



‘Ruggedized’ data devices at \$250: reinventing the business case for mobile field force

Deloitte predicts that in 2014 the entry price for a ruggedized, connected data device that can be used by some field force workers, and used to undertake tasks such as car rental check-in inspections, inspecting highways or delivering packages, will fall to \$250. We expect incremental annual sales of almost 10 million units in 2014, effectively increasing the size of the entire rugged data device market by almost 50 percent to over 30 million units in 2014²⁴³.

The main driver for this fall in price will be a shift in approach, from only deploying data devices that are built to be rugged and capable of withstanding rough handling, exposure to dust and moisture, and the occasional fall on hard floors, to purchasing a standard consumer smartphone or tablet with a toughened screen, and further protecting it by adding a rugged case²⁴⁴.

This development does not signal the end of the existing market for ruggedized data devices. Rather, it indicates that the lower price points made possible by twinning selected consumer data devices with a rugged case will open up connected working for tens of millions of additional field force workers around the world in 2014. This should increase their productivity, through enabling a range of connected applications such as data entry, job allocation, and viewing maps and drawings. The lower entry price for rugged connected data devices, particularly when combined with pay-per-use mobile field force software²⁴⁵, may remove the need even to present a business case.

Connected data devices – smartphones, and more recently tablets – have for many years been ubiquitous among the hundreds of millions of office users, but have had relatively low use among field force workers. Connected devices in offices have been used in a fairly benign environment, protected in pockets and purses, and rarely exposed to harsher, outdoor, dusty settings; most connected data devices launched over the past decade would not have survived intact in harsh environments. And this is why for many years field force workers have been issued with highly rugged devices, be they walkie-talkies or PDAs used for data entry. In the latter case, resilient devices could cost over \$1,000 per unit, and software a few hundred dollars per year.

But not all field force deployments require the same level of ruggedness: for millions of existing rugged device applications and tens of millions of potential users, ultra-rugged devices may be overkill.

Therefore in 2014, alongside continued utilization of existing models of rugged data devices, we would expect about 10 million additional deployments of standard, consumer smartphones and tablets to field force workers, with the only adaptation required being a case, priced between \$30 and \$100. This would enable the cost of smartphone plus case to start from about \$250 for a specification sufficient for a field force worker: a 1.5 GHz processor, eight gigabytes of RAM, a sufficiently toughened screen (4.5 inches or larger), Wi-Fi, Bluetooth and cellular mobile²⁴⁶.

There are three key trends at play which enable the price of devices suitable for field force usage to fall to \$250 including the case.

First, Moore’s Law and exceptional economies of scale deliver a markedly improving specification for devices at each price point over time²⁴⁷. About 1.5 billion smartphones and tablets, built for the consumer market, should ship in 2014. This compares to about twenty million units of ruggedly-built devices sold in 2012²⁴⁸.

243 In 2012 there were an estimated 21 million rugged mobile devices sold. See: *Insanely durable smartphone ... from Caterpillar?*, CNN Money, 22 May 2013: <http://money.cnn.com/2013/05/22/technology/mobile/caterpillar-phone/>. Similar volumes were expected to sell in 2013.

244 There are multiple degrees of protection available. A case providing protection against minor shocks, dust and moisture costs in the region of \$50. For \$99, a considerable degree of protection is available, providing resistance to: prolonged submersion in water; falls on to hard surfaces from three meters; two tons of pressure. However this degree of protection would not be required for all field force environments. See: *iPhone 5 Armor Series Case*, Otterbox, 19 December 2013: http://www.otterbox.com/iPhone-5-Armor-Series-Case/app10-iphone-5-default.pd.html?dswar_color=v5

245 For examples of companies operating on this basis, see: *ServiceMax Product Editions*, ServiceMax, 19 December 2013: <http://www.servicemax.com/editions.html>

246 There are several varieties of toughened glass available. There are over one thousand models that have ever been produced with some form of resilient glass. Each generation of glass brings significant improvements in strength. For example Corning’s Gorilla Glass 3 is “up to three times more damage resistant” than Gorilla Glass 2. For more information, see: *CORNING® Gorilla® Glass 3 WITH NATIVE DAMAGE RESISTANCE™*, Corning Gorilla Glass, 19 December 2013: <http://www.corninggorillaglass.com/Gorilla-Glass>. Integrated cellular mobile is preferable, but not mandatory. A device, such as a Wi-Fi-only tablet, can use a nearby smartphone’s data connection by a process called tethering, which sets up a connection via Bluetooth between the device and the smartphone. This typically consumes more of the device’s power than if cellular mobile is built-in. So if frequent data transmission is required, built-in cellular mobile is preferable.

247 Smart phones, Worldwide, unit forecasts by OS vendor, 2012 – 2017, Canalis, 19 December 2013: <http://www.canalis.com/chart/index.html#display=77>; IDC Forecasts Worldwide Tablet Shipments to Surpass Portable PC Shipments in 2013, Total PC Shipments in 2015, IDC, 28 May 2013: <http://www.idc.com/getdoc.jsp?containerId=prUS24129713>; Tablets, Worldwide, unit forecasts by OS vendor, 2012 – 2017, Canalis, 19 December 2013: <http://www.canalis.com/chart/index.html#display=84>

248 In 2012 there were an estimated 21 million rugged mobile devices sold. See: *Insanely durable smartphone ... from Caterpillar?*, CNN Money, 22 May 2013: <http://money.cnn.com/2013/05/22/technology/mobile/caterpillar-phone/>

Second, consumer devices over the years have become increasingly robust, able to cope with increasingly intensive usage patterns, and also to act as a differentiator. Today's smartphones and tablets need to be able to cope with thousands of hours of active use in their life time, and many thousands of hours being carried around in pockets and bags²⁴⁹. This has led to the incorporation of scratch-resistant screens and casings – and even cases that ‘heal’ minor scratches. Screen resilience should continue improving, and in 2014 devices with synthetic sapphire screens, sufficient to withstand repeated knocks against concrete, are likely to reach mainstream consumer devices²⁵⁰. There are already touch-sensitive screens which have been designed to work with standard gloves, a critical feature for devices used in cold environments²⁵¹.

A growing range of consumer smartphones and tablets are water-resistant, and able to cope with pool-side and bathroom usage. This feature, which also provides dust-proofing, makes them much more suitable for use in the field²⁵².

Third, rather than depend on physical protection for devices, enterprises are also focusing more on behavioral change and identifying how workers could be encouraged to look after their devices. A device that is set up to provide both business functions and personal applications, such as consumer instant messaging, or simply taking good quality photos of family, may be more likely to get careful treatment.

Bottom line

Using mobile technology to increase the productivity of the world's billion field force workers has long made sense, and it has long since been regarded as a key application for mobile networks. But many projects have historically foundered on cost. Deployments that have been signed off have required a significant investment in business process reinvention to make the case viable, limiting the number of mobile field force projects that get approval.

However, the price of devices, software, and mobile broadband are all falling and this is creating ample opportunities to harness mobile-enabled devices to increase field force worker productivity.

For carriers, greater mobile field force use would increase data traffic and revenues. Field force systems integrators should identify which consumer-targeted smartphones and tablets being launched, or already being sold, could be readily re-purposed for field force usage. For software developers, one approach would be to create standard, off-the-shelf field-force solutions and apps that customers can use: for example an app that takes a picture of a defective water heater part, automatically assigns it a trouble ticket, and geo-tags it to the customer's address and links to its file. Software publishers should also identify the contexts in which field-force software could be used in a bring-your-own-device context.

Enterprises evaluating the rising applicability of mobile field force should be risk-aware: as with all technology deployments, security is paramount. To mitigate risk, enterprises should consider using a ‘sand box’ approach, whereby consumer data is kept separate from enterprise data, and incorporating remote-kill functionality that can instruct a stolen device to wipe its enterprise contents²⁵³. Most smartphones and tablets have integrated cameras, and in some contexts these may need to be disabled during working hours or in certain locations, to lessen the possibility of intellectual property being compromised.

While encouraging use of corporate-issued field force devices for personal applications, companies should pass on mobile data costs resulting from usage of non-work related applications. While the price per gigabyte over cellular mobile is falling, it is still between \$5 and \$10 in many markets. This may be acceptable for work usage, but is not justifiable for watching video or sending photos of friends and family.

Employers should also consider all approaches for encouraging workers to protect, and not punish, their devices. One option may be to have a scheme for selling devices to employees after a couple of years' usage – this may well encourage better treatment, if the price is right²⁵⁴.

- 249 According to one survey, the average smartphone owner spends two hours a day actively using their device. For more information, see: Smartphones hardly used for calls, Telegraph, 29 June 2012: <http://www.telegraph.co.uk/technology/mobile-phones/9365085/Smartphones-hardly-used-for-calls.html>
- 250 Why Apple Bought \$578M Worth Of Sapphire In Advance, TechCrunch, 8 November 2013: <http://techcrunch.com/2013/11/08/why-apple-bought-578m-worth-of-sapphire-in-advance/>; For a video showing the resilience of sapphire glass, see: Sapphire Screen vs. Gorilla Glass: Scratch Test (Video), Pocketnow, 27 February 2013: <http://pocketnow.com/2013/02/27/sapphire-screen-scratch.> Sapphire glass already features in very high-end smartphones, priced at several thousand dollars per unit. However at the time of writing it was not available in mainstream devices.
- 251 For an explanation on how this technology works, see: How supersensitive screens get touchy (Smartphones Unlocked), 8 June 2013: http://reviews.cnet.com/8301-6452_7-57586983/how-supersensitive-screens-get-touchy-smartphones-unlocked/; For more information on devices, see: Vertu's new Constellation is its second Android phone, and you still can't afford it, Engadget, October 2013: <http://www.engadget.com/2013/10/01/vertu-constellation-android/>
- 252 For more information on the range of water-resistant smartphones available, see: Waterproof phones you can take to the beach (roundup), CNET, 6 August 2013: http://reviews.cnet.com/8301-6452_7-57597025/waterproof-phones-you-can-take-to-the-beach-roundup/. Each model uses a slightly different approach to sealing the device, each of which has its pros and cons. The tolerance to immersion of each device varies. For information on water-resistant tablets, see: Sharp touts new water-resistant Windows 8 tablet, CNET, 30 September 2013: http://news.cnet.com/8301-1035_3-57605288-94/sharp-touts-new-water-resistant-windows-8-tablet/; The lightest, slimmest and water-resistantest tablet on the market, Techradar, 12 August 2013: <http://www.techradar.com/reviews/pc-mac/tablets/sony-xperia-tablet-z-1133193/review>
- 253 For more information on sandboxing, see: MDM: To Sandbox Or Not To Sandbox?, Information Week, 1 November 2011: <http://www.informationweek.com/security/risk-management/mdm-to-sandbox-or-not-to-sandbox/d/d-id/1101060/>
- 254 In some jurisdictions, if the device is sold below market price, it may be considered as a benefit-in-kind and therefore taxable.

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Designed and produced by The Creative Studio at Deloitte, London. 31916A