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RAPID GROWTH IN RUGGED PHONES

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Rapid Growth in Rugged Phones

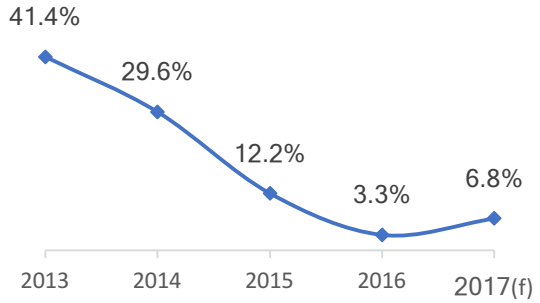
How the market for robust mobile devices is going from strength to strength

August 2017, Bullitt Group Research

1. Market dynamics

Growth in the global smartphone market has slowed significantly in recent years, and is forecast at 6.8% year-on-year for 2017, taking shipments for the year to 1.6 billion units.[1] Within this vast global market, numerous smaller niche segments exist, servicing the specific needs of their target customer groups with differentiated products.

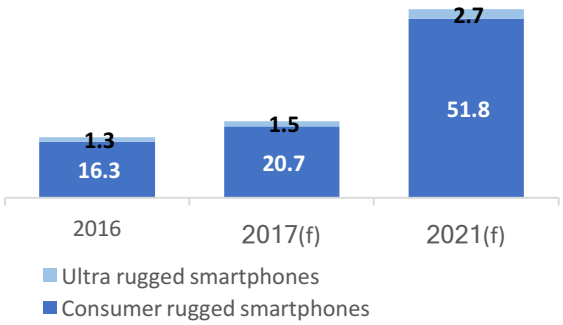
Smartphone market year-on-year growth rates



Source: Strategy Analytics

One such niche – the rugged smartphone market – is growing rapidly, and is expected to see continued growth, substantially beyond the macro smartphone market trend.

The global rugged smartphone market (units, millions)



Source: CCS Insight

Recent shipment volume estimates for the rugged smartphone market, by independent industry analyst firm CCS Insight, show that 17.7 million rugged smartphones shipped in 2016, globally. This is forecast to grow to 22.2 million units in 2017, representing a year-on-year increase of 25%. Continued year-on-year increases are forecast at a compound annual growth rate (CAGR) of 18.9% (2016-2021), with the market set to reach 54.5 million units by 2021.[2]

The market comprises devices clearly positioned as 'rugged', and incorporates two sub-categories:

Consumer rugged smartphones: these devices are consumer-oriented and retain key characteristics of a conventional smartphone. But, they usually carry an ingress protection (IP) rating of 68, and are drop tested onto a hard surface from a minimum of 1.2 metres (4ft) – usually as part of support for the MIL-STD-810G standard. Vendors include Cat® phones, Kyocera, Samsung (Galaxy Active and Xcover), Evolveo, RugGear, Crosscall, MTT, and many others.

Ultra rugged smartphones: these devices are specifically designed for industrial use or to survive extreme rugged testing. They are usually considerably more expensive, and will often be engineered to be non-incendiary and Intrinsically Safe, making them suitable for use in hazardous environments. They may also incorporate specialised software or hardware features to support key line-of-business use cases in targeted industrial verticals. Vendors include Sonim, Motorola Solutions, and Bartec Pixavi among others.

[1] Strategy Analytics, smartphone estimates and forecasts

[2] CCS Insight, rugged smartphone estimates and forecasts

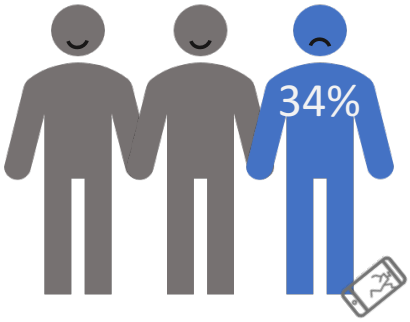
Of these two segments, the largest by far is the consumer rugged market, which is set to more than double in volume terms over the next four years.

Behind this significant growth trajectory are a number of interlinked factors, explored in detail below:

2. Demand for fit-for-purpose products

Mass market devices have long been prone to accidental breakages. Too many consumers are being left inconvenienced and out of pocket by the failure of mobile products to withstand their use in everyday life and challenges for which they were not designed or intended. With aesthetics the core driver of flagship industrial designs, this issue is only set to become more acute. The fragility of screens is a particularly substantial problem, exacerbated by design trends towards edge-to-edge displays with minimised bezels, and curved glass. For many customers (about 60%)[3], this necessitates an immediate investment in an aftermarket protective case - a fact that counter intuitively obscures the highly prized sleek design of the product itself. Yet others require a product that is fit-for-purpose; built to survive the knocks, drops and scuffs that their mobile device endures day-to-day. Consumer rugged devices offer a compelling, more hard-wearing alternative for such customers.

Proportion of consumers that have damaged their mobile phone in the last 3 years in Western Europe



Source: Bullitt Group Research, with YouGov

[3] Bullitt Group Research, Damage Report Survey with YouGov, 2017. 5,130 respondents across France, Germany and the United Kingdom.

The level of mobile phone breakage was revealed clearly in a recent survey of 5,130 Western European consumers, which showed 34% of consumers - or one in three – had damaged their mobile phone in the last three years, in a manner that would ultimately require repair or early replacement.

23% said they had suffered a cracked display, 15% said their phone had suffered another significant type of physical damage, and 9% had sustained liquid damage to their phone – with some users reporting multiple incidents or types of damage. The numbers increase for users of high-end devices, with 45% and 36% of Apple and Samsung owners respectively having damaged their phones in the last three years. Similarly, for those working in industrial verticals (construction, agriculture, mining and quarrying, engineering and manufacturing), the proportion of consumers that report having damaged their phone jumps to 42%.[3]

In light of the prevalence of mobile phone damage in the mass market, that growing numbers of customers are choosing to seek devices that are tougher and more fit for their purposes should not be surprising.

3. Proposition relevance

Consumer rugged devices from leading vendors offer relevant features that enhance their suitability for use in many scenarios. Such features are rarely seen on mass market handsets. They include drop proofing, true water and dust proofing, high capacity batteries that are too large for many ultra-thin mid and high-end smartphones, bright touch-screen displays readable in sunlight and optimised for outdoor use, with thick tempered glass protection and support for input with wet fingers or while wearing gloves.

4. Total cost of ownership (TCO)

Fundamentally, rugged devices are engineered and tested to be robust, and to break substantially less often, despite regularly being used in significantly more demanding and rough conditions. While rugged devices often command a premium in the market, due chiefly to the increased associated engineering costs, they can often deliver dramatic total cost of ownership (TCO) benefits to individuals and organisations. For instance, a single screen repair on an Apple iPhone costs between $129 and $149, while 'other damage' repairs can cost up to $349 through Apple[4]. Costs, though, extend beyond the monetary savings afforded by fewer device repairs or replacement bills, into the costs and resource requirements associated with the inconvenience of a mobile device being temporarily and unexpectedly unavailable.

An employee with a broken phone can easily find themselves unable to complete their job until it is replaced, or at least find themselves unable to work efficiently. Meanwhile, where the device has been deployed by a business, this will add to the workload of the IT manager or coordinator that must now arrange a repair or replacement, and perhaps provide and set up a temporary device for the employee. Dealing with isolated incidents would be a significant inconvenience, but the potential in some contexts for this to be a regular issue affecting multiple staff members constitutes a risk that some businesses are understandably eager to mitigate.

A small study recently found that within the enterprise space, field staff are 18% more productive with rugged devices, and deploying rugged devices can be "upwards of 40% more cost effective" than consumer devices, with mass market products proving a false economy in many circumstances due to hardware failure rates.[5]

Where cost conscious individuals and organisations reflect on TCO, rugged smartphones will often prove more economically prudent.

5. The consumerisation of rugged

Across information and communication technology markets, consumerisation has been evolving buying trends within the enterprise space for years now. In mobility, corporate device deployments today routinely involve roll-outs of mass market consumer-oriented products that either include sufficient enterprise required features, or are adapted and secured via Enterprise Mobility Management (EMM) or Mobile Device Management (MDM) aftermarket software solutions.

In the rugged segment of the market, enterprise-grade ultra-rugged smartphones have been available for many years. However, the use of premium materials, the inclusion of enterprise-grade security and other software features, and the incorporation of sometimes redundant elements (e.g. barcode scanners, Intrinsically Safe certifications, etc.), render these products prohibitively expensive for many businesses that nonetheless require tough, robust devices. In this context, a growing number of businesses are opting to purchase higher quantities of more affordable consumer rugged devices that fulfil their basic requirements, rather than specifically enterprise-grade products with superfluous capabilities.

6. Bring Your Own Device (BYOD)

The opportunity for rugged devices to serve professional customers in tough working environments is not constrained by the pace of enterprise roll-outs either. 75% of Cat phone customers are motivated to purchase their rugged smartphone, at least partially, by the environment in which they work. Consumer rugged smartphones, sold through consumer-facing channels, are finding their way into business, from micro and small organisations to large multinationals, as 'personal liable' or

[4] Apple.com support pages

[5] Rocket Consulting, 'Why it pays to go rugged. Investigating the total cost of ownership for hand-held devices,' posted online, July 2017.

BYOD devices. The BYOD trend, across mobility, sees employees purchasing their own choice of handset, with the expectation that they will be able to use its features for (or, at least, at) work. More people working in environments that are tough on phones, such as construction where phone breakages are common, faced with the personal decision of what mobile device to invest in, are now considering products that are designed to withstand rougher treatment. Concern for the longevity of expensive personally owned devices is unsurprisingly a clear purchase motivator for consumer rugged smartphones.

7. Fading compromise

The consumer rugged smartphone of five years ago was a very different, far less sophisticated product. Vendors and ODMs would typically take a pre-existing device and essentially wrap it in rubber and plastic materials to act as bumpers, ruggedizing and protecting the handset against drops and water damage. However, the devices this process yielded were necessarily bulky, inelegant, and were rarely based on sufficiently new or high-performance products to begin with, ensuring rugged smartphones were perceived as heavily compromised in terms of design, features and performance.

But the current generation of consumer rugged smartphones, at least from leading vendors in the space, deliver uncompromised smartphone capabilities. They often run the latest version of Android, boast mass market-level specs, and are engineered from scratch to ensure superior ruggedisation in dramatically sleeker, more attractive forms. Today's industrial designs incorporate premium material finishes, and are no longer thick and bulky - often no larger than an equivalent mass market handset in a case that offers significantly inferior protection.

8. Innovation

While there is arguably limited, genuine feature innovation currently coming to market in mass market devices, the narrower customer focus of the rugged segment means that vendors can invest in delivering new or improved features, relevant to large swathes of their target users. The integration of a thermal imaging camera into the Cat S60 smartphone is one such example. Thermal imaging has many potential use cases, but nowhere more so than within core target customer sectors for rugged devices, such as construction, agriculture, security, and emergency response. Offering relevant new features and appropriate product convergence is an approach that will continue to entice new customers to rugged products.

9. Channel evolution

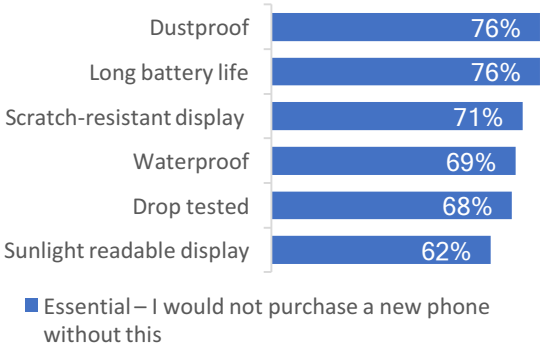
With mobile operator or carrier subsidies disappearing across North America and Western Europe particularly, the number of consumers taking up SIM-only contracts is rapidly increasing, freeing up consumers to seek the best deals on their next smartphone purchase. For many customers in these markets, default behaviour dictates that their first port of call for device upgrades will be their current carrier, but significant numbers are beginning to shop around and go further afield in search of the best handset deal, divorced from a tariff bundle. This development is having several effects. Online and independent retail channels are steadily growing in importance as the 'open market' in traditionally carrier-dominated countries, grows – collectively, online channels currently account for just below half of rugged device sales.[5] In these environments, consumer rugged smartphones have a good chance to compete, highlighting clear key selling points against indistinct mass market competitors.

Meanwhile, some carriers are looking to offer greater variety and differentiation within streamlined portfolios. Where they serve appropriate customer bases, consumer rugged smartphones are winning slots with carriers as product propositions that a large subset of consumers want on offer.

10. Achieving success

Understanding the market dynamics, outlined above, is critical to the success of rugged device vendors. But it is also critical to understand the requirements, needs and preferences of customers that purchase rugged devices.
From a recent survey of over 21,000 of Cat phones rugged smartphone customers worldwide, Bullitt Group reached a series of conclusions relating to the features most valued by users.[5]

Top six essential features for rugged smartphone users



Source: Bullitt Group Research

Most notably, four of the top six features deemed to be 'essential' by rugged smartphone users relate to core rugged credentials. Recognising this, and continuing to enhance the fundamental robustness of rugged devices is critical for end users.

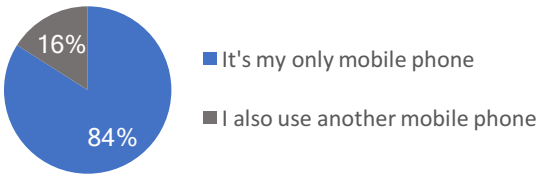
Also critical is battery life and performance. While disappointing battery life is often a complaint of mass market products, the need for extended battery performance is all the more important for rugged device users who are more likely to find themselves working outside or on construction sites where charging points are unavailable, or engaged in recreational outdoor activities away from immediate power sources. Larger batteries and more effective power management are important for rugged device customers.

Display readability in bright sunlight was also flagged as an essential feature. Support for wet finger and gloved finger touch-screen input also feature prominently in the list, as did features such as loud audio for noisy environments. Again, the prevalence of workers from outdoor industries, and of outdoor activity participants among rugged device users underscores the importance of relevant feature optimisation.[6]

Notably, just 19% rated a thin, sleek design as essential, compared to 48% that required a phone that looks tough and rugged, highlighting that rugged smartphone customers have needs and priorities at odds with those of mass market flagship smartphone vendors. It also implies a level of consumer realism and acceptance that ruggedness and large capacity batteries prohibit ultra-sleek industrial designs.

Other findings included a clear indication that apps are of increasing importance for users seeking to make the most out of their devices. In common with the mass market, social media apps remain highly popular among rugged device users. Gaming, though, is far less widely used. Significantly, many users noted that they are regularly using apps aligned to the work context or recreational activities that prompted them to choose a rugged device. Apps addressing construction, facilities management, electrical and plumbing, and agriculture, as well as hiking, mountain biking, sailing, and home improvement, all showed up among the list of users' valued apps.

Rugged phones as primary devices



Source: Bullitt Group Research

Contrary to some misplaced conceptions, consumer rugged smartphones are rarely being purchased as companion or secondary devices.

[6] Bullitt Group Research, Rugged Smartphone User Survey 2017. 21,689 respondents.

84% of customers use their rugged device as their sole smartphone, with the remainder split quite evenly between those with another device for work, and those with another device for leisure. These are important products for end consumers and ensuring that they deliver high quality, innovative, uncompromised experiences is all the more critical in this context.

11. Case study: Cat phones – positioned for growth

Understanding the market dynamics, outlined above, is critical to the success of rugged device vendors in this space. Cat phones, produced by Bullitt Group Ltd. under global license from Caterpillar Inc., are strongly positioned to help drive growth in the rugged device market, with a clear portfolio addressing varying price points and feature requirements with truly differentiated offerings, showcasing genuine, relevant feature innovation. Caterpillar (Cat) is also the 82nd most valuable brand in the world[7], with excellent brand awareness globally and an unparalleled association with toughness and ruggedness.

Cat phones are distributed and available in over 60 countries around the world, via a broad and diversifying range of channels, spanning carriers, retailers and resellers, and first and third party online outlets.

The multi-award-winning **Cat S60** smartphone, launched in 2016, combines flagship innovation with market-leading rugged credentials. Besides, beyond-MIL-Spec hardware, rigorous repeated drop testing onto concrete from 1.8 metres (6ft), an IP68 ingress protection rating, thick Corning® Gorilla® glass screen protection, and an aluminium edged reinforced industrial design, it is the world's most waterproof smartphone, able to survive while submerged in water up to 5 metres (16.4ft) deep for as long as an hour. But it also boasts being the world's first ever smartphone with an integrated thermal imaging camera, leveraging technology from market-leading thermal imaging provider, FLIR Systems. Thermal imaging is a unique feature with myriad use cases that has proved highly relevant and useful to a large numbers of Cat phones' target customers.

Thermal imaging use cases for rugged device target customers, include:

- Construction/home improvement: checking the effective installation of insulation, checking the temperature of materials.
- Electricians: looking for overloaded fuses or overheating appliances, or using imagery of faults to communicate the issue and resolution to customers.
- Plumbers: finding damp from leaking pipes behind drywalls, checking underfloor heating.
- Agriculture: checking crop growing conditions, checking the temperature of stored grain, finding livestock in the dark, checking animal limbs for abnormalities.
- Emergency response: seeing through smoke, finding or spotting missing or injured people, revealing vehicle occupancy at the scene of an accident, locating a person overboard in maritime contexts.
- Security: seeing in the dark.
- Vehicle repair: checking for signs of overheating or rubbing parts, or using imagery of faults to communicate the issue and resolution to customers.

[continued on next page]

- Domestic: home improvement, locating pets in the dark, spotting pests, checking barbeque temperatures and propane tank levels.
- Outdoor: seeing in the dark, checking fires or barbeques are properly out, checking campsites for animals, hunting, locating a person overboard in maritime contexts.

The Cat S60 remains the premium, flagship device in the Cat phones range, and is now

[7] Interbrand, Best Global Brands 2016 Rankings

joined by two updated mid-tier devices, the Cat S31 and Cat S41.

Common across the portfolio are Cat phones' core rugged specs and key features:

Core rugged specs

- Repeated 1.8 metre (6ft) drop testing onto concrete
- Beyond MIL-STD-810G compliance
- IP68 ingress protection rating
- Corning® Gorilla® glass screen protection

Key features

- Large capacity batteries
- Bright displays, optimised for outdoor use
- Support for wet finger and gloved finger input
- Loud audio for noisy environments
- Curated app recommendations for rugged device users

As the baseline product in the smartphone range, the Cat S31 combines these leading, hard-wearing rugged specs into an uncompromised package for budget conscious consumers, and offers all of these crucial features, including a large 4000mAh battery and bright HD capacitive display, in a tough and robust product.

The Cat S41 adds more powerful smartphone specs - including a faster processor, more memory, and a higher resolution display - and zeroes in on users' frustration with battery performance, offering a huge, 5000mAh battery. It also offers a Battery Share function, allowing users to charge other devices or accessories, and allowing them to set a reserve battery level, ensuring their Cat S41 will keep running – even when it's acting as a powerbank for friends or colleagues. It's a relevant, research-backed feature that will undoubtedly prove highly popular with future Cat phone owners.[8]

Each of these devices launches on the latest available version of Android, currently Nougat, and includes an app curation and discovery portal called App Toolbox. This portal showcases a select, handpicked range of apps together with other content that is presented to help users make the most of their devices with software that they might otherwise struggle to find. There are App Toolbox categories for Construction, Farming, and Outdoor activities, among others, which allow users to discover, install, and benefit from, the rich but often hidden depths of content available to the Android ecosystem.

With a strong portfolio and relevant features, focused on the things that matter most to end customers, Cat phones is well positioned to capitalise on the appetite and growing demand for robust, fit for purpose, consumer rugged products.

12. Key takeaways

- The rugged market is growing, and forecast to see a CAGR of 18.9% from 2016 to 2021.
- 22.2 million rugged smartphones are forecast to ship in 2017.
- 1 in 3 consumers in Western Europe have broken a mobile phone in the last three years.
- There's a sizeable niche market of consumers that want mobile devices that are tougher, and fit for their purposes.
- The availability of cheaper, uncompromised consumer rugged smartphones is attracting investment from businesses that need robust devices with lower hardware failure rates.
- Simultaneously, the BYOD trend is benefitting rugged smartphone vendors, as employees in industry sectors where mobile phones frequently get damaged look to invest in fit-for-purpose products.
- Feature relevance and investment in useful innovation, tailored to the needs and pain points of target customers, is

[8] See catphones.com for more information

important for vendors to be successful and differentiate.

- Rugged smartphone customers truly value the rugged credentials of the products they purchase, over and above sleek designs.
- Large batteries, bright versatile touch screen displays, and loud audio for noisy environments are also among
- As a leading vendor in the space, Cat phones is well placed for growth, with a great brand, global distribution, and a portfolio of products that provides choice, differentiation, and genuinely relevant innovation for target

About Bullitt Group

Founded in 2009 by Colin Batt, Dave Floyd and Richard Wharton, Bullitt Group enables the world's leading brands to enter into rapid growth consumer technology categories creating extension to their portfolios and new, long term income streams in the process.

Bullitt works with leading global brands to develop, manufacture, market and sell consumer electronics products to meet unaddressed customer needs in specific categories. Currently the Bullitt Group holds the global licenses for Caterpillar Inc., Kodak, and Land Rover, with a growing portfolio of products covering the rugged, lifestyle and outdoor categories.

Bullitt's strategy is to identify underserved customer segments in specific categories, to approach global brands, who do not have product to serve customers in these categories, but for whom their brand would have significant appeal, then to work with the brand to develop and go to market with high quality products to meet these customers' needs.

Bullitt Group has shipped millions of mobile phones, audio products, connected devices and related peripherals to more than 60 countries worldwide, with revenues significantly in excess of US$100m pa. Headquartered in Reading (UK), today Bullitt Group has around 140 employees with offices in New York (USA), Shenzhen (China) and Taipei (Taiwan).

Peter Stephens, CEO joined Bullitt from Virgin in early 2016. Since then he has recruited a new executive team, reorganized the company to align business activities around a core portfolio of brands and product, and built a new sales organisation to support Bullitt's growth ambitions globally, whilst overseeing the continued development of its product portfolio.

Bullitt Group has significant growth ambitions, which will be fuelled by diversifying the brand and product portfolio and growing Bullitt's global presence, particularly in Asia. This strategy is underpinned by a drive across the organisation to innovate, think digital first and to place a much greater focus on the end consumer.