**LISTENING TO BUSINESS, APPLYING TECHNOLOGY**

# GALAXY

# TechTalk
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# Lenovo ThinkPad X1 Carbon (2016) Review: Flawless Execution

With every evolution of the notebook PC, our expectations get a bit higher. We're years into the Ultrabook craze and not a single company has managed to create the perfect one. Doing so is difficult. Users need thin profiles, great battery life and decent internals. The $1,269 ThinkPad X1 Carbon is Lenovo's latest attempt at getting the formula for the perfect business and professional Ultrabook just right. Touchscreens are out in this year's ThinkPad X1 Carbon. A fingerprint reader for use with Windows 10's Windows Hello feature is in. Also back is the world-famous ThinkPad keyboard and the X1's seriously thin profile. It's taken them a while, but I think the company might have succeeded in building the ultimate thin and light machine ThinkPad.

Lenovo continues the all-black and angled affair that the ThinkPad line is known for. Closed, the ThinkPad X1 Carbon is a charcoal slab that's cold to the touch. Set into its lid is an angled ThinkPad logo with a glowing red light that indicates when the machine is on and when it's fast asleep. The machine gets its name from the rigid carbon frame that ensures the keyboard deck doesn't flex.

Facing away from the user are two metal-clad hinges, an exhaust port and slots for adding in a SIM Card for mobile data and an SD card. The speakers also face away from the user, but on the bottom area of the notebook, not the back edge. Tapered edges on the front of the notebook below the palm rest make this notebook feel even thinner than it is. From top to bottom the ThinkPad X1 Carbon is 0.65-inches at its thickest point. The lightest configuration weighs 2.6 pounds, but different options that Lenovo offers online can change that weight. Ridiculously thin devices have forced even business users to get used to doing their work with less horse power. Other premium notebooks aimed at the same crowd as the ThinkPad X1 Carbon has gone to Intel Core M3 processors. These PCs don't win any spec wars, but are whisper quiet because they don't require a fan.

# Tata Group to Enter Wearable Biz

Tata group now wants to explore itself in the booming wearable space. The company intends to enter into the wearable business with a launch of smartwatch. According to the Bloomberg report published in the Times of India, Tata is developing wrist devices for two very distinct markets: Yoga enthusiasts and factory workers.
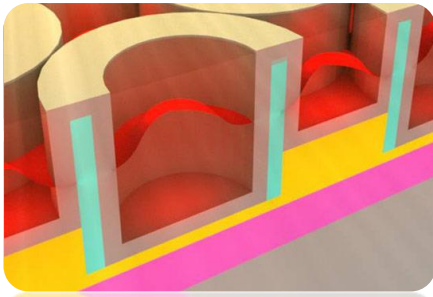
One's a watch that tracks breathing patterns, alertness and other metrics key to practitioners of the ancient discipline. Another will detect falls or other mishaps on plant floors, and is currently being tested among crane workers at Tata Steel Ltd, the report states.

The smartwatch segment has been dominated by tech companies such as Apple, Motorola and LG. The move of Tata symbolizes how the 148-year-old conglomerate is trying to place innovation at the heart of a sprawling empire of 100-plus companies, including Tata Consultancy Services Ltd and Tata Motors Ltd. It's betting big on a series of emergent technologies like graphene for phones, hydrogen fuel cells and drones, though it's starting small.

"We are going back to the basics with our yoga wearable. Users can stop many lifestyle diseases at their very onset," said Gopichand Katragadda, group chief technology officer of Tata Sons Ltd. "We have the technology to develop different kinds of wearables and we want to bring Made in India products into the market," he added.

# The Future is Now
## New System to Harness the Full Spectrum of Available Solar Radiation



Engineers at MIT have developed a two-dimensional metallic dielectric photonic crystal that has the ability to absorb sunlight from a wide range of angles while withstanding extremely high temperatures. The key to creating a material that would be ideal for converting solar energy to heat is tuning the material's spectrum of absorption just right: It should absorb virtually all wavelengths of light that reach the Earth's surface from the sun — but not much of the rest of the spectrum, since that would increase the energy that is reradiated by the material, and thus lost to the conversion process.

Now researchers at MIT say they have accomplished the development of a material that comes very close to the "ideal" for solar absorption. The material is a two-dimensional metallic dielectric photonic crystal, and has the additional benefits of absorbing sunlight from a wide range of angles and withstanding extremely high temperatures. Perhaps most importantly, the material can also be made cheaply at large scales.

The creation of this material is described in a paper published in the journal Advanced Materials, co-authored by MIT postdoc Jeffrey Chou, professors Marin Soljacic, Nicholas Fang, Evelyn Wang, and Sang-Gook Kim, and five others.
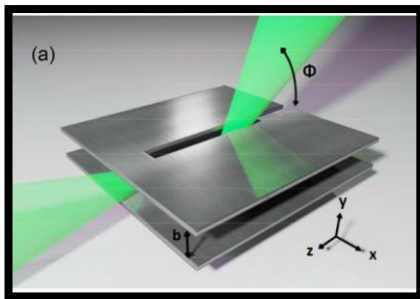
The material works as part of a solar- thermophotovoltaic (STPV) device: The sunlight's energy is first converted to heat, which then causes the material to glow, emitting light that can, in turn, be converted to an electric current. Some members of the team worked on an earlier STPV device that took the form of hollow cavities, explains Chou, of MIT's Department of Mechanical Engineering, who is the paper's lead author. "They were empty, there was air inside," he says. "No one had tried putting a dielectric material inside, so we tried that and saw some interesting properties."

When harnessing solar energy, "you want to trap it and keep it there," Chou says; getting just the right spectrum of both absorption and emission is essential to efficient STPV performance. Most of the sun's energy reaches us within a specific band of wavelengths, Chou explains, ranging from the ultraviolet through visible light and into the near-infrared. "It's a very specific window that you want to absorb in," he says. "We built this structure, and found that it had a very good absorption spectrum, just what we wanted."

In addition, the absorption characteristics can be controlled with great precision: The material is made from a collection of Nano cavities, and "you can tune the absorption just by changing the size of the Nano cavities," Chou says.

## Engineers from Brown Develop Key Component for Terahertz Wireless

**Engineers from Brown University have made progress on a key component for terahertz wireless: multiplexing and de-multiplexing a terahertz stream**.



Terahertz radiation could one day provide the backbone for wireless systems that can deliver data up to one hundred times faster than today's cellular or Wi-Fi networks. But there remain many technical challenges to be solved before terahertz wireless is ready for prime time. Researchers from Brown University have taken a major step toward addressing one of those challenges. They've developed what they believe to be the first system for multiplexing terahertz waves. Multiplexers are devices that enable separate streams of data to travel through a single medium. It's the technology that makes it possible for a single cable to carry multiple TV channels or for a fiber optic line to carry thousands of phone calls at the same time.

"Any terahertz communications application is going to need some form of multiplexing and de-multiplexing," said Daniel Mittleman, professor of engineering at Brown and senior author of a paper describing the new device. "This is, to our knowledge, the first time anyone has demonstrated a viable strategy for multiplexing in the terahertz range."

Today's cellular and Wi-Fi networks rely on microwaves to carry voice conversations and data. But the increasing demands for data transfer are quickly becoming more than microwaves can handle. Terahertz waves have a much higher frequency and therefore more potential bandwidth. Scientists and engineers have only recently begun exploring the potential of terahertz waves, however. As a result, many of the components for a terahertz wireless network — including multiplexers — have not yet been developed. The multiplexer that Mittleman and his colleagues have been working on makes use of what's known as a leaky wave antenna. In this case, the antenna is made from two metal plates placed in parallel to form a waveguide. One of the plates has a small slit in it. As terahertz waves travel down the waveguide, some of the radiation leaks out of the slit. It turns out that terahertz waves leak out at different angles depending on their frequency.

"That means if you put in 10 different frequencies between the plates — each of them potentially carrying a unique data stream — they'll come out at 10 different angles," Mittleman said. "Now you've separated them and that's de-multiplexing."

On the other end, a receiver could be tuned to accept radiation at a particular angle, thus receiving data from only one stream.
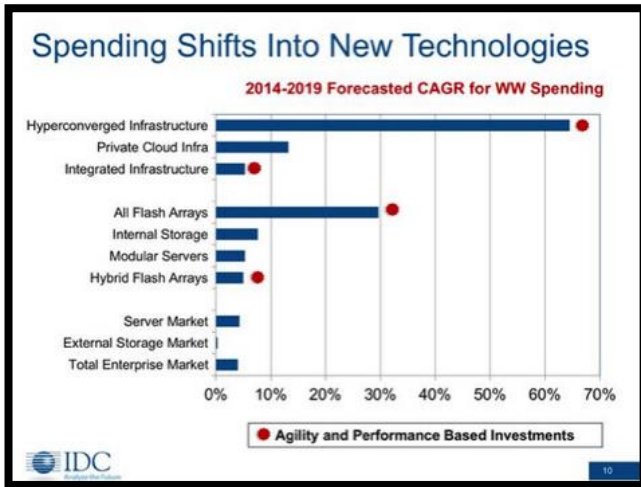
"We think it's definitely a reasonable solution to meet the needs of a terahertz communication network," said Nicholas Karl, a graduate student at Brown and the paper's lead author. Karl led the experiments on the device with fellow graduate student Robert McKinney. Other authors on the study are Rajind Mendis, a research professor at Brown, and Yasuaki Monnai from Keio University in Tokyo.

# Technology Focus

## Evaluating Hyper-Converged Architectures: Five Key CIO Considerations

**Simplicity and cost savings are among the benefits of hyper-converged architectures, but the biggest draw for CIOs may be how these systems make IT teams more business-ready.**

Plain IT convergence offers IT organizations a major convenience -- integrated and pre-assembled stacks of heterogeneous vendor infrastructure, including servers, storage and networking gear that help accelerate new deployments and quickly support fast-growing applications.



But IT hyper-convergence goes farther to integrate IT infrastructure into simple modular appliances. Where pre-converged racks of infrastructure can provide good value to enterprises that would otherwise buy and assemble component vendor equipment themselves, hyper-converged architectures present a larger opportunity to not only simplify IT infrastructure and save on capital expenditures (CAPEX) but also help transform IT staff from internally focused legacy data center operators into increasingly agile, business-facing service providers. With hyper-converged architectures, IT organizations can shift focus towards helping accelerate and enable business operations and applications, because they don't spend as much time on, for example, silo troubleshooting, stack integration and testing, and traditional data protection tasks. The decision to adopt hyper-converged architectures are therefore something that business folks will see and appreciate directly through increased IT agility, cloud-like IT services, realistic BC/DR, and a greatly improved IT cost basis.

Hyper-converged solutions take advantage of software-defined resources that run inside the server in place of external physical storage and networking. Because computing continues to become more powerful, dense, and commodity priced, hyper-converged vendors can host everything in the same box, including an embedded hypervisor. The resulting Lego™ like IT bricks of virtual machine hosting infrastructure make deployment, expansion, and support simple. For the stressed IT staff that can't afford to maintain silo management depth, hyper-converged architectures are easy to adopt. (But even in the best run IT shops on traditional architectures, migrating to hyper-convergence can still speed deployment, reduce both CAPEX and OPEX, and enable IT transformation.)

Hyper-converged architectures are essentially optimized virtual machine, machines. It's true that early hyper-converged solutions aligned well with virtual desktop infrastructure (VDI) applications. But with increasing virtualization in the data center, it makes less and less sense to run specialized physical architectures in favor of optimized virtual hosts. And many vendors are now aiming to deliver hyper-converged solutions for high-end databases, mission-critical applications and apps with Web/cloud scale-out requirements.

**Five key benefits: For IT organizations analyzing the case for hyper-converged solutions, here are five key benefits.**
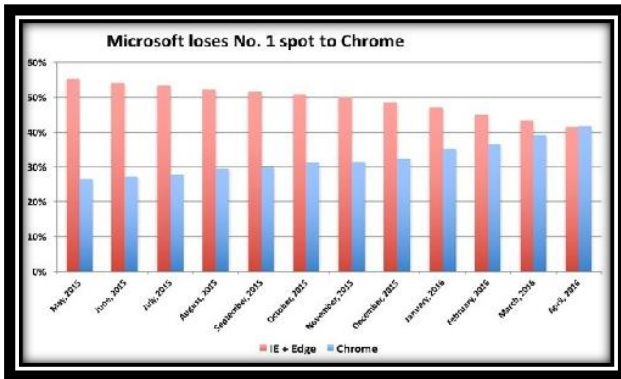
a) Fast deployment and easy management provides less risk to new project rollout, a one-step patch/upgrade process, and one-call support on the back end. The end user provisioning experience can be far more "cloud-like."

b) CAPEX costs are predictable and OPEX is lower due to the simplified architecture, availability is high across the hyper-converged cluster. In addition:

    i) All infrastructure investment is pooled and shared preventing resource isolation and waste

    ii) Additional layers of supporting infrastructure can be simplified or even eliminated (e.g. WAN optimization, backup targets, load balancers)

c) With various sizes and formats of hyper-converged appliances, end users can expect and experience the same IT services everywhere -- in the data center, local branches, even in remote and branch offices (ROBOs).

d) Data protection gets a boost from built-in backup, WAN optimization, and replication functions

e) Quality of Service is "tunable." If performance is slow, one can add more performance tuned boxes; if capacity is low, one can add capacity nodes.

However, hyper-convergence is not for everyone -- or at least, not all at once. It is a complete new architecture requiring a wholesale infrastructure conversion. If your servers, storage, and networking are all looking dated, this might be exactly the best time to jump in with both feet.

Otherwise, look for initial and incremental hyper-convergence migration opportunities at the edges of the organization that aren't currently well served by existing silo-organized data center capabilities. We've seen success here quickly accelerated up and across enterprises as both IT and business leaders recognize the total beneficial impact.

# Tech News

## Microsoft Finally Loses Top Browser Spot to Google



There's a saying that what goes up, must come down, and apparently Microsoft is the latest victim of that expression after finally losing its top browser spot to Google's own Chrome browser. According to Net Applications, Microsoft's downward trend, coupled with Google's simultaneous growth has resulted in Redmond securing 41.4% of the browser share, just shy of Chrome's 41.7% in the month of April.

Microsoft's (yes, both IE and Edge were combined for these numbers) browser share has been on a 16 month decline, a move likely caused by Redmond's idea to try and get users to migrate back in 2014. Microsoft promised to stop providing security updates for older browsers by Jan of 2016, including IE8, at the time their most popular browser, and in the interim users have been looking to other companies for their web browsing needs.

However, with the recent announcement that Cortana searches will only be allowed inside of its Edge browser in an effort to fully optimize the voice assistant (after all Cortana is more than just a search engine), the new Windows Ink, and support for Edge browser extensions, hopefully Microsoft is able to turn things around with this year's Anniversary Update, due in 2 months.

## Twitter Posts Disappointing Revenue, Misses Forecast



Popular micro blogging site Twitter seems to be going through its toughest time. Twitter disappointed investors with first-quarter results with stagnant revenue growth. Twitter shares plunged 13.6 percent to $15.34 in late trade on Tuesday after reporting lower-than-expected revenue, hurt by weaker than expected spending by big advertisers, and providing a current-quarter revenue forecast well below analysts' expectations. Twitter's user base grew modestly to 310 million monthly active users in the quarter ended March 31 from 305 million in the fourth quarter, above analysts' expectations. But investors were let down by the revenue miss since outlining a turnaround plan.

"It's obvious Twitter is having trouble," Arvind Bhatia, analyst with CRT Capital told Reuters. "It's not growing anywhere close to where people expected a while back", he said.

Twitter has struggled with stagnant user growth as its complex interface makes it less attractive to new users. As part of its turnaround plan, the company has emphasized its live offerings, including live commentary and video streaming through its Periscope app, to attract new users. But it faces fierce competition from Facebook Inc (FB.O), which has recently ramped up its live video product, Facebook Live. Chief Executive Jack Dorsey said that talent recruitment was a top priority for the year, especially on the engineering and product teams. Twitter lost several top executives earlier this year and has since added two new board members and a new chief marketing officer. The company forecast revenue of $590 million to $610 million for the second quarter. Analysts on average were expecting $677.57 million, according to Thomson Reuters I/B/E/S. first-quarter revenue rose 36 percent from a year earlier to $594.5 million, but widely missed the average analyst estimate of $607.8 million. Its net loss narrowed to $79.7.million, or 12 cents per share, from $162.4 million, or 25 cents per share, a year earlier.

## Paytm Joins Hands with Wipro for its Payments Bank Business

Paytm, India's largest mobile payments and commerce platform has joined hands with Wipro Limited, a global information technology, consulting and business process services company to create the requisite technology infrastructure for its upcoming Payments Bank business. Wipro will be implementing the core banking solution for Paytm and also program managing the integration of other key systems like the anti-money laundering solution and the regulatory reporting solution. Wipro will play a crucial role in helping Paytm interface its existing systems with the core banking solution. It will also put in place and manage the data centers for the Payment Bank in order to ensure smooth functioning of the new unit.

Shinjini Kumar, CEO Designate, Paytm Payments Bank said, "Technology is an integral part of the value proposition we seek to create for customers of our upcoming bank and we are happy to announce that we will be partnering with Wipro. They have a demonstrated track record in banking technology in India that will be important in ensuring that our innovative solutions are integrated with core banking systems in a compliant and secure manner, creating the right platform for service delivery at large scale. We are a young and agile organization and the Wipro team has demonstrated the agility and flexibility that will be necessary to make this partnership meaningful." Soumitro Ghosh, President, India & Middle East Markets, Wipro Limited said, "Paytm is making steady strides towards its larger vision of financial inclusion in the country. Its Payments Bank is another step in this direction and we are happy to partner with them in their endeavor."

Paytm received its in-principle approval to set up a Payments Bank in August last year. Payment banks can accept demand deposits and savings bank deposits from individuals and small businesses, up to a maximum of Rs 1 lakh per account. Non-resident Indians cannot bank with these ventures, which also cannot disburse loans. However, they can sell mutual funds, insurance and pension products as well as facilitate payments and remittances with a focus on the unbanked segment like migrant workers.

# Special Focus
## Top 10 Gotchas of DR and Business Continuity Planning

Business continuity — the planning, preparation, and implementation of more resilient business systems in anticipation of unscheduled downtime — is often thought of as an IT problem, and most organizations leave it to the IT department to provide a fix. This invariably leads to the deployment of a wide range of tactical solutions, with no overriding strategy providing guidance. In reality, as the term implies, business continuity is a business problem, and it requires a business approach to fix it.

Everyone talks about how to do disaster recovery the right way, but isn't it just as helpful to take a look at the pitfalls that await you if you do it wrong? That's why we've prepared the top 10 gotchas to assist you with your planning and decision making.

**1.  It's About the Business, Not Technology!:** It's important to remember that disaster recovery is about satisfying a business need and must be driven by business requirements. Before trying to work out how to implement disaster recovery, you need to spend time thinking about why. Talk to business leaders to understand their priorities. Whether it's done through email or face-to-face discussions, the point is that you won't know what systems are the most important unless you ask business users. Understanding the needs of the organization will let you set priorities that dictate your technology choices.

**2. It's a Catastrophe, or Maybe Not**: When you think about disaster recovery, you probably picture hurricanes, floods, terrorist attacks, and the like; not a software upgrade gone wrong or a hardware error on a critical piece of networking equipment. Planning for the worst-case scenario and being tripped up by trivial day-to-day errors is very common. Your planning has to take into account all eventualities, from the ordinary to the cataclysmic.

**3. How Can You Assign Budget Without Knowing The Cost of Downtime?:** In most cases, organizations assign a dollar value for disaster recovery planning before determining the financial risk of downtime and data loss to the business. Unless you can quantify how much you can lose from an outage to critical systems, it will be difficult to state how much you can spend to avoid these losses. This means assessing the financial cost of downtime before allocating a budget. Don't forget to include regulatory compliance in your cost of downtime calculations. There are often financial penalties for unmet legal obligations.

**4. it's About Measuring Risk: Exactly:** what events classify as a disaster can change from organization to organization, and even from department to department. Some events – earthquakes, for example – are potentially so catastrophic that it is obvious the organization must protect itself. Other events may be common – such as failed network hardware – yet have an outsized financial impact. When thinking about disaster recovery, it is essential to ask:  What are we trying to protect ourselves from? Don't overlook the commonplace. Small losses from common problems mount up quickly.

**5. Do You Have A Plan? :**  If your disaster recovery plan is a Post-it note on the backup tapes under your system admin's bed, you're in trouble. As crazy as it sounds, a surprising number of organizations don't have a disaster recovery plan. It is essential that you develop a formal document detailing all applications, hardware, facilities, service providers, personnel and priorities, and you must obtain buy-in to the document from all the stakeholders in the organization. The plan must represent all functional areas and offer clear guidance on what happens before, during and after a disaster.

**6. We've got A Plan, But We Didn't Test It:** Maintaining a disaster recovery plan is only helpful if it works. The only way to ensure your plan works is to test it. Testing the plan under simulated disaster conditions is essential, but it can also be challenging. Performing disaster recovery testing is expensive and takes time and resources away from day-to-day operations. However, unless a recovery is fully tested at the application level, you will inevitably encounter difficulties during a real-world disaster.

**7. Who is Responsible and for what? :** A real-life disaster event will be chaotic and confusing. If the key staff does not understand their disaster recovery responsibilities, the recovery process will be long and fraught with problems. Your disaster recovery plan must clearly state the roles and responsibilities of everyone involved, including what to do if the key personnel are not available. These people should also be involved in testing your recovery plan.

**8. Recovery Point What? Recovery Time Who? :** Two metrics are used to record an application's tolerance of downtime and data loss: recovery point objective (RPO) and recovery time objective (RTO).  RPO is a measure of data loss. The larger the RPO, the more data loss each application can tolerate before it becomes a problem for the business. RTO is a measure of recovery time. The smaller the RTO, the faster you have to work to get the application back online before the organization starts to suffer significant losses. If you don't know the RPO and RTO of each application, you're in the dark when it comes to disaster recovery. RPO and RTO allow you to define levels of service that you can deliver against.

**9. Recovery Will Take Longer Than You Think:** Understanding how long it will take to recover key business systems is essential. Even if you can access offsite backup copies, there is no guarantee that you can recover applications in a timely manner. Can you restore data and rebuild application systems fast enough to satisfy business users? Do you have the bandwidth to recover data from a cloud service provider? Understanding how long it takes to recover applications and the effect of downtime on the business, may prompt you to make different technology choices.

**10. Going Home:** Going back home after failing over to a disaster site is an often overlooked component of disaster recovery planning. It's easy to see why. When we think about disaster, our minds focus solely on protecting valuable assets. Little thought is given to what happens to those assets after the disaster event has passed. The ability to failback to production systems is every bit as important as the ability to failover. Unless carefully planned, a backup data center is unlikely to have the same capacity or performance as the production site. Without a failback plan, you may perform a successful initial failover and then see losses mount as your business limps along for weeks operating from an inadequately provisioned backup site.

Downtime and data loss are a fact of life for businesses that rely on IT. Offsetting this risk with the right technology must be a consideration at the earliest stages of the software development and product deployment lifecycles. Understanding the protection level demanded by each application lets you allocate the appropriate resources. By the time an application is in production use by business users, its RPO and RTO must be clearly identified and the appropriate business continuity solutions implemented to provide assured recovery in the event of an outage.

# About Galaxy

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- An ISO 9001:2008 organization, founded in 1987.
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- PAN India presence.
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- Experienced consultants certified on a wide spectrum of technologies.
- The Galaxy Technology Innovation Centre, a state-of-the-art integrated hardware and software laboratory, allows customers a hands-on look at the latest storage, backup, security, application delivery and virtualization technologies.
- Customer list includes many of India's leading corporations, banks and government agencies.
- Four business units collaborate to provide a full spectrum of services and ensure smooth projects. Together, they provide our customers with truly end to end professional IT Services.

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| **Galaxy Business Solutions** <br> System integrators of best of breed technologies to deliver solutions to the problems and challenges that confront enterprises | **Galaxy Technology Services** <br> Skilled pool of resources consistently maintains and delivers enterprise class service levels |
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**MISSION**

"*Total customer satisfaction; through innovative insights, quality service and excellence in technology deployment.*"

**VALUE PROPOSITION**

"*We understand the need of a common vendor for all your IT needs. Hence, we are committed to long-term partnerships by delivering on our commitments.*"

# MD Speaks

"*Dear Readers,*

*Last week, for the first time in 13 years, Apple reported a drop in quarterly revenue. This was mainly due to a fall in sales of their flagship product, the iPhone. The worrying bit for the company is that they are predicting a further fall in the coming quarter due to the same reason. Of course, when the quarterly revenue base is over $50 billion, it's really hard to keep growing, especially when that base was created due to the blockbuster release of the iPhone 6. How does a company that size keep growing? Is it possible to keep repackaging the iPhone every year and expect bumper sales? Or does one need to keep innovating to put more things in the market? The Apple Watch does not seem to have generated as much enthusiasm as the iPhones. However, rumor has it that a lot of work is going on developing an electric car and a virtual reality device. But will these match the success and should I say near 'monopoly' of the iPhone. Only time will tell.*

*Another event from last month was the release of the 'Panama papers' - a set of 11.5 million leaked documents with sensitive information including the details of shareholders and directors of more than 214,000 offshore companies. Some really big names from across the world cropped up and held center stage on all news media for about a week - and disappeared from the news as suddenly. The source of the leaks finally came down to lax data security and use of 'outdate open source technology' with known vulnerabilities.  High time for the law firms in tax havens to charge their clients a Data Security surcharge and upgrade their systems!*"