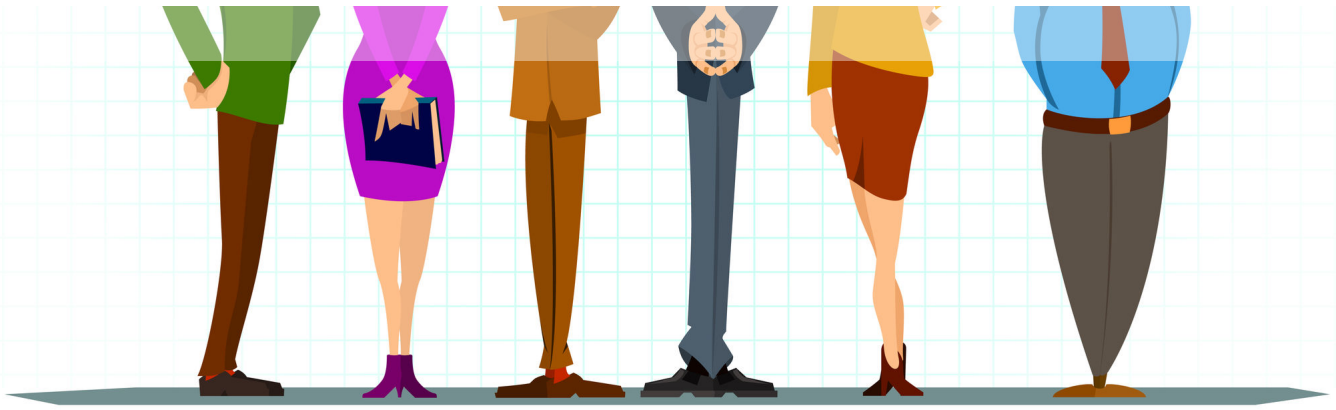
By partnering with Favro, Unity's developers were able to build on the company's existing culture of effective communication at every level. Here are three of Favro's key features that enabled Unity to bolster cross-team alignment without compromising small team autonomy:

- Backlog-driven structure: Without a formally outlined and continuously updated project overview, developers risk confusion about their objectives and the potential for redundancy. Favro's backlog-driven structure provided users at Unity with a framework to support the more goal-driven approach to project management that Unity is taking. A well-designed backlog, like Favro's, offers smaller teams a highly accessible global view of a project. By providing this window of oversight, a robust backlog enables autonomous teams to know not only their individual tasks, but how those tasks support the overall project goal.

- Adaptability: Because Unity embraces diverse working styles, all tools it uses need to support this approach. For Unity, therefore, one of Favro's greatest assets is its adaptability – the fact that it easily integrates with apps like Slack, Google and Dropbox. In addition, Favro's highly navigable format and appealing aesthetic made it easy to implement alongside existing tools.

- Full-stack collaboration: In addition to using preferred apps, small teams often have individualized working styles that can make it challenging for producers to set and fulfill overall goals. Favro's backlog-driven structure addresses this issue by allowing individual teams to design their own boards – a feature that augmented team goal-setting at Unity.

Development works demands collaboration across both small and large teams – and developers know just how important it is that this collaboration happens seamlessly. At Unity, developers have fostered a successful culture of cross-team collaboration in which autonomous teams use different working styles while retaining overall project visibility. Favro helps to augment this architecture by offering tools that support cross-team sharing and adapt to diverse working styles. Other developers looking to drive productivity should consider prioritizing decentralized collaboration and implementing the tools to support it. By adopting a strategic approach to collaboration, developers can strengthen global project management while also empowering small teams with the autonomy to flourish.



Voximplant tells us about their cloud communications platform

Voximplant, a communications cloud platform for mobile and web app developers, has been working to improve audio and visual communications in real time. They provide the tools for developer to create their own web and mobile communication applications. We've sat down with Alexey Aylarov, the CEO of Voximplant to talk more about what their company is about and where the future of communications platform is going.

ADM: What sorts of mobile apps benefit from the addition of voice and video communications?

Aylarov: Most of the businesses we see benefiting from voice and video communication within their mobile apps are business-to-consumer (B2C) companies offering customer service and contact availability in real-time. Examples of use cases cut across industries; from our own experience we're seeing particular interest from banks, airlines, delivery and taxi services, etc. Voice and video capabilities have also proven particularly valuable for Skype-like communication applications, as well as for educational apps.

ADM: What are some under-utilized but advantageous voice and video call functionalities that developers should know more about?

Aylarov: One useful feature is that advanced cloud communications platforms can connect and disconnect voice and video in real-time. It's something we made a priority for our platform. This functionality sets the stage for using a wide set of clever new communications techniques – for example, the operator can click a button to play a pre-recorded message within the call, giving the customer the illusion that he or she is always communicating with same person.

Another important functionality is the fact that the quality of voice recognition has improved a lot in the last few years. Voice IVR and automated communications have really gotten to the point where developers and businesses ought to be taking advantage of them in almost all use cases.

ADM: What should a mobile app developer know going in when proceeding with a project that includes voice and video communication features?

Aylarov: Three things stand out. One, it's critical that app developers know to pay close attention to network latency and timeouts. This could make-or-break usability. Second, developers should also be sure to use device-specific push notifications when they signal a call. And third, they can also preserve battery by choosing a hardware-accelerated video encoder and decoder, which end users will similarly appreciate. There are certainly others, but it's particularly important not to lose sight of those three.

ADM: What role does speech recognition technology play in the development of app-based communication solutions?

Aylarov: Speech recognition is a multi-purpose solution that can really provide different benefits depending on the scenario, from big data analysis of user voice communications, to powering a cloud-based personal assistant, to IVR solutions that don't require a phone keypad but instead recognize what the user is saying.

ADM: Voximplant is "designed by and built for developers." How specifically does it simplify or enhance the development of apps featuring cloud-based communication?

Aylarov: Our cloud communications platform has been created as "programmable" from scratch. We began by asking, "What is the best way for a web developer to control voice and video calls?" To answer the question, we created a cloud JavaScript engine called "VoxEngine" that makes it possible to run a client's JavaScript code in parallel with a call and control the call in real-time. All parts of our platform – HTTP API, Web SDK, Mobile SDK, etc. – have been created from scratch based on input from the use cases of real-life app developers. This means we don't have any "legacy" and "compatibility" issues, and believe we can offer a best-of-class experience for app developers using the platform.

ADM: What's upcoming for Voximplant in the near

future?

Aylarov: Our latest additions include support for Microsoft Edge, as well as new voice recognition capabilities that were created in partnership with Google. Right now we are working on a Messaging API revamp, screen sharing functionality, and Unity support. Stay tuned!

ADM: What trends do you see in the adoption of app-based voice and video communication? What do you anticipate looking forward?

Aylarov: With the rise of cloud-based communications platforms like Voximplant, we see a shift from traditional cellular voice calls to mobile clients that use an internet connection and cloud backend for communication and call handling logic. Voice communication is becoming much, much more automated – to the degree that you can't always tell anymore if you're speaking with a live person or clever voice recognition system. Such app-based communication enables companies to provide a new level of service, where calls are answered instantly, and a lot of communication tasks are handled automatically.

"Most of the businesses we see benefiting from voice and video communication within their mobile apps are business-to-consumer (B2C) companies offering customer service and contact availability in real-time."

What IBM says were the shifts in enterprise mobility throughout 2016

BY RICHARD HARRIS

As companies continue down the road of mobile enterprise application development to improve their software infrastructure, many are left wondering if it is the correct step to take. "What makes a good enterprise software?" and "How can I take advantage of the newest trend?" is on the minds of many businesses constantly.

We sat down with Phil Guido, General Manager at IBM Global Technology Services, North America to learn more about the latest trend. Namely, how an enterprise app can be done successfully, and other additional things to consider that can greatly complement the software you desire.

ADM: As 2016 comes to a close, what shifts have you seen when it comes to enterprises adopting mobile strategies?

Guido: The last year has continued the trend towards enterprises baking mobile into their overall strategies, simply because mobile-first organizations are competitively positioned to reach more people and markets, and can more quickly adapt to changes and trends within their industry.

From what we've seen, mobile is becoming a more critical part of an organization's IT strategy, which means enterprises are considering what they need to do in order to make mobile possible and cost effective – who they need to hire, what other technologies they need to implement, and the most efficient way to integrate mobile into their existing systems.

After seeing the benefits of mobile on marketing, sales, customer service, IT, and beyond, more enterprises are exploring their options and taking the steps to ensure they have the right tools to make mobile a central part of their strategies. In fact, a recent IBM study found that over the next year, 77% of executives plan to complete at least five enterprise mobile initiatives, with a third planning to spend at least $15M on mobile.

ADM: In your experience, how can enterprises ensure that their mobile strategies will be successful?

Guido: When it comes to implementing mobile strategies, enterprises face the challenge of deploying solutions that solve customer needs while still being cost effective, not to mention compliant with industry regulations and easily integrated with their existing IT systems.

We're seeing enterprises turn to new technologies like the cloud, particularly hybrid cloud, to free up resources and improve their IT environments overall. This provides businesses the flexibility to incorporate mobile strategies in two ways – first, the cloud is more cost-effective so there are more resources and flexibility to implement mobile. Secondly, hybrid cloud solutions are agile, so businesses can quickly deploy real-time, personalized mobile offerings that use technologies like predictive analytics and big data and adapt to new trends and capabilities. The cloud is enabling enterprises to achieve ambitious mobile strategies which in turn, is helping drive digital transformation all around.

ADM: In addition to the cloud, what other emerging technologies should developers and enterprises be looking at when planning their mobile strategies? How can developers take advantage of these technologies?

Guido: We make the full value of IBM's capability available through the cloud. This means developers are able to utilize Watson IoT, cognitive analytics, and of course high value IBM software that is all available through the IBM cloud and our services. These are the types of technologies that developers can use to build high-value services and/or products for the end-user.

Take the retail industry as one example. The shift to mobile in retail has led to a large volume of data on consumer behavior and spending habits. We provide the tools so that developers can quickly analyze that data sitting in the cloud, ultimately resulting in the ability to build automated systems to send personalized offers directly to consumer mobile devices for products or services that they are more likely to purchase.

The introduction of these technologies to IT infrastructures that can be utilized by the developers building new, high-value products and services is the cornerstone of the digital business transformation.

ADM: Can you share examples of companies that have been successful in incorporating a mobile strategy?

Guido: Because of growing demands from

more digital-savvy customers, banks must modernize their technology environments to deliver a better banking experience to customers across multiple channels, while lowering their cost base. IBMsigned a five year deal with Citizens Financial last year to help them achieve this, by transitioning its back-end technology infrastructure to a managed services environment.

Using a hybrid IT approach, IBM is integrating automation and predictive analytics technologies to standardize and streamline many of Citizen's IT systems and processes, including online and mobile banking. This will allow Citizens to shift its IT resources to more innovative, higher-value services, such as developing new online and mobile offerings in response to customer demand.

ADM: What mobile trends do you expect to see in 2017 among enterprises?

Guido: Mobility remains a key client entry point for digital transformation and a catalyst for growth. We understand the value of high-level agility, and the technologies that will support that into 2017 – AI, cognitive, predictive analytics, automation, IoT. Developers at enterprises will continue to use these technologies to create mobile apps that leverage an "as a service model" (e.g., bundled end point hardware, accessories and workplaces services), integrate predictive and preventative management functions (e.g., self-help and self-healing support services) and, ultimately, improve customer loyalty.

We've created tools and methodologies to ensure networks are efficiently maintained, regardless of workloads and applications, to ensure those goals come to fruition.

"When it comes to implementing mobile strategies, enterprises face the challenge of deploying solutions that solve customer needs while still being cost effective."

Yahoo explains what communitainment is and how it's mobile's killer app

BY SIMON KHALAF

Last August, in Flurry's app usage report, we declared that "Content is King: Again." That report showed U.S. users' time spent consuming media in apps had grown from 46 mins/day in 2014 to 96 mins/day in 2015, a whopping 108% year-over-year increase. Curious to clock this year's usage, we ran the numbers again and found that time spent consuming media in apps posted another 38.5% year-over-year gain between 2015 and 2016. The average U.S. consumer now spends 133 minutes/day (well over two hours every day) consuming media in mobile applications.

The growth in 2015 came predominantly from entertainment apps such as YouTube, Netflix and Hulu, as well as social apps, such as Facebook and Snapchat. In 2016, the expanded media consumption on social apps was a critical growth driver for the category. It's important to note that the daily 133 mins/day spent is over and above everything else consumers do on mobile, including messaging, email, exchanging photos, using maps, shopping, etc.

The "I Generation" Has Reached their Teens

It is hard to think of the iPhone, the App Store and the app revolution as mature technologies. Children who were five or six years old when the iPhone hit the market are now well into their teen years. This generation grew up with smartphones and tablets as their predominant media consumption devices and it may be obvious, but these same consumers account for the largest population spending time on their devices.

The rise of teens engaging in communitainment has been one of the main driving forces behind the 38.5% increase, as well. Communitainment,or communication for the sole purpose of entertainment, is not your standard chat or exchanging pictures over social networks. This is (live) streaming to entertain each other on dedicated apps like live.ly, musical.ly and Houseparty, which have been App Store Top 100 strong holds for a while.

Live content is finally happening on mobile, as teens have become avid "streamers." Many still believe that this is a fad, but it is hard to look at the data (and astounding growth) and not see a phenomenon taking hold. In an effort to gain a foothold in this trend, media-giant Facebook is investing heavily in live video, as demonstrated by their recent ad campaign in every major U.S. metro. Flurry data is telling us that this trend is here to stay, and we see large communities forming around streamed content and hours spent on it. This is reality TV pushed to its limits and it's imperative for app developers to build and watch the space - no pun intended.

Media Companies or Tech Companies: The 76 Billion Dollar Question

With so many hours spent consuming media in apps in general, and social apps in particular, it is hard not to bring back the old debate: are the makers of these apps tech OR media companies? With the exception of Germany, which already believes that Facebook should be treated as a media company, the whole world is confused. It is time for the tech industry to accept reality and own up to the fact that more than two hours are spent in their apps consuming media every day, and hence, they are media companies. After all, we are all aiming at gaining a slice of the $76B USD in ads currently locked in US television. We have been trying for the past 20 years to silo the two industries, but it's evident that the time to face the music and dance has come.

Mobile marketing tools and tips for 2017

BY MARGIE KUPFER

As the New Year approaches, marketers are carefully planning their strategies for their campaigns in 2017. Sure there are plenty of tools, tips, and tricks to choose from, but selecting the right ones for your brand's objectives is crucial. Here's a crash course in mobile marketing tools brands should be using in 2017.

Location-Based Marketing

As futuristic as it sounds, location-based marketing is sweeping the nation as one of the most popular marketing tools with both consumers and businesses. What makes location-based marketing so popular is that it eliminates irrelevant ads by presenting the consumer with promotions based on their current location. Location-based marketing can be accomplished through the use of geofencing, beacons, Wi-Fi and Bluetooth.

Tip: Think outside of the box when it comes to selecting your location to send customers promotions. Instead of just sending customers notification when they are near a store, send them promotions when they are near locations in which the brand's products or services would be useful. For example, a pet supply store could send customers promotions when they are near the dog park.

Developing an "AppPlus" Strategy

It is obvious that mobile marketing is a major factor in the success of any marketing strategy. According to The Guardian, 91% of top brands have apps. But simply having an app isn't enough to satisfy mobile customers anymore. A recent survey by 3C Interactive reports that over 25% of apps end up abandoned after the first use. By developing an "AppPlus" strategy, brands can help keep customers engaged.

Tip: Create additional capabilities for brand apps like messaging, mobile wallet, and an integrated loyalty program. By creating an app that does more than just deliver information about the brand and allow customers to browse product offerings businesses are increasing the longevity of the app.

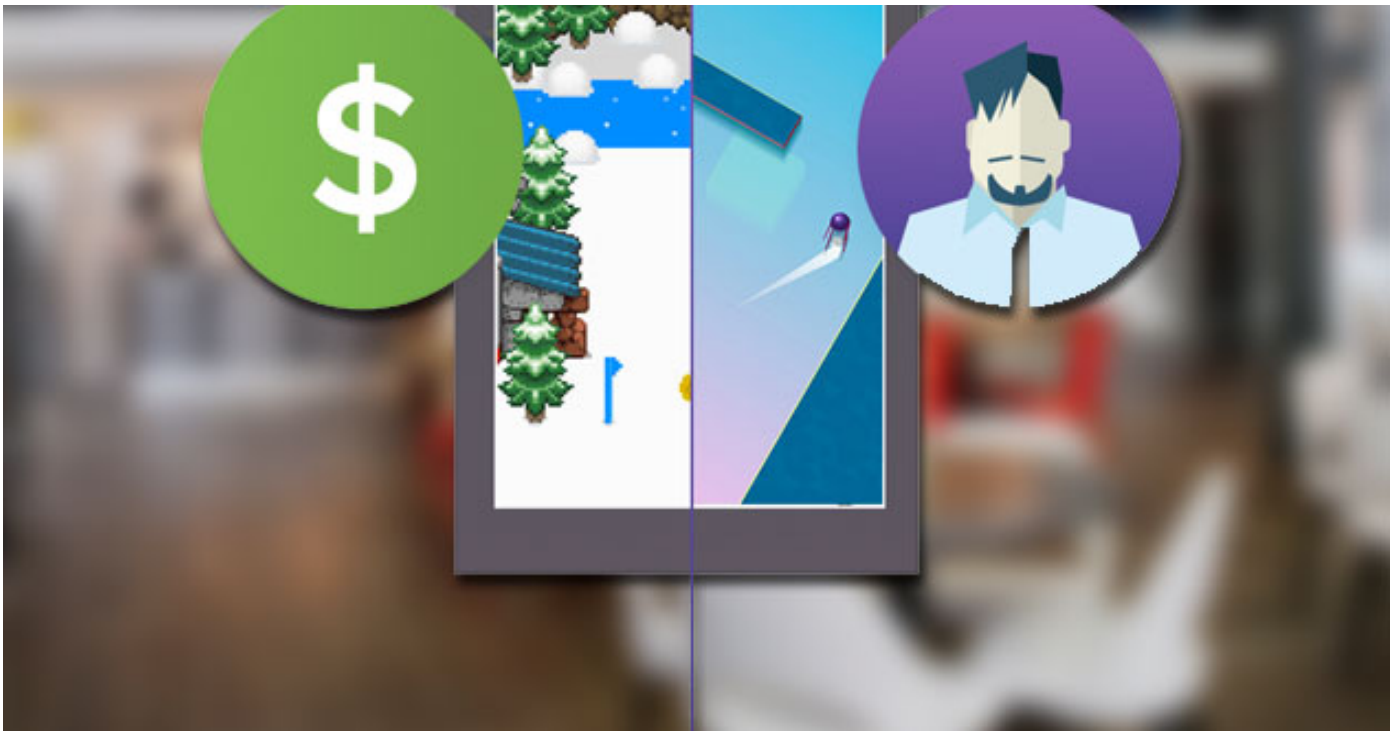
Social Media Messaging is the New SMS

Messaging alternatives to text messages are quickly becoming a preferred method of communication. Ad Week cites that 49% of mobile users in the U.S. use messaging apps monthly. One of the most popular examples of these messaging apps is Facebook Messenger. This kind of messaging seamlessly integrates with already popular social media networks and allows users to send information back and forth quickly over the internet as opposed to traditional text messaging. For these reasons these applications are ideal for communication between brands and customers.

Tip: After a customer has reached out to a brand via Facebook Messenger, the brand has a 24-hour window in which they are allowed to send that customer promotional content. Take advantage of this opportunity to offer customers personalized and exclusive deals. This will build the relationship between the customer and brand increasing the chances of repeat business.

Tapdaq launches ad mediation layer so developers can earn more revenue

BY CHRISTIAN HARGRAVE



Tapdaq has launched its unbiased ad mediation platform to help mobile developers earn as much revenue as possible through their in-app advertising. The company, which also enables mobile developers to grow and retain their app's user base through efficient cross-promotion, is shaking up an industry it says is riddled with problems.

A good ad mediation platform makes monetizing through in-app advertising a more profitable business model for developers, by providing a single dashboard through which a developer can manage and optimize their ad monetization efforts. The software should aggregate multiple ad sources and prioritize the highest paying demand. This increase in demand naturally leads to higher competition between advertisers which, in turn, results in better fill rates and eCPMs (effective cost per thousand impressions) for the developer and, ultimately, more ad revenue.

However, Dom Bracher, CPO and co-founder of Tapdaq, believes a lack of clarity from many major mediation platforms has dampened developers' trust in the industry. He said:

"When we talked with our community, it was clear the vast majority were far from happy with the current ad mediation solutions available to them. The biggest issue by far was lack of trust. This comes from most platforms having their own ad demand which they force publishers to monetize through; that's a conflict of interest, and really shouldn't be happening.

"We want to restore faith in the industry by giving developers an unbiased platform they can rely on to select the actual highest paying demand source, every time. By taking control of ad mediation through implementing an honest and reliable platform like ours, developers are given the power and insight they need to stay in control of their ad strategy and will maximize revenue."

Tapdaq's exclusive server-to-server integrations enable developers to monetize with new ad networks they may not have had access to previously. It also eliminates the need for a developer to re-submit their app to the store when adding new ad sources. With no dependencies or bundles, Tapdaq's software development kit (SDK) requires less bandwidth than other platforms, giving better performance for users.

Developers can watch their earnings grow in real-time with Tapdaq's advanced ad serving analytics, and control their entire ad strategy using server side dashboard controls. This means they can optimise ad placements, formats and networks without having to utilize any development resource.

Top 3 ways to grow your audience with Facebook Analytics for Apps

BY JOSH TWIST

We live in a digital world. We shop on our desktop computers, browse the web on tablets, play games on mobile, and interact with bots. We're always on the go—at work, at home, even on vacation.

That means your ideal audience is out there, waiting to discover and enjoy your app and website or get in touch with you through your bot. To build great experiences for them, you need to measure how they are interacting with your business. That's why it's essential for you to identify your audience and understand their behavior across their devices and platforms.

We recommend you use these top 3 ways to grow your audience using Facebook Analytics for Apps.

Tip #1: Go beyond basic demographics

Facebook is a deep hub of demographic data. With over 1.7B people around the world interacting and sharing with each other, we can show you powerful data and insights about your audience.

With Analytics for Apps, you have access to these unique insights and an understanding of your customers' Facebook activity. Our anonymized and aggregated data provides information about your users—including age, location, gender, education level, job titles, language, their Page likes on Facebook, and more—so you can build a detailed picture of the audience for your app and website.

We also show you data and insights on how customers use your apps and websites to give you a more complete view of their overall behavior. Are they engaging with your business? For how long? Is there an area or flow where they're dropping off? Are they making in-app purchases? What triggers these purchases? Analytics for Apps makes it easy to see the data you need to create a better, more relevant experience for your audience. Plus, you don't need to use Facebook Login to use any of these capabilities—all app developers can leverage the power of Analytics for Apps. And it's all free.

With our powerful insights, you can learn who your users really are and what they really do, not just use cookies to find out what they did. Using this information, you can engage your audience on a deeper level to drive success and accelerate your growth.

Tip #2: Optimize people's experience by combining demographics and behavioral analytics

To build a great product, you need to understand more than just who's using your product. You also need to understand how they're using it. By combining demographics with behavioral analytics, you can discover new insights about how to improve your product, which helps increase your retention.

In addition to helping you understand your customers' demographics, Analytics for Apps helps you understand their behaviors. For example, you can build a funnel that mimics your e-commerce flow (ex: a shopper views a product, adds it to their cart, starts to checkout, and then completes their purchase). Once you've built your funnel, you can see breakdowns by demographics like gender to see whether women or men have a higher conversion rate.

If you discover that women have a higher conversion rate than men, you might choose to bid higher when you advertise to women since they're more valuable customers for your business. But you might approach that insight from a different angle and decide to run experiments to see if you can increase the conversion rate for men. For example, you could try stocking some additional items in your store that might appeal more to male customers.

By combining demographic and behavioral analytics, you can learn ways to improve the experience for specific groups of people. This can help you increase their conversion and retention over time.

Tip #3: Think about people, not devices

To connect with your audience, you need to understand how they behave on all of their devices. focusing on silos won't be enough—you can't just consider desktop actions or just mobile app behaviors alone. Instead, you need to see the complete view: connecting the dots across desktop browsers, mobile web, native apps, and even bots. In understanding the complete picture, you'll get to know your audience on a deeper level and see how their behavior evolves over time.

Let's imagine you're a travel company that has a website and app, but most of your customers don't log in before purchasing. If this were the case, it would be hard for you to understand how people are planning their trips using multiple devices and platforms (ex: researching a trip in your app, then purchasing it on the web).

Analytics for Apps offers cross-platform measurement capabilities that help you understand when someone starts looking at a trip on their phone and then later purchases on their laptop. With other

analytics tools that only show you data based on cookies or devices, this travel company might have concluded that their mobile app wasn't very effective. But with a people-based cross-platform analytics tool like Analytics for Apps, the travel company can see that the mobile app was a critical part of the path to purchase even if the purchase didn't occur in the app.

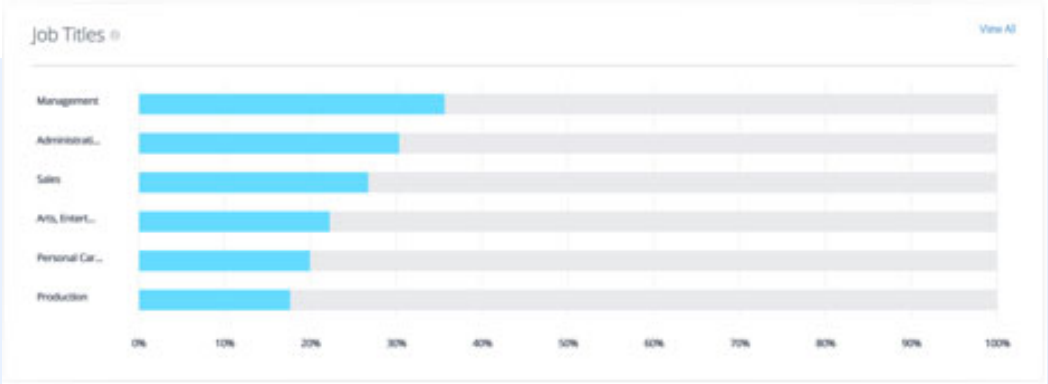
As your customers' paths to conversion becomes increasingly cross-platform and cross-device, it's key that you use a tool that measures people and their cross-platform activity, not just devices or cookies.

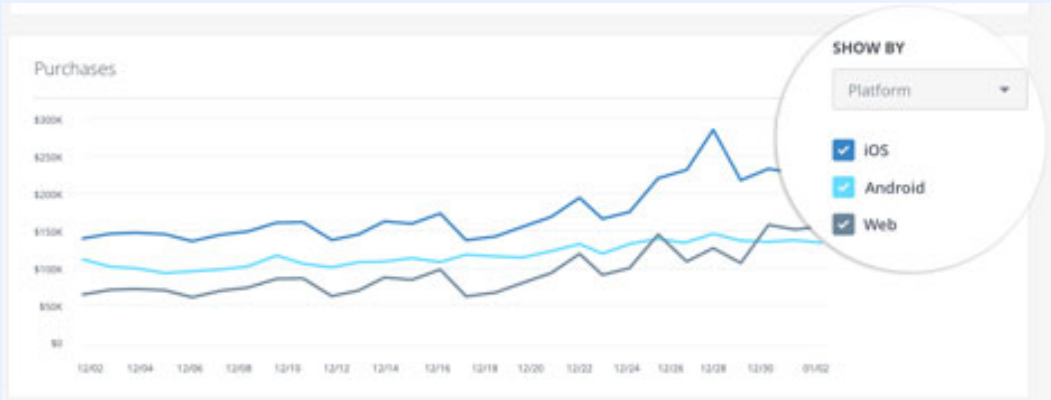
Get to know your audience with Facebook Analytics for Apps

Our world often requires constant attention to screens and devices. With powerful data and insights, you have the opportunity to better engage and retain your users, providing rich value in relevant experiences.

Get started with Facebook Analytics for Apps today to dive in to deep insights about how your audience interacts with your business across websites, apps, and bots. It's all free, easy to set up, and it provides you with a more complete picture of your customers, their interests, and how to reach them.

"Your ideal audience is out there, waiting to discover and enjoy your app and website or get in touch with you through your bot."





Flash based data storage will rise exponentially in 2017 an IBM Fellow tells us

BY RICHARD HARRIS

2016 was a busy year for IBM, as Chairman and CEO Ginni Rometty set the company on the cognitive and cloud computing path. This created huge opportunity for storage as much of IBM's news from the past year set the foundation for growth in these areas.

From the expansion of IBM's Flash Storage Solution to Target New, Intelligent Apps in the Cloud to the delivery of IBM's Cloud Object Storage service to the launch of IBM's DeepFlash 150 exabyte-scale all-flash array, these announcements set the stage for what's to come.

Vincent Hsu, VP, IBM Fellow, CTO for Storage and SDE expects 2017 to be an even busier year.

He predicts that flash-based data storage will rise exponentially and become more pervasive with users who are looking for ways to drive business agility. In addition, analytics will experience a revolution as the Spark operating model - through in memory analytics - will become a popular big data analytics option due to its ability to significantly reduce data movement and allow analytics to occur much earlier and faster in the process.

The cognitive market will continue to expand while software-defined storage will integrate with the cloud, allowing companies to conduct DevOps and Dec Test in the cloud. Lastly, the combined use of object storage, cloud platform, and cognitive will become mainstream, driving innovation and disrupting a diverse set of industries including insurance, financial services, media/entertainment, gaming, virtual reality and many more.

"Flash-based data storage will rise exponentially and become more pervasive with users who are looking for ways to drive business agility."

Docker predicts much opportunity for anyone with CaaS expertise in 2017

Rising confidence in container security, to the point that developers consider containers more secure than alternative technologies, will drive an increase in the use of CaaS, displacing legacy PaaS approaches to application development and deployment. This requirement for integrated security at every phase of the software supply chain will rise to the surface in the upcoming year.

The increase in production deployment and adoption across verticals and geographies will continue to drive a wave of opportunity for systems integrators and resellers with CaaS expertise, accelerating the need and opportunity cross-platform integration and associated training. Because CaaS solutions are more flexible, integrators will have the opportunity to optimize for the organizations that they work with through integrations with their existing tools in the realm of networking, monitoring, storage, etc. This will give them the opportunity to build a practice on CaaS.

An increasing number of traditional IT leaders will integrate container offerings with their core platforms bundling training and support. By the end of 2017, server, cloud, management and IT infrastructure leaders not having bundled commercial container offerings with their own platforms will compose a minority.

The coming year will be one of unification among container vendors, with strong contributions from de facto leaders making more core capabilities available to all as open source, and differentiation being established farther downstream, closer to the end user. At the high end of the market, Fortune 100 enterprises with strong container adoption and deployment strategies will drive cooperation, rather than increased competition, from container leaders.

"The coming year will be one of unification among container vendors."

Predictions from Red Hat for 2017

BY RICHARD HARRIS

Catching up with Red Hat's mobile team on what they're expecting to see in mobile and IT in 2017.

1. Prediction: Mobile goes mainstream as part of enterprise application strategy that hinges on containers, DevOps, and microservices.

There are more mobile devices in circulation than the global population and mobile searches now outstrip those from PCs; mobile can no longer be seen as a standalone initiative in the enterprise. Rather, mobile app development should be part of an organization's broader enterprise application development function and share a common goal of driving innovation and business results at speed.

As organizations invest in modernizing traditional application workloads and moving them to the cloud, the potential exists to use a common platform for managing both the new generation of digital workloads as well as the more traditional applications that businesses still rely on.

Mobile changes the way software is developed and deployed. From agile development methods enabled by DevOps tools and culture to microservices and API-based architectures in the cloud delivering greater scalability and collaboration – organizations can apply these principles to their broader portfolio of enterprise applications. To do so, they are moving traditional applications to the cloud and availing container-based platform technologies to run different workloads in the same environment, sharing central resources for development and management.

Container-based platforms enable mobile app development to run alongside traditional and other microservices-based applications, helping to streamline and reduce the costs associated with modern application development and deployment.

2. Prediction: The roles of IT and Lines of Business in mobile/digital strategy will become more defined as modern approaches to app development are adopted.

In 2016, collaboration was a key to IT/business relationships in pushing digital transformation initiatives, but collaboration alone does not work unless there are clear responsibilities of the decision-making roles in the relationship. In 2017, IT and business need to take this crucial next step and better define how they work together to approach mobile app development.

Survey results and analyst reports all point to an increasing role for the business in mobile decision making, at the cost of IT. However, it is not really about CIOs and IT losing control of spending as much as it is the need for more collaborative decision-making, with clear delineations on what is IT-led and what is business-led.

In 2017, I anticipate IT will still drive the key decisions and implementation of modern architectures based on microservices and APIs, platforms (cloud, container-based, self-service developer components, infrastructure, etc.) and processes (DevOps, agile), and should hold budget and control for these areas. Business is at the edge of innovation and should drive many of the decisions around engagement channels, use cases, app features, design/UI/UX, workflows, citizen developer tools, analytics, etc. in partnership with IT.

As platform technologies emerge that support modern architectures and processes, enabling organizations to transition from traditional approaches that can stifle digital innovation, IT should be in a better position to respond to the demands from the business for more agility in getting new applications to market and modernizing existing applications. However, if they do not work together the lines of communication remain blurred and positive ROI may be significantly more difficult to achieve.

3. Prediction: Niche, tactical and customized solutions mark the play for enterprise wearables in 2017

The initial uptick in wearables over the last few years has created a market where the overall wearables market currently represents about seven percent of the massive smartphone market —approximately 102 million devices according to IDC. While this is a nice start, a deeper dive into the numbers shows that the smart wearables, those devices able to run third-party applications, represent only a fraction of that 102 million devices (21.5 million devices). This speaks to where the enterprise market is and the expectation is for strong growth, but coming from this low base. Ultimately, they key to that growth will be about customizing solutions across niche markets and opportunities and leveraging those smart devices that can ultimately do more.

From a technology standpoint, factors like battery life, cellular capability and operating system maturity can go a long way to improve the opportunity around wearables. Government (specifically, military and law enforcement), healthcare, manufacturing and field service drive some of the key deployments today and are expected to expand. Whether it is glasses, body cameras, watches, etc., these devices have their focused play to be real game changers but in small pockets. Increased consumer adoption can also help spark BYOD approaches similar to those that helped spur smartphone adoption in the enterprise, and may start with basic or horizontal functions that provide access to key apps used by sales, executives and similar workers.

At Red Hat's approach to wearables and other IoT adoption is to treat them as part of a holistic mobile and IT strategy. The idea of looking beyond smartphone or tablet users at broader assets can lead to more strategic opportunities that start with tactical trials with some of that technology. Red Hat Mobile Application Platform is putting this approach into action through a number of apps on wearables via our Samsung partnership.

Predictions for Apple Watch, Objective-C, Google, and the rise of Snapchat

Editors note: Predictions by Alexander Stigsen, the CEO and co-founder of Realm

By the end of 2017, the **Apple Watch will still have a very small and uninteresting ecosystem of apps**. It won't be until the next generation of Watch - Series 3 in maybe late 2017 before the Watch platform is sufficiently powerful to attract significant third-party applications.

Apple will announce the **deprecation schedule for Objective-C** at WWDC 2017 - this decision is inevitable as we are seeing a dramatic shift from Objective-C to Swift among mobile developers for iOS.

Apple will release their own **Snapchat Spectacles and a** Fitbit competitor as cheaper version to Apple Watch.

Google will keep trying to reclaim the Android ecosystem from the OEM vendors to try and force them to roll-out updates as quickly as possible.

Google, Apple, Amazon, Microsoft and Facebook (and Samsung to some extent) will keep on **pushing the frontiers of artificial intelligence and machine learning**. It's going to be more of a transition year, but several breakthroughs will be revealed, even in "surprising" fields such as medicine.

Nokia is going to release its Android phone, but, once again, it's going to be too little too late.

Google will lose the antitrust case **in the EU** and be forced to unbundle a lot of the apps currently being shipped as the default.

Samsung will place a big bet on Galaxy 8, and have it ready in time for iPhone's 10-year anniversary.

Facebook will try to capitalize on WhatsApp, and either force users to have a Facebook account, or merge the Messenger/WhatsApp apps.

The rise of Snapchat is the beginning of **a major shift away from user willingness to allow big companies to capture, store, and monetize user data**. This will have major implications for Facebook and Google, and app siloed data in general.

What you need to know about customizing Software as a Service

It's a given for web and mobile application development that performance testing is critical to application success. Yet, for organizations wishing to customize third-party (3P) software as a service (SaaS) rather than running it out of the box as written, performance testing can be problematic. For some types of performance testing, it is nearly impossible due to limitations imposed by the SaaS platform developer. (Author's note: To avoid confusion, for the remainder of the article I will refer to SaaS platform developers as "parent companies.")

There are ways to get around some of the impediments. Where that is not possible, teams can run calculations and develop simulations that give them a reasonable amount of confidence in their work. The alternative - not performance testing - is unacceptable, as it almost always leads to problems in production.

As a performance testing consultant, I have worked with numerous Orasi customers, helping them ensure reliable performance for their customized SaaS implementations. One platform where we are frequently called in to assist is Salesforce, which has strict rules relating to customizations and the testing that surrounds them.

For this article, I will use Salesforce as an example, describing some of the key impediments to performance testing and offering best practices for overcoming (or at least minimizing) them. Although this information is platform-specific, it will be largely applicable to many 3P SaaS products.

The Challenge of Outside Control

It's understandable that 3P SaaS parent companies would want to restrict performance testing. After all, their reputations are built on - or destroyed due to lack of—application performance. In achieving application stability and reliability, they must weigh many factors and overcome myriad challenges, especially:

- Customers in an array of industries that have wildly varying user counts and usage patterns.

- Enormous, unpredictable load swings.

- User expectations for consistency of service on virtually every possible device.

To promote stability, when SaaS parent companies allow customizations, they frequently restrict access to the platform. Many develop specialized testing tools for customers to use - and create protocols customers must follow. Salesforce, for example, requires companies customizing the Salesforce platform to submit a performance test plan for advance approval.

Additionally, the Salesforce corporate wisdom on customizations is essentially, "Write clean, bug-free code, and your customizations should work just fine." Performance testing is surest way to bring such theory into practice. It ensures your customizations provide value to your end users and helps you avoid bumping against Force.com governor limits in production.

Why Performance Testing Matters

With 3P SaaS, some software teams persuade themselves that testing is less important, because they are working within an environment that has been tested by others. This may be true with the vanilla versions of a SaaS system, but it is completely inaccurate when customizations come into play. For 3P SaaS products, the importance of testing customizations cannot be overstated.

With a well-built product like Salesforce, configurations, such as adding objects/fields, building workflows and reports, and creating validation rules, should be reasonably safe. That is fortunate, because some companies let users perform these configuration themselves. (This is not a best practice - users should be encouraged to use out-of-the-box features when possible. Administrator-level approval should be required for specialized configurations.)

Customizations bring a much greater degree of risk. Precisely because Salesforce is so easy to customize, it illustrates perfectly how much trouble enterprises can get into when their teams start tinkering. Following is a list of the primary customizations allowed in Salesforce:

- Apex classes and/or triggers
- Visualforce pages/components
- Visualforce emails
- Integrations with 3P Systems
- Creating Lightning components
- Building Sites.com/Force.com sites
- Using Cascading Style Sheets to alter page appearance
- JavaScripting to add capabilities

For any of these customizations, individual snippets of code can be bug free, and they may pass unit testing, but that doesn't mean they will perform as designed within the system as a whole. (Another Orasi author discussed this issue last month. You can read that article, here.) Even minor changes can cause a ripple effect across a system and break other components that are not obviously related.

Furthermore, customizations are often done at the department level without consideration for their overall impact. Optimally, each customization should be considered as part of a whole, with regression and performance testing conducted after each customization. Otherwise, as organizations layer customization after customization, the environment will become disorganized and support will become next to impossible.

How SaaS Impacts Your

Workflow

With Salesforce and many other SaaS platforms, I see four core issues that can significantly impact the activities of software teams

- Multi-tenant environment: Multi-tenancy is one of the biggest challenges of testing 3P SaaS customizations. Without robust performance testing, teams have no way of knowing how or if performance will be diminished by heavy app server loads from other users outside the testing company.

- Scheduling challenges: Developers and testers customizing 3P SaaS products frequently face scheduling challenges, because the parent organization controls when they can have access to an approved sandbox environment.

- Governors: Salesforce and other SaaS parent companies use governors to restrict the amount of load any team can place on the live system. Salesforce does not allow stress testing, at all.

- Device and browser testing: A key selling point for 3P SaaS parent companies is often very broad devices and browser compatibility. As a result, teams must test their customizations on as many devices and browsers as possible. In the case of Salesforce, the debut of the new Lightning GUI has complicated matters even more.

Achieving Performance in a Limited Environment

Ideally, I would hand you an easy solution for mitigating the impacts of 3P SaaS testing, but there isn't one. The only way to ensure good performance with Salesforce and 3P SaaS customizations is to have a mature plan for approving, managing and testing customizations, individually and as part of the entire system. Teams must be effectively managing test data, and the organization must be making use of both automation and virtualization. Teams should also be using correctly developed scripts and performing proactive script management.

Ideally, teams should have access to a dedicated, in-house testing environment, or they should license robust, cloud-based load generators where they can perform performance testing. Teams should also take advantage of advanced tools such as HPE LoadRunner or HPE StormRunner Load. These solutions make it feasible for teams to run tests—under every possible scenario—for a multi-tenant, globally adopted platform. Testing scenarios should reflect not only the user base for the current release but also the expected growth over the next year.

Finally, your organization should have a quality assurance program that enables you to make productive use of raw test data and turn it into actionable KPIs. Then, that information should be used to refine your development and testing efforts. (If you aren't familiar with such programs, read about the methodology here.)

Building a Better Solution

If your company isn't already engaging in best-practices customization management, development and testing, I urge you to become an evangelist for proper testing. Advocate for an evaluation of your company's current development and testing environments.

Ask management to devise a plan for improvement, calling in outside assistance if needed. Companies no longer must build their own best-practices testing labs. Hosted, cloud-based testing services offer an affordable alternative for performance testing at the levels required by 3P SaaS.

If you are not following the recommendations outlined here, you are operating on borrowed time. A comprehensive performance testing plan will help you avoid the post-release performance failures that can occur with layers of inadequately tested customizations in a multi-tenant SaaS deployment.

"We have only touched the tip of the iceberg for what Hadoop and Spark are capable of

Editors note: Predictions by Kunal Agarwal, CEO of Unravel Data

In 2017 Big Data will begin to cross a chasm into the mainstream, in large part resulting from the popularity of Hadoop and Spark. Companies will use Big Data for mission-critical needs when running their data stacks. These are the same companies that once had issues with the security threat propaganda that plagued Hadoop and Spark; that's now in the past.

We have only touched the tip of the iceberg for what Hadoop and Spark are capable of offering when running mission-critical jobs on a high-performance Big Data platform.

We will also see more Big Data workloads moving to the cloud, while a large number of customers who traditionally have run their operations on-premises will move to a hybrid cloud / on-premises model. I think we can also expect to see companies using the cloud not just for data storage, but for data processing. And we'll see mainstream adoption of the cloud, which will give companies confidence in running their Big Data clusters in the cloud, and not just on-premises.

As Hadoop and Spark enter the mainstream, we can expect consumers to demand comprehensive Big Data solutions – not just piece parts. Even in 2016, many companies have seen platforms running just Hadoop and Spark as unstable. But those platforms will be tasked to run a multitude of apps, and those platforms will be expected to become the cornerstone for companies' Big Data initiatives. On the supplier side, we can expect to see more companies selling prebuilt Big Data solutions that meet a variety of needs, while delivering stable high-performance as well as the ability to "foresee" and head off performance issues before they arise.

What AtScale wants you to know about Big Data's future

BY RICHARD HARRIS

2017 is looking like it will be the year of BI on Big Data. Seventy-five percent of respondents in the 2016 Big Data Maturity Survey indicated that Business Intelligence is taking over as the #1 workload for Big Data.

AtScale, a company that provides enterprises with a fast and secure self-service analytics platform for Big Data, released the results of the survey, based on 2,550+ responses from big data professionals at 1,400 companies across 77 countries. The report reveals new and unexpected insights about Cloud, Big Data, Business Intelligence and Spark.

So what's the best way to gain value from Big Data?

According to the survey, it is to solve scale-out needs with 56% of respondents claiming that they are more likely to yield tangible value from their Big Data than companies who use Big Data out of curiosity. The survey also confirmed that Tableau is the number 1 tool used for BI on Big Data, while Microsoft maintains its top spot as the BI tool for small data with Excel, with new entrant PowerBI helping maintain its leading position.

Self-service is another key to driving value from Big Data, with companies that have self-service 32% more likely to succeed. Unfortunately, 53% of companies surveyed still lack self-service access to Big Data. "Some of the findings of this year's survey were surprising and indicative of upcoming market shifts impacting the industry," said Bruno Aziza, CMO of AtScale. "The Cloud is taking on a surprising role when it comes to big data, while the viability of new technologies like Spark are still in question."

Big Data's future is Cloudy

Among many other insights, the survey reveals a surge in Cloud deployments for Big Data. More than half of respondents deploy Big Data in the Cloud today and 72% plan on doing so in the future.

"There's been a clear surge in use of Big Data in the Cloud over the last year and what's perhaps as interesting, is the fact that respondents are far more likely to achieve tangible value when their data is in the Cloud," explains AtScale CTO and co-founder Matt Baird, whose company recently announced the newest version of it platform will provide a universal semantic layer that provides BI on Big Data across traditional data warehouses (like Teradata), today's data platforms (like Hadoop) and future cloud based services (Google BigQuery, Microsoft Azure…etc).

Mature and savvy respondents

"The maturity of respondents in this survey is a key consideration," says Thomas Dinsmore, big data analytics industry analyst and author of the book "Disruptive Analytics." "One in 5 has more than 100 nodes and 74% of them are in production, indicating double-digit growth year over year." The survey is a good representation of what AtScale sees across their customer base, which includes leaders across the financial services, insurance, healthcare, telecommunication, online and retail industry. Just this past week, Ventana rewarded Macy's AtScale deployment with their Business Technology Leadership Award for Big Data, showcasing the maturity and savvy such enterprises have developed in the BI on Big Data field.

Business Intelligence soaring on Big Data

Another key trend observed in this report is the continued momentum of Business Intelligence for Big Data. Last year's survey indicated that Business Intelligence had overtaken ETL and Data Science as predominant workload planned for Big Data. This trend continues moving forward.

Business Intelligence is #1 workload for Big Data and 75% of respondents are planning on using BI on Big Data. In addition, 97% of respondents indicated that they would do as much or more with Big Data over the next 3 months… 2017 might very well be the year of Business Intelligence on Big Data! The survey was conducted in collaboration with Cloudera, Hortonworks, MapR, Trifacta and Tableau.

Key findings

Mature and Experienced Respondents

- Close to 70% have been using Big Data for more than a year (vs. 59% last year)

- 74% of respondents have more than 10 nodes, close to 20% have over 100 nodes

- 73% of respondents now in production (vs. 65% last year)

- 95% of respondents have achieved positive value or are anticipating they would

Big Data Adoption Soaring

- 97% will do as much or more with Big Data over the next 3 months

- More than 53% of respondents are using Cloud for their Big Data deployment today
14%
of respondents have ALL their Big Data in the Cloud

- 72% of respondents plan on doing Big Data in the Cloud

- Two-thirds (66%) view Big Data as "Strategic" or "Game Changing", while only 19% of
respondents consider it "Experimental"

#1 Opportunity: BI on Big Data

- Business Intelligence is #1 workload for Big Data with 75% of respondents planning on
using BI on Big Data.

- Self-service access on Big Data grew by 15% year over year, however, most companies
(53%) still suffer from a lack of self-service access to Big Data.

- Accessibility, Security and Governance have become the fastest growing areas of concerns
year-over- year, with Governance growing most at 21%.

- Organizations who have deployed Spark in production are 85% more likely to achieve
value.

The AtScale Big Data Maturity assessment methodology was developed in association with survey experts. The assessment tool is composed of over 20 questions, designed to assess a company's stage in its Big Data journey. By taking the assessment, participants get an immediate score, access to a primer to help them mature and as well as aggregated results that they can use to benchmark their efforts against industry peers.

"Consumers have thrown down the gauntlet. They expect to be served in their moments of need, immediately and in context. Adapting, anticipating and delivering in these moments can overwhelm even the most sophisticated, tech-enabled marketers."

— Vendor Landscape: Mobile Engagement Automation Solutions, November 2015, Forrester

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