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The re-enterprization of IT

Deloitte predicts that in 2015 the impetus for IT adoption will swing back to the enterprise market following a decade of consumer-led technological change.

From the 1950s until about ten years ago, new technologies and advanced versions of technologies were usually adopted by the enterprise first: the mass-market consumers would then take years or even decades to catch up. Early mainframe computers were only useful or affordable for large companies; they cost $750,000 in 1951 ($7 million in 2014 dollars) and had to be lifted into the building with a crane.[160] Touch-tone phones were in offices long before the average home.[161] Electronic calculators in 1972 were business tools, costing several hundred dollars (thousands of dollars in today's money), so too expensive for the home as for students.[162] Early PCs, aside from tech hobbyists and the curious wealthy, were purchased overwhelmingly by enterprises. Who needed to do word processing or use VisiCalc at home? Early cellular phones cost thousands of dollars – the price of a compact car, or a quarter of the average salary at that time – when they went on sale in 1984. Users would pay $50 a month just to be able to use the service.[163]

When PC manufacturers launched new models, boasting bigger hard drives, more RAM and faster CPUs, they were marketed and branded as 'Pro', 'Office 'or 'Enterprise'. Meanwhile, the lagging edge of technology was marketed as 'Home'. While consumers were buying their first bulky cell phones, businesspeople were lining up for sleek flip-phones, and later for early smartphones incorporating full-sized keyboards and 'giant' 2.0 inch monochrome screens.

But in the last ten years there have been several examples where the exact opposite has been true, and the consumer has led the way.

Large touch-screen smartphones were adopted first by consumers. Enterprises were not only slow in taking to these now-ubiquitous devices; in many cases they tried to ban or restrict their use for work purposes. It was much the same with tablet computers. In the early days, enterprises tried restricting their use, and although they are now common in the work place, this only came about after millions of units had already been bought by consumers.

It isn't just technology that has experienced this trend towards consumerization; it affected telecommunications too. Accessing work functions and email on a smartphone works relatively well at 3G wireless speeds; but consumers wanted to watch high definition video or play games, and wanted the advances provided by 4G LTE networks. Most businesses are only upgrading their wireline ISP provisioning gradually, while it is consumers watching tens of hours of high bitrate over-the-top (OTT) video who are looking into getting fiber-to-the-home services.

There have been a number of other technologies that reflect the consumerization trend. Voice-over IP telephony is common in many large enterprises today, but was largely a consumer-driven product initially. Desktop video conferencing was also consumer-led. Many enterprise laptops had their cameras disabled by the IT department. Storing your emails on a web service was a popular consumer service, while enterprises continued to own dedicated email servers.

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160. UNIVAC: the first mass-produced commercial computer (infographic), Pingdom, 30 March 2012: http://royal.pingdom.com/2012/03/30/univac-computer-infographic/

161. What Is a Touch Tone Telephone?, WiseGEEK, as accessed on 9 December 2014: http://www.wisegeek.org/what-is-a-touch-tone-telephone.htm

162. Forty years ago, a pocket calculator would cost about $400, equivalent to about $2,200 in 2014.

163. The first cellphone went on sale in the US in March 1984, and cost $3,995.

Not surprisingly, observers tend to extrapolate trends based on what has happened in the last couple of years: it's called the 'recency bias'.[164] Since the most recent examples of technological adoption have been 'consumer first; enterprise after' (also known as the consumerization of IT)[165] it is not surprising that many believe this will become the dominant model of technology and telecommunications adoption from now on.

There is strong evidence that the pendulum is swinging back to enterprise-first adoption, or at least a world where the consumer doesn't always lead the way.

Predictions 2014 discussed the wearables market: smart headsets and smart watches such as Google Glass and Samsung Gear, and hundreds of other models from various manufacturers. The media hype in January of that year suggested these would be an enormous consumer success,[166] and our prediction was the same: "Usage of smart glasses in 2014 is likely to focus on consumer applications, with enterprise usage becoming more prevalent later as the product specification improves."[167] Consumer acceptance of these devices has been much lower than the four million units we predicted. Although exact numbers have not been disclosed for many head-mounted devices, the combined total of units sold is almost certainly under 500,000.[168]

However, Deloitte member firms' ongoing client interactions over the course of 2014 suggest that the enterprise market may be a sweet spot for the wearables industry. The security, medical, materials handling and warehousing industries are all eagerly exploring the potential of devices that offer hands-free use, augmented reality display, and easy-to-use video camera capability.

Predictions 2015 features three more examples. 3D printing (also known as Additive Manufacturing), drones (also known as Unmanned Aerial Vehicles or UAVs), and the Internet of Things (IoT, also known as Machine-to-Machine communications) seem to be primarily enterprise driven (for the full stories and supporting endnotes, please read each prediction in this report). The consumer market may possibly dominate in terms of units sold, but will be less important in the near term in terms of usage and value.

3D printing has been around since 1988, but more recent media interest has focused on the idea that these devices will become the 'factory in every home'. With a proliferation of sub-$1,000 machines, the concept of widespread home use looks plausible: if many homes have their own laser printers, why not 3D printers too?

The reality is that the home devices are still hard to use, and make small objects out of plastic only. While there is a growing 'Maker' community, the household penetration is well under 0.007 percent,[169] and the total dollar value of all consumer 3D printers is equivalent to less than four hours of smartphone sales.[170]
The media hype is obscuring the more important fact that enterprises are spending ten times more than consumers on 3D printing machines. They buy them and use them frequently: we estimate that the economic value of goods being produced by enterprises is over 100,000 times higher than output by consumers.
In contrast to plastic-only consumer printers, enterprise 3D printers are operated by experts who are good at design, and produce objects from a range of much more useful materials, including metals; and the machines fit into existing production work flows and processes such as the manufacture of molds, forms, jigs, and dies. The most-heralded new 3D printers from large manufacturers are not aimed at the home market, but the enterprise.

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164. Tomorrow's market probably won't look anything like today, The New York Times, 13 February 2012: http://bucks.blogs.nytimes.com/2012/02/13/tomorrows-market-probably-wont-look-anything-like-today/

165. Consumerization, Gartner, as accessed on 9 December 2014: http://www.gartner.com/it-glossary/consumerization

166. ROBERT SCOBLE: I Just Wore Google's Glasses For 2 Weeks And I'm Never Taking Them Off, Business Insider, 27 April 2013: http://www.businessinsider.com/robert-scoble-i-just-wore-googles-glasses-for-2-weeks-2013-4

167. Wearables: The eyes have it, Deloitte TMT Predictions 2014, Deloitte Touche Tohmatsu Limited, January 2014: www.deloitte.com/tmtpredictions

168. How Many People Actually Own Google Glass?, CIO, 4 June 2014: http://www.cio.com/article/2369965/consumer-technology/how-many-people-actually-own-google-glass-.html

169. With fewer than 200,000 consumer 3D printers in the installed base, and about three billion homes globally, the penetration is roughly 0.00667 percent.

170. 2015 smartphone sales are likely to be over $400 billion, and the consumer 3D printer market to be $160 million. Consumer 3D printer sales represent the equivalent of less than four hours' worth of smartphones.

Drones (UAVs) have been widely used in military applications since 2001, but the last few years have seen UAVs gaining traction in the consumer and enterprise markets. Although the majority of the 300,000 drones expected to sell in 2015 will be purchased by consumers, we predict they will not be used extensively. Those that are priced for the consumer or even prosumer can't carry much, go very far, or fly even in light winds; and they are suitable only for experimentation and limited aerial photography. They are also becoming more heavily regulated, and are often difficult to fly safely.

In contrast heavier and more expensive enterprise drones, guided by trained, licensed, and insured pilots, will be better able to comply with the new regulations. Drones will not become the norm for delivery or many other mass market uses, but will have growing utility in niche enterprise applications such as crop surveying, finding lost livestock or people, distributing lightweight medicine during disaster relief, surveying for resource extraction, inspecting wind farm turbines, and a variety of professional photography and videography uses.

The media is also focusing on the consumer aspects of the Internet of Things (IoT); but many of these are trivial applications, with low ROIs; and while they are technologically possible, they often do not meet real mass-market consumer needs. Consumers don't need a washing machine that sends a message to a smartphone when the cycle is finished: they already have loud buzzers to do that.

However, washing machine companies do want a connected device, which can provide information about real-world usage. And in the future, predictive analytics from a connected machine could warn of an impending break down, and which parts need to be stocked for the service call. Although consumers will also end up benefiting from connected devices, they will not be the ones pushing for the functionality or paying for it. Enterprises will, and consumers will piggyback.

Deloitte isn't predicting that all tech trends in future will be pioneered by the enterprise. But it seems likely that the consumerization model will not be the only game in town, in 2015 and beyond.

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Bottom Line

The 're-enterprization of IT' may be an inelegant term, but it is likely to be a boon for the CIO, who tolerated consumerization, but largely found it posed significant challenges. Consumerization and the associated 'Bring Your Own Device' trend offered some benefits for the enterprise, but attempting to procure, pay for, provision and secure tens or even hundreds of millions of consumer devices has been a nightmare for most corporate IT departments. The sheer diversity of operating systems and form factors has been a challenge, and if enterprise use of wearables, 3D printers, drones or the Internet of Things were being primarily driven by consumers the headaches would only be worse.

As an example, head-mounted wearables aimed primarily at the consumer market would be unlikely to be secure enough from an intellectual property perspective for many enterprises. It is too easy for employees to intentionally or inadvertently record trade secrets or other proprietary information. But a device that was enterprise-oriented from inception can have 'IP integrity by design' built in: the pharmaceutical industry would almost certainly be interested in secure enterprise wearables, and not interested in a consumer version of the technology. Equally, consumer wearables are not usually rugged enough, or safe enough (they can emit sparks) to use on an oil drilling rig; but an enterprise version would have to go through the Mil-Std safety tests, and pose lower risks.

The Internet of Things offers significant promise: but the billions of widely-dispersed sensors and various networking standards also pose a security risk that is potentially even larger than with PCs or mobile phones. If IoT were primarily consumer-led, it seems unlikely that security would have been the most important feature. Enterprise-grade IoT seems more likely to protect corporate networks and data, and is likely to do a better job on privacy too.

New technologies – whether adopted first by consumers or enterprises – do not sit in splendid isolation: they need to fit into an ecosystem. Consumerized devices were designed to be inter-operable with consumer networks, software, connectivity and services. In some cases the technology worked adequately with enterprise software, supply chains and networks. But, as an example, where smartphones and tablets work nearly perfectly in synching music libraries or sharing photos on social networks, they are not nearly so perfect in synching ERP workflows or sharing spreadsheet versions.

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