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PREVIEW

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Google
in 2017:



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Google Pixel 2

£629 inc VAT from fave.co/2CvluPk ★★★★★☆

The Google Pixel 2 is an odd phone. It has no headphone jack, large bezels and an uninspiring design. It doesn't ignite excitement in the same way the hardware of the larger Pixel 2 XL does, with its curved, tall 18:9 display.

Samsung, LG and even Apple have phones with tiny bezels and bleeding edge design. The smaller 5in Pixel 2 has neither of these things.

But the little Pixel is still a winner for two reasons: its software and its camera. It's the first phone I've

used for a long time where the hardware melts away and you're just left with the best possible software experience a phone can give you right now.

That's what happens with the best PCs and with the iPad, but in a competitive phone market, manufacturers have to excite consumers with flashy hardware. This sometimes leaves the software with something to be desired, particularly in Android's fragmented world. Not so with the Pixel.

Design

Taste is subjective of course, but the Pixel 2 is not as pretty as the larger Pixel 2 XL. The latter has an edge to edge curved display with a higher resolution. The smaller Pixel 2 reviewed here has a 5in 1080p display with two big, black bezels at the top and bottom.

It's pretty ugly from the front, and not a phone I'd pick on aesthetic merit. When LG has done well with the sleek XL version, it's hard not to be disappointed by HTC's effort on this smaller one.

Thankfully, Google has put stereo front facing speakers in the bezels, vastly improving the audio output from 2016's first generation. It's easy to hold in one hand but your thumb may still struggle to reach the top of the screen.

Google made three colours of the smaller Pixel, with Just Black, Clearly White and Kinda Blue for the Miles Davis fans out there. My review device is in black which is quite a pedestrian design, but all three versions have black fronts (as do all Pixel 2 XL models).

The white and blue designs are only different on the back and sides, though the blue has a cool

REVIEW

turquoise power button that helps it stand out. The Google logo on the back is barely visible on the black model.

The rear metal and glass design of the first Pixel has been carried over but altered slightly. The glass section is now shallower, housing a camera with the smallest of bumps, a dual LED flash and light sensors hidden by the black designs, but visible on the blue and white. The fingerprint sensor is not the fastest I've ever used, but is exactly where it should be on the rear of a phone: in the middle.

I think the white version of the Pixel 2 is the best looking, but not as lovely as the black and white 2 XL that has a bright orange power button. Swoon.

The aluminium body is slightly more textured than the original Pixel and so feels more grippy and premium in the hand. HTC made both of these phones for Google, but they are surprisingly different from one another.

The Pixel 2 is not wedge shaped like its predecessor so cannot hide its camera bump, and the volume rocker and power button on the right edge are similar, except the power button is no longer textured.

The design is boxy but it hides its aerial lines well in the thin body. The design is oddly reminiscent of the Microsoft Lumia 950 and personally I don't think it's overly exciting despite its premium build. From the front it's a bit ugly and cheap-looking.

It's not going to stand out on a shelf next to the Galaxy S8 or iPhone X, and if it weren't for all the redeeming features of the software experience, I'd pass on the Pixel 2. In case you're choosing between

Samsung and Google, we've compared the Galaxy S8 and Pixel 2 in detail.

The phone feels lighter than I expected it to be, but at 143g is pretty normal. It measures 145.7x69.7x7.8mm, 0.7mm thinner than the first Pixel. It is far more utilitarian, but thankfully screams along with the Snapdragon 835 (4x 2.35GHz and 4x 1.9GHz) chipset and 4GB RAM. You have a choice between 64 and 128GB of non-expandable storage, but you'll pay £100 extra for the latter.

This is where the Pixel lifts its unexciting design above Android phones from OEMs like Samsung, LG and Sony. When Google can handle the hardware and give it stock Android, the performance is unparalleled. In 2017 only the OnePlus 5 is as fluid in overall software experience as the Pixel 2.

Despite making a huge joke about having one last year when the iPhone didn't, the Pixel 2 does not have



REVIEW

a 3.5mm headphone jack. It's a shame to see it go but it won't be long before all audio on smartphones is run through USB-C, the same port you charge the phone with. The phone ships with an adaptor (£9 to buy separately) but no headphones in the box.

Don't get me wrong, not having a headphone jack is still, in 2017, very annoying and user hostile. But it's the norm now.

The Pixel 2 is IP67 water resistant (splash not dunk), but it doesn't have wireless charging. Personally, I always prefer a speedy wired charge to a slow wireless one, but when even the iPhone has it now, Google is a tad behind.

Display

The screen is a 5in OLED with a resolution of 1920x1080 and 441ppi. Blacks are brilliantly dark and viewing angles are superb in all conditions including bright sunlight. It's a portal to one of the most responsive Android experiences around.

If you want the best of the best then you'll have to opt for the higher resolution Pixel 2 XL, but the difference is only noticeable when comparing side by side. Compared to a phone like the Galaxy S8, the smaller Pixel 2 has a slightly dull tint, but Samsung's panels are best in class.

Camera

And then, the camera. Oh my. The Pixel had an amazing camera and the Pixel 2 has improved it. Brilliantly, you get the same sensor and set up on the smaller 2 and the larger 2 XL so if you like smaller



Detail and lighting in dusk shots excel on the Pixel 2, but note the sunspot to the lower left of the image

phones then you don't lose out like you do with Apple (iPhone 8 and 8 Plus) and Huawei (P10 and P10 Plus).

There is a single 12.2Mp sensor with f/1.8 and optical image stabilisation. It can record UHD 4K video at 30fps, not quite as good as the iPhone 8's ridiculous

REVIEW



The Pixel 2 handles low light incredibly, showing excellent detail in bright and dark areas

UHD 4K at 60fps. The front-facing camera is 8Mp with f/2.4 and capable of recording HD 1080p video.

Eschewing the dual lens trend, Google has leant on its post-processing prowess to bring a superlative photography experience to the Pixel 2. Taking a photo actually takes several images that the software quickly processes into one combined end product. This method increases the high dynamic range (HDR) and leaves phenomenal results, notably so in low light.

HDR+, Google’s algorithmic wizardry in the camera app, is on by default. You can turn it off if you want, but you shouldn’t. This is surely the best all round point-and-shoot phone camera going for pure ease of

use and quality of photos. Low light shots show detail excellently, and the software pays attention to the composition of the whole scene to great effect.

Despite there only being one lens, the Pixel 2 has a Portrait Mode like the iPhone 7 Plus and 8 Plus. This is achieved by Google using a dual-pixel sensor in both cameras, meaning each pixel takes in the image and focus data rather than only being able to handle one. This means the processing can easier identify the intended subject of a portrait mode shot.

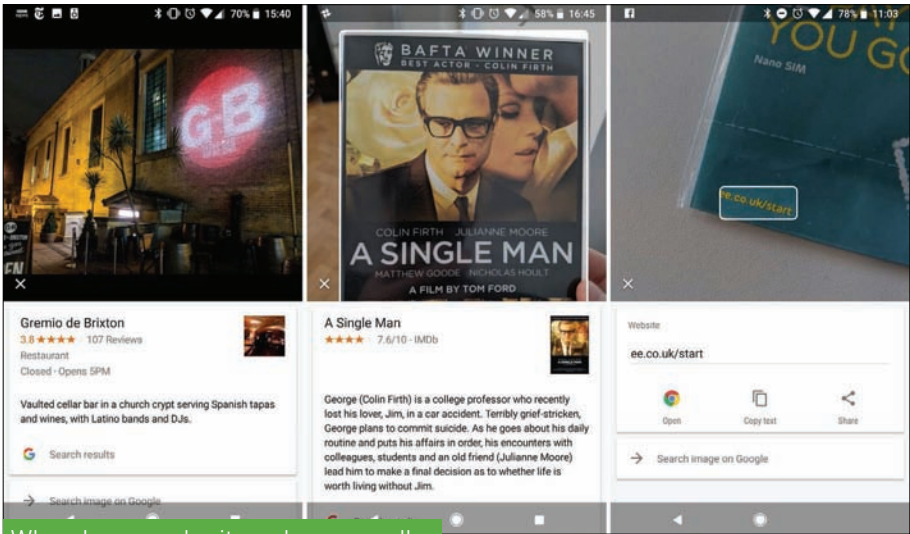
Results are slightly less natural than the dual camera results of an iPhone 8 Plus or Galaxy Note 8, but for a single lens to be able to do this is absolutely ridiculous. You will love it, as will selfie-addicts. More than any phone, the photos from the Pixel 2 will not need much tinkering before uploading to social media.

Unlike Apple's portrait forays, the Pixel one arrives at launch not in beta and fully formed. One thing you will have to wait for though is AR sticker integration for photo-fun. But with the mountain of photo data Google is sitting on, I expect the experience will be decent.

Finally, take a photo of something and chances are Google knows what it is. The Pixel 2 is the first phone to get Google Lens integration in Google Photos. Go to your camera roll and tap the Lens icon and you'll more often than not get a good result. It can identify buildings and landmarks, or extract URLs, email addresses and phone numbers to then immediately action.

It's very good but not something everyone is pining for. It could quietly be the future though, particularly

REVIEW



When Lens works, it works very well. But it can't identify everything yet

with possible AR integration to view the world live Google Glass style through the phone's display, rather than by reviewing taken images.

Motion photo capture is a lot like Apple's live photos where photos spring to life with a couple of seconds of video. But rather than pressing to view a snippet of film like on iPhone, you toggle motion on or off in Photos, and the software loops the video as it sees best. It's a neat touch, but can only be viewed between Pixel devices; at the time of writing the original Pixel can view but not take them. Pixel

Video recording is also top notch, combining OIS and EIS to bring good stability. It is an all-around excellent photography experience, from viewfinder to post processing to viewing.



AR stickers

Google pushed an update to the Pixel 2 in December 2017 that brings AR stickers into the camera app. It's a lot of fun, and it's free. It allows you to drop 3D moving images and characters into the frame of your camera lens. There are *Star Wars* and *Stranger Things* sticker packs, with more to come. There's also text, little food characters and other stuff besides. It's a lot of fun, and the intelligence of the AR placing is way better than you might be used to than on Pokémon Go. The above Porg agrees.

Assistant

Lens is all part of the Google Assistant. Assistant on the Pixel 2 activated either by the familiar long press

of the home button from any screen, or by Active Edge, a feature carried over by HTC from its U11 (though it can also be found on the LG-made Pixel 2 XL). The pressure sensitive sides of the phone have no physical give in them but can detect levels of pressure. Setting the squeeze to your preference lets you open Assistant from anywhere in the phone or even when it's locked. Unlike the U11 though, that's all it can do – it's either on or off and you can't assign it to do different things like open the camera (it can be used to silence calls though, it's only other optional use).

Assistant baked into Google Pixel hardware is still the best way to experience it, despite it being present on other Android devices. Connection to Google Home devices worked for me brilliantly, and it all simply felt right at home on the Pixel 2, whereas I have felt Assistant is tacked-on to other phones, especially when they offer it alongside Bixby (Samsung) or Alexa (HTC).

Daydream View

Google also sent me a Daydream View, its improved VR headset, to try out. It is very comfortable even over my glasses and it's easy to navigate the UI with the included controller. Apps are a tad scarce but the available games are entertaining enough, while YouTube VR will surely be a gateway to the VR living room of the future once everyone has a smartphone capable of it. But if you're after an HD VR experience, this isn't it. Having the Pixel 2 that close to your face shows up, well, pixels. Text and video becomes blurry and I'd rather just watch a TV.

Battery life

The Pixel 2 has an adequate 2,700mAh non-removable battery, which is about as much juice as Google could squeeze into such a slim device. It charges via the supplied USB-C fast charger, and I saw excellent charging speeds particularly from empty to about 60 percent in around half an hour.

Google claims you can get seven hours of use out of a 15-minute charge which I am dubious about. I'll update this review with more observations the more I use the device, but at the moment the phone is usually getting me through a whole day starting at 100 percent at 8am and ending up with about 15 percent by 10pm, which is great.

On another day though, I used the phone for just shy of nine hours before it hit 20 percent, recording under three hours of screen on time which isn't amazing. Hopefully, long-term use will prove less erratic, but if battery life is your concern you'll want the 3,250mAh Pixel 2 XL. Battery saver mode can be toggled on and off in the notification shade and if you go into the battery section in settings it'll even tell you which apps are caning your battery and, excellently, let you action it straight away rather than just close it.



Connectivity

The phone has Bluetooth 5.0, hopefully to overcome the original Pixel's less than stellar connectivity.

In my time so far with the Pixel 2 it has kept decent connections with wearables, speakers and headphones, so things look to have improved here.

There's also NFC for Android Pay that works as expected, while Wi-Fi connections are slick with dual band 802.11 a/b/g/n/ac. Hotspotting to 4G also worked without a hitch.

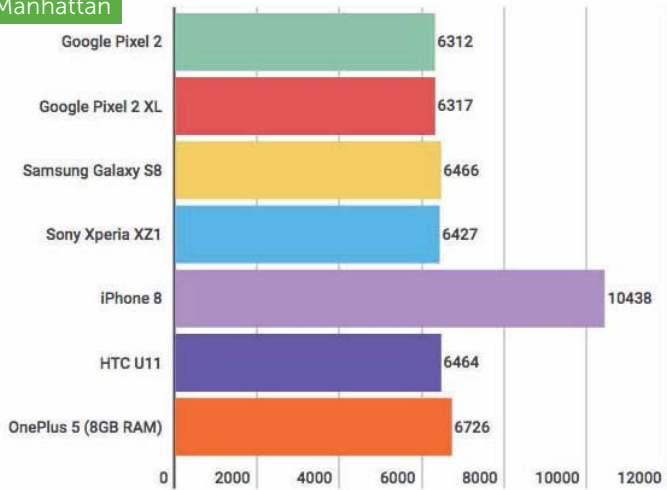
Performance

I ran speed tests for the Pixel 2 against the larger Pixel 2 XL, the iPhone 8 and four other Android flagships that have the same processor as the Pixel (the Snapdragon 835). The results below represent what I would have expected: no real-life difference between the multi-core scores for any of the phones with an 835. The Pixel 2 only feels faster and more fluid than every phone on the list (bar, perhaps the unusually fast OnePlus 5) because of the stock nature of Android with no skin to process. The Pixel 2 ran faster than the XL in terms of frame rate because of its lower resolution screen, while the iPhone pulls ahead in terms of raw possible speed thanks to that A11 chip. But realistically, all these phones are just as fast as each other.

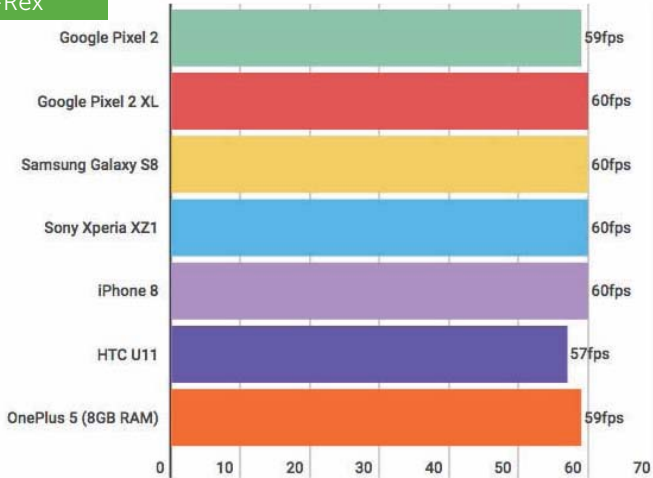
Audio

The Pixel 2's stereo speakers are pretty good for YouTube videos and the occasional dip into Instagram stories, but you won't want to play an album or watch

GFXBench
Manhattan



GFXBench
T-Rex



a film on them. I found even podcasts sounded a bit tinny and trebly and preferred to use headphones.

This involves the included adaptor, and music streamed from Spotify sounded good through AKG in-ear headphones. With no headphones in the box though, audio quality will depend how good your cans are. Call quality on the Pixel 2 is very good, with all 2G calls sounding crisp and clear (the earpiece also goes excruciatingly loud, which is better than quiet). VoLTE and Wi-Fi calls are available depending on your service and operator, and all worked in my testing.

Software

The lure of the Pixel 2 is not its pedestrian design but its superb software. As described it takes care of photos to an unbelievable level, such is Google prowess in post processing and machine learning. Google Photos is so far ahead of the competition it's not even fair anymore.

The Pixel launcher is slightly tweaked now, putting the Google search bar at the foot of the screen rather than a tab at the top. You can't change remove it, but you can edit the five icons that sit above it, and a swipe up gets you your full alphabetized list.

Android 8.0 Oreo out the box gives you a completely up to date Google software experience and I really can't fault the performance of the phone at all. From streaming music, watching video and gaming, to multitasking between data intensive apps, the phone didn't chug once where the iPhone 8 does in my experience. Google gets all the little things right too, like swiping on the fingerprint sensor to bring the

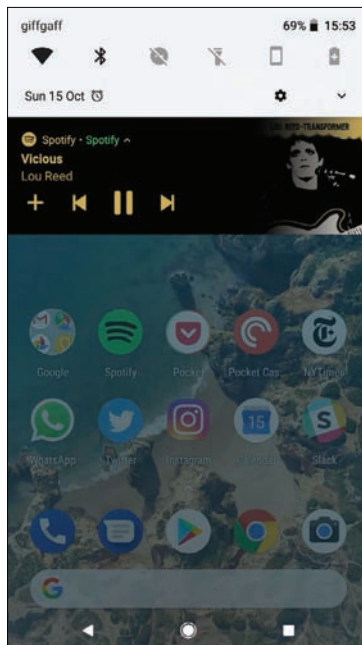
notification shade down. As well as the tidied-up menus in Oreo, the Pixel 2 has an improved always on display with new font, notification icons and a cool 'now playing' feature that can tell what music is playing around you from an offline library of about 10,000 tracks.

It's another example of Google using its obscene mine of data to bring another nice-to-have feature to its polished vision of Android. Where other manufacturers tack things on needlessly, Google refinements have an air of effortless about them.

And for the record, it got Fleetwood Mac, Badly Drawn Boy and Green Day first time, but not, to the irritation of my alternative-minded colleague, I Am Kloot. I'll let the phone off though.

Notification dots don't fully work yet on phones like the Sony Xperia XZ1 but work flawlessly here, though I still find long pressing apps to see shortcuts unintuitive. Apple does it better, where you keep your thumb held down to scroll up the menu. I instinctively do it on the Pixel, but that drags the icon away for repositioning, so I don't use it.

One thing that Google has quietly changed from the original Pixel is to limit its unlimited storage for



Music playing on Google Pixel 2 uses the colours of album artwork in the notification

REVIEW

photos. A purchase of the original got you unlimited Google Photo storage for life, whereas the Pixel 2 gets you unlimited for three years. Google hopes you'll pay for it after that, or buy the next Pixel. It's a small detail that likely won't bother you, but it's worth noting.

Overall, the Pixel 2's software is uniformly excellent, but if you like the slick futurism of Samsung's latest Android skin you might find this a little bland.

Verdict

The Pixel 2 is a boring phone until you turn it on. The uninspiring hardware melts away to present you with a bleeding edge vision of the Android future, with machine learning fully integrated. It's not quite there yet, but this is where we are heading.

The camera, one lens down on some competitors, is better than all of them in most situations thanks to the superior software on board. You only get that benefit when you buy Google hardware, and the company is finally realising the end to end product that Apple has been making for a decade. If you want a phone to fawn over and make your friends jealous with, you won't want the Pixel 2. But it's faster than the Galaxy S8 and takes better photos. It delivers the best overall camera and software experience on any Android smartphone to date. **Henry Burrell**

Specifications

- 5in (1920x1080, 441ppi) display
- Android 8.0 Oreo
- Qualcomm MSM8998 Snapdragon 835 processor
- Octa-core (4x 2.35GHz Kryo, 4x 1.9GHz Kryo) CPU

- Adreno 540 GPU
- 4GB RAM
- 64/128GB storage
- Fingerprint scanner
- 12.2Mp rear-facing camera (f/1.8, 27mm and 1/2.6in, 1.4µm, Dual Pixel PDAF), OIS, phase detection & laser autofocus, dual-LED flash
- 8Mp front-facing camera (f/2.4, 27mm, 1/3.2in, 1.4µm), 1080p
- 802.11ac Wi-Fi
- Bluetooth 5.0
- A-GPS, GLONASS, BDS, GALILEO
- NFC
- USB 3.1, Type-C 1.0
- Non-removable lithium-ion 2,700mAh battery
- 145.7x69.7x7.8mm
- 143g





Honor View 10

£449 inc VAT from fave.co/2CCLrCE ★★★★★☆

Hot on the heels of the mid-range 7X, Honor has announced the View 10, a flagship device that starts 2018 with the 2017's biggest smartphone trend, an 18:9 display.

The phone was expected to be called the Honor 9 Pro as per its usual naming conventions, but the company have chosen View 10 thanks to its similarities to the Huawei Mate 10 Pro.

It's the first time the View branding has been used outside of Asia.

The device has premium build, and while is not exactly the same dimensions as either Huawei's Mate 10 or Mate 10 Pro shares many of the traits of the two.

For a company trying to break into the UK mainstream at the same time as its parent company Huawei, this affordable high-end flagship makes a decent case for itself so long as you're looking to buy a handset outright – Honor phones are not always easily available from UK operators.

Design

The View 10 looks like a lot of other premium phones this year, sporting an 18:9 display. First seen on the LG G6 and then the Samsung Galaxy S8, the form factor keeps the View 10 slim and manageable in the hand while adding some height to the screen.

This is the same aspect ratio as the Huawei Mate 10 Pro, yet there's a front-placed fingerprint sensor and headphone jack like on the Mate 10. Confused? It means you get the better 18:9 display size with the familiar fingerprint sensor and headphone jack. This means the View 10 has an excellent mix of features from both versions of Huawei's recent flagship.

The front of the phone is visually similar to the OnePlus 5T, though the View 10 has a more uniform, straight edged feel to it and has a front facing fingerprint sensor in a long pill shape not often seen.

The back of the phone is less exciting, with iPhone-esque antenna lines at the top and bottom, with a solitary Honor logo and dual rear cameras. Squint, and the View 10 resembles an iPhone 7 Plus with a taller screen running Android.

REVIEW

Two cameras are good to see, two ugly camera bumps are not, and it is a shame when Huawei's flagships manage to bring design that keeps the lenses flush with the body.

With no glass back, there's no chance of wireless charging, though that is still a non-essential feature that would have increased the price.

The Honor View 10 is alarmingly thin at 6.97mm and recalls the Apple of a few years ago that became obsessed with this measurement, to the detriment of build quality and Bendgate. In our time with the phone, though it hasn't exhibited much sign of wear at all, even without a case.

If you're on a budget, this is as premium a device as you'll get for the price – the same £449 asking price as the OnePlus 5T while pretty much matching that phone's specs.

We like the matte back in comparison to smeary glass, and the View 10 has attractive shiny edges running around the display, sandwiching the matte rim that helps you hold it. It only adds to the premium feel of this decidedly mid-range price phone.

The View 10 is available in navy blue, but isn't as notably stunning as other flagships this year, or even compared to the older glass-backed Honor 9. It looks very similar to the 8 Pro that we reviewed last year.

Despite its upsides, the design isn't particularly inspiring, and reeks of a phone whose features you'll have to love way more than the hardware to shell out for it. Perhaps the black version we haven't used fares better, but we still aren't convinced many people actually want a blue phone.

Display

The display on the View 10 is a vibrant 5.99in LCD with a 2160x1080 resolution. It is pleasingly punchy for an LCD, but is not as vibrant as a Samsung or OnePlus OLED panel, even when you have the settings on Honor's 'vibrant' mode.

But the size of the screen and its high brightness capabilities means video streaming and gaming on the View 10 is more than acceptable, and easily good enough for long sessions.

Honor is leading with the AI features that Huawei pushed on the Mate 10 Pro and Honor had on its Asia-only Magic phone, and in theory they are impressive. There's an argument to be had that it's not really AI at all and rather a prominent assistant-style layer to the software, but we'll let them have it for now.



Hardware

The Kirin 970 processor allows for language translation in the preloaded Translator app, while the AI smarts also allow the camera to intelligently select the right parameters of a certain shot, without you having to go into a confusing pro mode.

It's worth noting that you still need a data connection to use the translation features, much like Google Translate, so if you are planning on going abroad then you will have to download the relevant language pack.

Really what the NPU (neural processing unit, what Huawei calls its Kirin 970 chip) does is learn your behaviours to better enhance the day to day use of your phone. From sleeping background processes of unused apps to prioritizing certain functions at certain times, supposedly the View 10 learns you better than other phones.

But on use there is no proof of that in the short term, and we doubt there will be in the long term either. Many Android phones are intelligent enough to prioritize processes, and face recognition functions and vague claims like 'AI enhanced translation' are fairly vacuous.

Cameras

The dual 20- and 16Mp cameras are more impressive, and offer portrait mode for a depth effect on photos, as well as a monochrome lens for excellent black and white photography. The 20Mp sensor is monochrome, and gives a natural effect compared to phones whose software simulate black and white.



Detail in landscape shots such as the one above shows excellent detail and light balance

An AI feature that proved genuinely good is the built-in object recognition in the camera app. Point the camera at something, and an icon appears. Tap it, and the phone runs a search of what it thinks is in frame. When it works, it works really well, identifying landmarks and even specific products like a Rough Trade mug. But frustratingly, the feature often disappears from the camera app with no way to recall it. And of course, it doesn't always work. Honor also claims AI helps reduce blur in photos of moving objects.

It also says AI helps you get better selfies with the 13Mp front camera. In reality, this is not AI at all but post-processing software. Honor's insistence of having the awful beauty mode on by default is also annoying, but at least you can turn it off. Selfies still look fairly washed out to us, even though there are some fun AR masks in the native camera app.

Performance

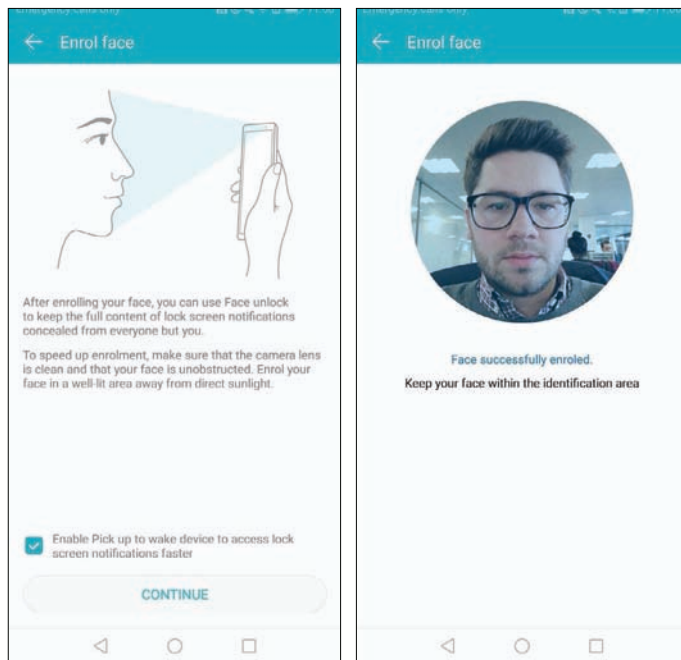
In its razor thin body, Honor has packed a whopping 3,750mAh battery with fast-charge the company claims can get you to 50 percent from dead in half an hour. In our testing, it proved good on that promise.

It's also great to see the octa-core Kirin 970 processor carried over, as it is Huawei's latest chip and a powerful alternative to the Qualcomm Snapdragon 835 in most other high-end Android phones this year. The pure processing power and speed of this chip is a better sell for Honor than the half-baked, half-functional 'AI' capabilities.

Unlocking the device

The View 10 has what the company describes as 'fast and secure facial recognition', but its only functionality is to reveal lock screen notifications when you look at the screen. The phone still falls back on its fingerprint sensor for secure app activity like banking, and it's odd that the facial recognition is reserved for notifications only and not even unlocking the screen.

The phone is dual SIM active (the best kind) and has a headphone jack, mercifully, though no headphones in the box. If you didn't like the omission of the jack on



the Huawei Mate 10 Pro, here's a way to get the same basic specs, a headphone jack, and save over £200.

Software

Software could be what lets this phone down if you're not a fan of Honor (and Huawei's) EMUI skin. Granted, EMUI 8.0 is a lot better than previous iterations, but the changes it makes to stock Android don't always make a lot of sense. Intuitive actions from stock Android are overlaid with different actions and icons, while the notification shade is still a bit of a mess.

Huawei and Honor's changes to the basic look and function of Android is off-putting if you are used to

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Google's version. OnePlus' OxygenOS is a much better example of refined change to Android, where EMUI is the definition of change for change sake. Having said this, it doesn't restrict use, it's just a lot to adjust to if you're coming from another Android device.

Yet the View 10 ships on Android Oreo 8.0, still one of the first handsets worldwide to do so, and remains an excellently affordable way to get your hands on an OS running Google's latest software – even if it is masked by the massive changes EMUI brings.

You can add the preferable app drawer where EMUI by default displays all app on the home screens iOS style, or you could just add the Google or Nova launchers from the Play Store to change the vibe.

In fact, Honor includes probably the most granular customization settings of any widely available Android manufacturer, from screen resolution to accessibility features, secure enclaves and file encryption. If you are looking for a phone you can make your own, this is a great option. But if you want a clean, straight forward Android experience out of the box, you are best off looking at a OnePlus 5T or Pixel 2.

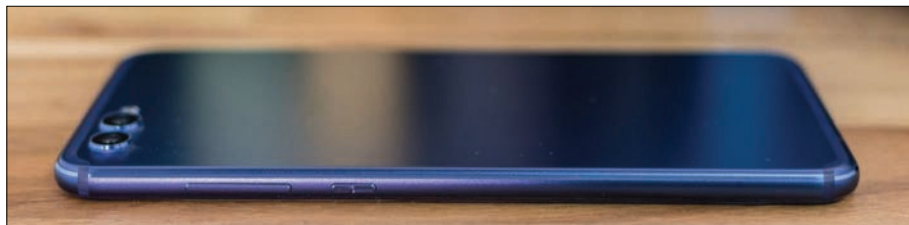
Verdict

The Honor View 10 is another flagship device from a company that promises a lot with high specs and low prices. The phone is much more similar in look and feel to the Honor 8 Pro than the recent Honor 9, and loses the attractive glass back in favour of AI software perks and Android Oreo. At £449 you could opt for the same-price OnePlus 5T which has more attractive software design, but it could turn out that the Honor

View 10 is an intelligent choice with Android Oreo out the box, promising if unrefined AI features and strong dual cameras. **Henry Burrell**

Specifications

- 5.99in (2160x1080, 403ppi) display
- Android 8.0 Oreo
- Hisilicon Kirin 970 processor
- Octa-core (4x 2.4GHz Cortex-A73, 4x 1.8GHz Cortex-A53) CPU
- Mali-G72 MP12 GPU
- 4/6GB RAM
- 64/128GB storage, up to 256GB via microSD
- Fingerprint scanner
- Dual rear-facing cameras:16Mp (f/1.8) and 20Mp, phase detection autofocus, LED flash
- 13Mp front-facing camera (f/2.0)
- 802.11ac Wi-Fi
- Bluetooth 4.2
- A-GPS, GLONASS, BDS
- NFC
- USB 2.0, Type-C 1.0
- Non-removable lithium-polymer 3,750mAh battery
- 157x75x7mm
- 172g





Doogee Mix

£135 inc VAT from fave.co/2C8PH4v ★★★★★☆

Doogee might not be a brand that instantly sparks recognition (or if it does it's about a TV show starring a very young doctor), but this Chinese manufacturer has much to offer those looking for an inexpensive Android phone.

The Mix is it's latest creation, and ticks many of the important boxes for potential buyers. But, what compromises do you have to make for a sub-£200 device? We take a look.

Price

As Doogee doesn't have a direct retail presence here in the UK, you'll need to import one from an online retailer like Gearbest. While this is perfectly fine, and something that UK buyers are increasingly doing, you will want to weigh up the pros and cons of doing so before you spend any money.

Design

The first impressions made by the Doogee Mix when you take it out of the box are positive. A metal chassis with glass front and back, lends the device a premium feel, and this is matched by a sturdy 193g weight which certainly feels substantial in the hand.

Most of the front panel is taken up by the 5.5in display, with only a lower bezel interrupting the glass. Here you'll find a fingerprint sensor that also doubles as a capacitive button for some functions. We found this to be fast and very reliable at unlocking the phone, which isn't something we always say.

Then there's the curiously positioned selfie camera, which occupies the bottom right corner of the bezel mimicking the Xiaomi Mi Mix. When launched, the camera presents a message that you should turn the unit upside down to take a picture. This does seem a bit absurd. On the right flank there's the power button and volume controls, while the opposite side is home to a dual-SIM card slot with the secondary place also supporting microSD cards up to 128GB. The bottom of the unit houses twin speakers and a Micro-USB charging port. We'd like to have seen USB-C here, as that is now the norm, but we realize that a

REVIEW



few corners have to be cut when you're working in this price range.

One inclusion that we're happy about though is 3.5mm headphone jack. Glad to see that Chinese manufacturers didn't get the memo about the stupid decision to remove it from modern devices. It's just a shame that Google did on one of our favourite Android phones – the Pixel 2. Turning the Doogee Mix over reveals dual cameras on the back, which is a nice touch for a device under £200.

Closer inspection of the handset does show up a few clues that construction standards might not be as high as you'd hope. The physical buttons on the side are a little loose, and the dual-SIM tray doesn't

sit flush when you put the card in. But neither are deal-breakers.

Display

Doogee has included a 5.5in AMOLED display on the Mix, which looks bright and spacious. The thin edge bezels might not be the curved variety that make the Samsung Galaxy S8 so attractive, but they do give the Mix something approaching an edge-to-edge display.

The blot on this landscape is that the panel itself is only capable of a 1280x720 HD resolution. In general use this isn't a big deal, and to be fair we found the display to be very pleasant, but if you want to use the phone for VR or demand Full-HD on your devices, then the Mix is going to come up a bit short.

We think that would be a shame though, as the colour range, bright display, and clear text representation is perfectly acceptable on a device of this type. The lower amount of pixels to push should also grant a boost to battery life and performance over higher specified rivals at this price point.

Performance

Under the hood you'll find a Helio P25 octa-core CPU, with 4x Cortex-A53 2.5GHz and 4x Cortex-A53 16GHz, all of whom are complemented by 6GB of RAM, and 64GB of storage.

This makes the Mix a pretty nippy device, with only the occasional pause when launching apps. Of course, it's still a budget phone, so you won't be able to do anything that requires heavy lifting – graphically demanding 3D gaming for instance – without a

noticeable drop in performance. We ran the usual benchmark tests to see how the Mix fared, and results were predictably found to be in the low to mid-range bracket. Geekbench 4 scored it at 849 (Single-core) and 4059 (multi-core), GFXBench's T-Rex was 1,911 frames, Manhattan returned 1,195, and Manhattan 3.1 chalked up 1,015. For surfing, emails, messaging, video playback and things along those lines it's fine. Just don't expect a powerhouse.

From a full charge in the morning, and with a mixture of Wi-Fi surfing, listening to music, WhatsApp messaging, and a few YouTube videos, we were happy to see around 30 percent of battery life still remaining by late evening. This kind of stamina proved consistent, so if you want an all-day phone then the Mix should do the job.

Camera

The dual cameras are 16- and 8Mp units, which can give a x2 zoom. Results varied quite a bit, with occasionally a nice photo appearing, but for the most part shots were acceptable rather than impressive.

There are a few fun settings, such as one that adds make-up, another that blurs backgrounds in a Bokeh fashion, and even a Pro mode that offers a wide range of control over exposure, ISO speed, and colour temperature. But, you have to work hard to get a great shot. Again, it's fine for social media snaps, but you'll want a better unit for important photos you intend to keep. Video capture is decent, but you'll want to hold the camera very still to avoid shaky footage. If you do you'll be rewarded with up to 1080p at 30fps.



Software

Doogee has included Android 7.0 Nougat as the default OS for the Mix. There is the obligatory skin running on top – Doogee OS V2.0 – but it’s lightweight and for the most part feels like pure Android. The only real clues are a newsfeed app that appears when you swipe right on the Home screen, and a cat in a teacup that dangles from the top of the display. The latter is only on the Home screen and is a quick link to the Doogee themes store. We thought it would be annoying, but actually found it quite fun as it doesn’t interfere with operating the phone.

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You'll also find various settings available that expand the personalization of button placements, quick links, that sort of thing, but all can be turned off. It's a nice, clean version of Android.

Verdict

There's plenty to like about the Doogee Mix. The display, while only 720p, is bright, colourful and detailed, plus the slim bezels make it seem bigger than the actual 5.5in size. An unfettered Android experience is welcome, and the battery life means you'll make it through the day without a problem.



Cameras are a bit hit and miss, but you get good results if there's plenty of light. Although, those wanting a gaming device will find the hardware can't quite cope with anything too demanding.

For around £200 you're getting an attractive, highly usable device, that stands out from the crowd. Not bad at all. **Martyn Casserly**

Specifications

- 5.5in (1280x720, 294ppi) Super AMOLED display
 - Android 7.0 Nougat
 - Octa-core MediaTek Helio P25 (4x 2.5GHz ARM Cortex-A53 and 4x 1.6GHz ARM Cortex-A53) CPU
 - Mali-T880MP2 GPU
 - 6GB RAM
- 64GB storage up to 128GB microSD
- Fingerprint scanner
 - Dual 16- and 8Mp rear-facing cameras 1080p video capture at 30fps
 - 5Mp f/2.2 front-facing camera
 - Dual nano SIM
 - LTE Dual-band
 - Wi-Fi a/b/g/n
 - Bluetooth 4.1
 - FM Radio
 - Micro-USB
 - 3.5mm jack
 - 3,380mAh battery
 - 144x76.2x7.95mm
 - 193g



Best new Android smartphones in 2017

MARIE BLACK reveals the handsets we're most excited about

It's If you're in the market for a new phone your choices available right now are pretty good, but it's always the way that as soon as you take the plunge and upgrade something better comes along and you regret your decision. In this article we outline the phones that will be released in 2018 to help you decide whether or not to wait.

Google Pixel 3

Three new Google Pixel phones are expected to land on 4 October 2018, with one of them potentially poised as a rival to the iPhone X.

Release date

The Pixel phones are unlikely to be unveiled before early October 2018, with an on-sale date later in October probable. For the past two years Google has unveiled the new phones on 4 October, so 4 October 2018 is as good a guess as any.

They will come with the latest version of Android – Android 9.0 P – but as we saw in 2017 they may not be the first devices to ship with that operating system. It will be a pure version of the software, running exactly as Google intends, with regular security updates and no bloatware.

Specifications

Early rumours suggest there will be three Pixel phones announced, but bear in mind that this was also the case in 2017 and we saw only two new Pixel phones announced. Alleged code names include Crosshatch, Albacore and Blueline, according to Droid Life, although there is talk that Google will simply reference them internally as A, B and C to hide their details from the outside world.

If it does happen, we could see a cheaper model with pricing more in line with the old Nexus phones than Pixel, which is more expensive than ever with the Pixel 2 XL retailing at £799 (although currently on offer at just £699). Alternatively, and as most rumours seem

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to suggest, the third model will be a super-high-spec version that is a closer competitor to the iPhone X.

Google knows its users don't want cut-down specifications just because a phone has a smaller screen, so we fully expect to see the Snapdragon 845 processor running the show on all Pixel 3 models. This is a 7nm chip that is faster and 30 percent more efficient than any before it, thanks to an octa-core Kryo 385 CPU with four 2.8GHz high-power cores and four 1.8GHz low power cores.

Qualcomm's new super-fast X20 LTE modem is built-in, offering CAT 18 speeds of more than 1Gb/s, as well as an enhanced Spectra 280 image signal processor. Qualcomm has bumped up video recording potential to Ultra-HD, and added in various AI improvements.



Google Pixel 2

2018 might also be the year that Google bumps up the RAM to 6GB, while storage is likely to remain at 64- and 128GB.

We'd like to see Google retain the waterproofing (perhaps upgraded from IP67 to IP68) and aluminium chassis, and it's probable that the 18:9 POLED display will also remain, but this time around the new Pixel might also feature an under-glass fingerprint sensor. We'd like to see the 18:9 panel in the cheaper model, too, and for Google to add wireless charging.

The camera is one of the most important specs for Google, and that found in last year's Pixel phones is among the best you'll find on a smartphone. We'd expect to see some improvements here, though potentially in the software rather than the hardware.

In 2017 both models came in Just Black, while the Pixel 2 XL was also available in Black and White, and the Pixel 2 in Clearly White and Kinda Blue. We don't expect much deviation here.

It's likely HTC will again be the brains behind the Pixel 3, now that Google has bought out its mobile business, so Active Edge and front-facing stereo speakers would not come as a shock.

Huawei P11

The Huawei P10 is a strong contender in a sea of 2017 flagships, but we're already focused on the 2018 Huawei flagship, unofficially dubbed the Huawei P11. While it's still a long way away from release, below you'll find some of the most notable rumours about the phone so far, along with our speculation on a possible UK price and release date.

Release date

Huawei's Vice President of Handsets Product Line Bruce Lee has confirmed that the company will "probably launch devices at Mobile World Congress" in future as it wants to get the devices on-sale by the Easter period in Western Europe.

MWC 2018 is due to begin on Monday 26 February 2018 and judging by 2017's P10 announcement, we imagine the Huawei P11 will be revealed the day before the show begins, on Sunday 25 February 2018. That would put it directly up against the Galaxy S9, which could also launch the same day.

Price

We're still some way away from finding out the official price of the upcoming Huawei P11, but we can estimate a rough price range based on previous releases.

Judging by the £449 price tag of the Huawei P9 and the slightly more expensive £569 price tag of the Huawei P10, we imagine that the Huawei P11 will cost somewhere in the range of £550 and £600. While Huawei's flagship prices were once competitive when compared to Samsung and Apple, it's slowly changing.

Specifications

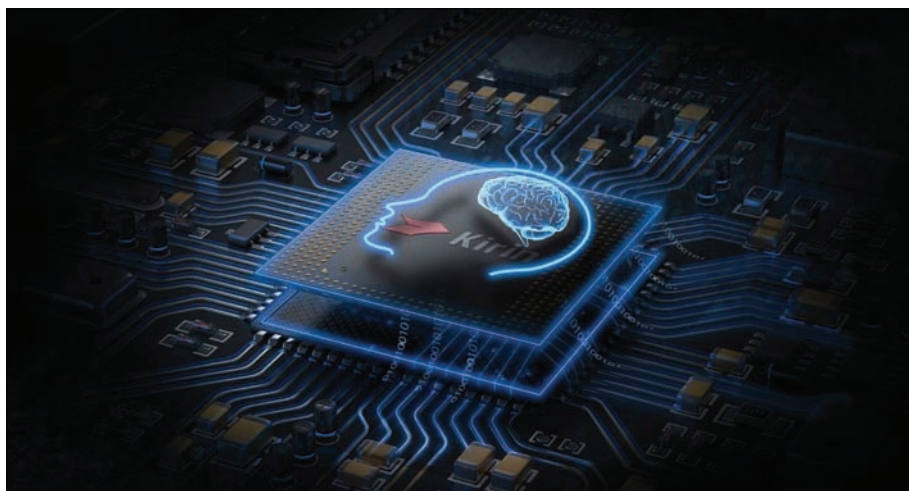
There is very little online about the design of the Huawei P11, but we can take a look at sister company Honor's 2017 flagship, the Honor 9, for inspiration. The 2016 Honor 8 had a very similar design and feature set to 2017's Huawei P10, including the dual-camera setup on the rear.

With that being said, the Honor 9 is the first Honor phone to 'do an Apple' and remove the 3.5mm headphone jack from the smartphone, suggesting that it could also be removed from next year's Huawei P11. It's a move that Apple has faced much criticism for, and is something that many Android manufacturers have avoided thus far.

In a concept video published in August 2017 (fave.co/2CnJlsl), the Huawei P11 is shown to have a titanium body, a full-screen display and an under-glass fingerprint scanner:

However, just like Apple's iPhone X the upcoming Huawei P11 is thought to maximize screen space on its 6.01in display by replicating Apple's notch.

We expect it will feature the 10nm Kirin 970, which is the chip that will feature in the Mate 10 and is said to deliver 25 times better CPU performance and 50 times greater energy efficiency.



Huawei leaked the Kirin 970 at IFA 2017 ahead of CEO Richard Yu's keynote speech where he announced the chip will be inside the Mate 10. That phone will be announced on 16 October.

We're assuming that the P11 will get it, too. The Kirin 970 is an octa-core chip (4x 2.4GHz Cortex-A73 and 4x 1.8GHz Cortex-A53 cores) with a 12-core GPU all built on a 10nm process like the Snapdragon 835 co-made with Samsung.

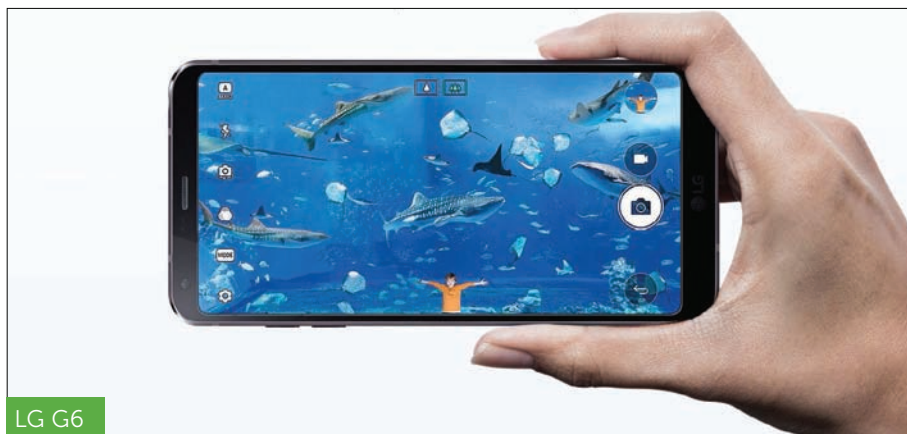
It's Huawei's first mobile AI computing platform featuring a dedicated Neural Processing Unit (NPU) and will be open to developers. The firm says it will bring 'AI experiences to life and changing the way we interact with our devices'.

LG G7

Samsung held all the strings last year when LG was forced to make the tough decision of launching its new flagship with an older processor or waiting a few months until after the Snapdragon 835-toting Galaxy S8 arrived. It chose the former option, which has almost certainly harmed its sales against the faster S8.

So it's no surprise to learn that LG is in a rush to update its flagship, and that it may unveil the successor even earlier than usual – potentially in January 2018. Business Korea suggests the smartphone will be unveiled at CES 2018.

With rumours of a Snapdragon 845 on board, Samsung is then the one forced to update its flagship quickly or risk lost sales in the meantime. Of course, that's if rumours that Samsung once again holds exclusive rights on the first batch of chips are



LG G6

untrue – the company claims that a Galaxy S9 launch at CES is unlikely.

Release date

The new LG G-series flagship typically arrives a day ahead of MWC, which in 2018 would put its probable launch date as Sunday 25 February.

However, The Investor claims that the LG G7 may arrive much earlier than expected, with LG announcing the new flagship in January 2018. That would place the announcement at CES 2018 in Las Vegas.

Business Korea also cites CES 2018 as the launch date for the new LG smartphone.

LG could take this strategy to get the flagship phone on the market quicker than rivals (largely Samsung and its Galaxy S9). It is also understandable that it might want to update the LG G6 earlier than expected due to its inclusion of the older Snapdragon 821 processor.

Price

We're speculating on the LG G7 price for now, since there are no credible rumours. Phones have increased in price recently – partly due to Brexit and the value of the pound – so it's expected that a flagship device costs in excess of £600. The LG G6 cost £649 and we expect the LG G7 price to be about the same... and then fall quickly in the months afterwards.

Specifications

It seems the phase of modular phones is pretty much over and even if it's not, we don't expect LG to go back to it for the G7. We're expecting another combination of metal and glass.

We wouldn't be surprised if the fingerprint sensor is moved from the rear of the phone to underneath the display. This is a feature we're about to start seeing a lot more of, even in 2017 so it may well be normal by the time we reach 2018.

As well as the fingerprint scanner there is expected to be an iris scanner, and a patent has been unearthed for just such a feature that will allow you to lock the phone and protect sensitive data. Although iris scanners usually work with infra-red, LG has developed a camera that can switch from IR to a regular one.

The LG G7 is almost certainly going to come with Qualcomm's new 7nm Snapdragon 845 chip.

Key new features offered by the Snapdragon 845 include a secure processing unit (SPU) that Qualcomm says offers "vault-like security" with the microprocessor, memory, crypto engine and random

number generator all sitting on its own power island. Performance and battery life will also improve, thanks to an octa-core Kryo 385 CPU with four 2.8GHz high-power cores and four 1.8GHz low power cores; the 845 is 30 percent more efficient than the 835 for gaming, video and AR/VR, says Samsung.

Qualcomm's new super-fast X20 LTE modem is built-in, offering CAT 18 speeds of more than 1Gb/s, as well as an enhanced Spectra 280 image signal processor. Qualcomm has bumped up video recording potential to Ultra-HD, and added in various AI improvements. LG fitted the G6 with the older Snapdragon 821 (rather than wait for the 835) so being the first with the 845 would be a big win.

We're expecting another dual-camera setup and decent core specs. The main question is what LG will



PREVIEW

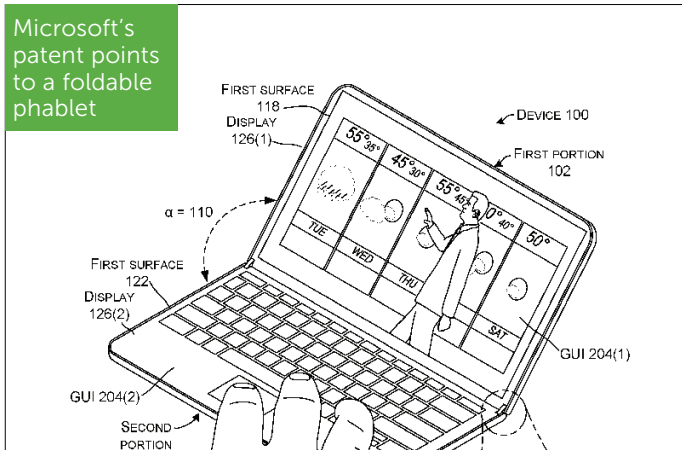
do with the display after introducing an 18:9 aspect ratio with the G6. There are rumours that the firm will switch to OLED for the G7.

Keeping an eye on LG Display is the best bet as the display using in the next flagship phone is typically announced in advance. This branch of the company recently showed of a 77in flexible and transparent OLED display (on page 49) so we're wondering if some of that technology might find its way into the LG G7.

Microsoft Surface Phone

Microsoft's Surface Phone has been the stuff of rumours for more than two years, and only a couple of months ago we believed all hopes were dashed with news that Microsoft was killing Windows Phone.

But the company has filed fresh patents for a foldable mobile device, reigniting rumours on the possibility of a Surface Phone. It's still no more than a maybe, making estimating a release date impossible.



But if the Surface Phone does eventually see the light of day, we could see a foldable phablet to rival Samsung's Galaxy Note X.

Nokia 9

The Nokia 9 is thought to be an upgraded version of the Nokia 8 with a larger 5.7in 18:9 display and an extra 2GB of RAM, with some key specs now confirmed by an FCC listing. Recent images (see page 52) show it in polished orange – and it's gorgeous, looking just like the Galaxy S8.

Release date

Nothing has been officially confirmed with regard to the Nokia 9 launch date, although My Drivers believes it will be announced in January 2018 along side the Nokia 6 (2018). That would put its release date close to the Samsung Galaxy S9 and LG G7, and as it will likely compete with those phones in terms of specs and design this does seem very plausible.

The fact it's also recently appeared on the FCC database suggests a launch date is imminent.

Price

The new Nokia 9 is thought to be priced at around £634 with 128GB of storage, and or £753 with 256GB.

Specifications

Many of the specifications for the now on sale Nokia 8 and rumoured Nokia 9 are similar, but the Nokia 9 is thought to be larger and to feature a higher screen-to-body ratio. While the 5.3in Nokia 8 has

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a 16:9 IPS panel, the 5.5in Nokia 9 could see a 18:9 virtually full-screen display, putting it in line with the Galaxy S8 and LG G6.

The FCC listing confirms that this 5.5in display is an OLED panel made by LG. It is expected to be a Quad-HD display with Gorilla Glass 5, though recently leaked images (via Slashleaks) suggest the Nokia 9 will also have glass at the rear.

The FCC also confirms a Snapdragon 835 processor with Adreno 540 GPU, 128GB of storage, Android 8.0 Oreo and a 3,250mAh battery, with dual-rear cameras (12- and 13Mp) and a 5Mp selfie camera.

GSMarena has pointed out that this 5Mp selfie camera – listed as a Chicony CKACE16 module – is in



Rumoured image of the Nokia 9

fact a dual-camera. It says the camera has autofocus and f/2.0 and f/2.4 apertures. Suddenly the 5Mp selfie camera sounds a lot more exciting.

The camera is now known to be a key selling point for the upcoming smartphone, with HMD Global confirming that Nokia's collaboration with Zeiss optics is back on. Zeiss is reportedly "rekindling its commitment to set new imaging standards for Nokia customers".

GSMArena has found references to new photography features not found in a current Nokia Android phone in updated code for the Nokia 5. It suggests that the Nokia 9 will indeed have a dual-lens camera, referring specifically to a wide-angle photography option and 2x telephoto zoom.

The Nokia 9 may additionally feature an iris scanner and fingerprint scanner, and is said to have an extra 2GB of RAM over the Nokia 8. It will likely feature IP54 waterproofing.

Also new in the Nokia 8 is 360-degree Ozo audio recording, which we're sure will also make its way to the Nokia 9.

Samsung Galaxy S9

Set to be one of the biggest releases of the year, we've rounded up everything we know so far on page 62.

Samsung Galaxy S9 Mini

You may have read rumours about a Galaxy S8 Mini. However, as we approach the Galaxy S9 release date it's looking more likely that if such a phone exists it will be the Galaxy S9 Mini, not the Galaxy S8 Mini.

There's very little to go on right now, but one mobile leakster has suggested Samsung is working on a 5in screen phone with a full-screen Infinity Display.

It sounds a lot like a potential Galaxy S9 Mini, but it could equally be an update to the Galaxy A series. We'll have to wait and see.

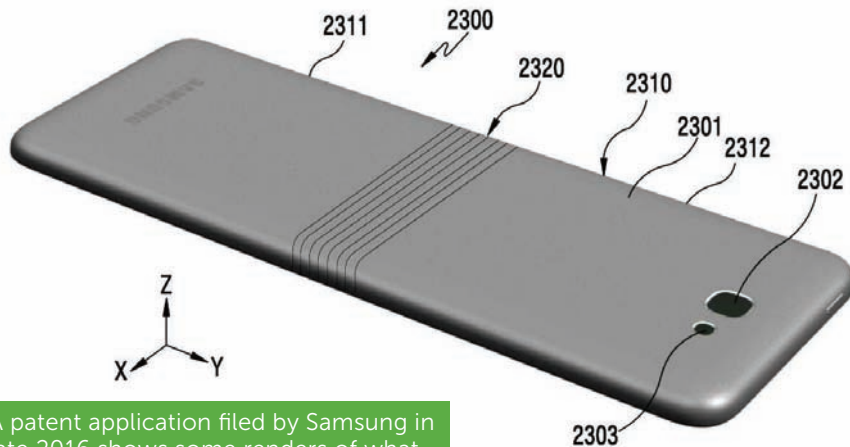
Samsung Galaxy Note X

Samsung is tipped to be creating a phone with a foldable screen, and having recently passed certification and now popped up on Samsung's support site it could be much closer to completion than we expected. Bloomberg says the company plans to announce a foldable phone under its Note brand in 2018. Could this be the Galaxy Note X, a fierce competitor to the newly announced iPhone X?

Release date

Bloomberg reports that a foldable smartphone will debut under the Note brand in 2018. Koh Dong-jin, president of mobile business at Samsung Electronics, said: "As the head of the business, I can say our current goal is next year. When we can overcome some problems for sure, we will launch the product."

A device with the model name SM-G888N0 (previously rumoured to be the Galaxy X) has recently passed through Bluetooth SIG, the certification body that regulates Bluetooth device standards. The same model has also been certified for Wi-Fi by the Wi-Fi Alliance, and has passed through the National Radio Research Agency, which is Korea's version of the US FCC.



A patent application filed by Samsung in late 2016 shows some renders of what the eventual Galaxy X may look like

However, it now seems the SM-G888N0 is in fact a rugged phone rather than a futuristic device with a flexible display. We can hope for a glimpse of it as CES 2018 but this may be a pipe dream.

Yet another report claims the phone might go into small-scale production in Q4 2017, ahead of an "H2 2018 'clam-type' mass production blastoff".

However, Samsung Display Engineer Kim Tae-wong claims the technology is not expected to mature until 2019. A year ago Sammobile reported that Project Valley would not be available globally at launch, but that the UK and Ireland, Germany, Italy, South Korea, Nordic countries, France and Poland were on the list. It appears the Note X will be more difficult to get hold of than we expected, though.

For months, we've been hearing frequent rumours about the Samsung Galaxy X, a smartphone that will

feature a folding display. The idea is that you'll be able to use it as a smartphone, and then fold it out to full tablet size, creating a whole new mobile segment that mirrors the tablet-laptop 2-in-1 hybrids we've already seen from the computing industry.

But the bad news is that Samsung's quirky folding phone might be tough to bag, with Forbes stating that "the expectation for the Galaxy X is as a limited-run device in a single territory – more than likely the home territory of South Korea". Adding that it will be one of the rarest phones in 2018.

Sony Xperia XZ1 Premium

'Bezel-less' smartphones are a trend kickstarted by Xiaomi's Mi Mix in late-2016. We've since seen industry heavyweights such as Samsung and LG apply the same full-screen thinking into their latest flagships, but Sony has yet to take the plunge with an 18:9 display. That could all be about to change as the company gears up to launch new smartphones at MWC 2018.

It's worth mentioning the fact that there are loads of Sony phone rumours on the web right now, and what's confusing everyone is they're all discussing different upcoming Sony phones with wildly different model numbers.

If Sony follows previous behaviour, in 2018 we expect to see the following Xperia model numbers:

- H81XX: Sony Xperia XZ1 Premium (February)
- H82XX: Sony Xperia XZ1S (February)
- H83XX: Sony Xperia XZ2 (September)
- H84XX: Sony Xperia XZ2 Compact (September)



We would also expect to see the XZ1 range continued at MWC 2018 (February), and the XZ2 line-up introduced at IFA 2018 (September). There will also be new XA devices with the XA1 Ultra supposedly coming with dual front-facing cameras and a rear-mounted fingerprint scanner.

Release date

Our best guess is that Sony will unveil the Xperia XZ1 Premium at MWC 2018, which takes place at the end of February. The smartphone press conferences are usually held the Sunday before the show begins, which would place the Sony Xperia XZ1 Premium launch date on 25 February 2018.

Specifications

The design will likely be standard Sony fare, which has a very distinct boxy shape, but with narrower bezels. The H81XX, which we expect to be the Sony Xperia XZ1 Premium, has been revealed through its user-agent profile. This reveals that it will have a 4K (3840x2160) screen and Android Oreo. Interestingly that is not an 18:9 panel, but a 16:9 display.

Sony 18:9

Specifications that have also leaked for a handset with the model number H8541 reveal an upcoming Sony flagship that features a 149x74x7.5mm body and an 18:9 panel. Given the expected model numbers at the top of this page and how close is its spec to the existing XZ Premium this may not be the XZ1 Premium, but if genuine it's certainly a phablet model within that flagship family. Perhaps one to more closely take on the iPhone X.

Whatever this phone is it's said to have a 5.7in 4K HDR Triluminus display with Gorilla Glass 5. Early leaked images suggest it will be an 18:9 panel, with super-slim bezels.

Core specifications include the Snapdragon 835, 4GB of RAM, 64GB of UFS storage and a 3,420mAh battery with Quick Charge 3.0.

It's odd that Sony would plump for the Snapdragon 835 over the recently announced 845, but it may be that Samsung once again holds the exclusive on this chip for its upcoming Galaxy S9. Waiting for this chip would mean delaying the release date, which Sony was forced to do last year when it announced its new

flagship at MWC but said it would not go on sale for several months. Connectivity-wise the new Sony phone will come with Bluetooth 5.0, GPS, GLONASS, NFC and USB-C. Running Android 8.0 Oreo it will also be waterproof (IP68).

Sony Xperia XZ1S

Yet another Sony phone with the model number H8216 has had its specs posted to Reddit, and they include the latest Snapdragon 845. As such, many spectators suggest this is the Sony Xperia XZ2, but we're not convinced. We think it could be the XZ1S.

The model number is off and the screen is a 16:9 Full-HD panel. That's no specification for a Sony Xperia XZ2, but it could fit an XZ1S.

Listed specifications for this upcoming Sony phone include Android 8.1 Oreo, a 5.48in Full-HD (1920x1080) Triluminos display, 4GB of RAM, 64GB of UFS storage, a 15Mp f/2.0 selfie camera, a 12Mp dual-camera at the rear, a 3,130mAh battery and IP68 waterproofing. This handset measures 148x73.4x7.4mm and weighs 156g.

Sony Xperia XZ1 Premium

Renders of two unknown Sony phones have been created by



Vortex – it says based on Sony’s own design drafts, so of course they’re not the real deal. At this stage we don’t know which is intended to be the Premium. The more boxy model fits better with Sony’s usual design, though the bizarrely spaced rear cameras (one may be a depth sensor) and strange combination of matt and gloss at the back is much less ‘Sony’.

The second model, meanwhile, features a rear-mounted fingerprint scanner. We’ve previously seen Sony embed these into the power button, but even better would be to embed it into the screen.

Interestingly the site suggests the Premium model will have the Snapdragon 845, 6GB of RAM and 128GB, contradicting the spec sheet leaked via Reddit.

Xiaomi Mi Mix 3

We’re still a long way from the potential Mi Mix 3 release date (likely October 2018), but it seems Xiaomi is already working on the new device if a leaked image of a rear panel is anything to go by.

This may be nothing more than a prototype, but if it sees the light of day we will see a Mi Mix with more rounded corners than ever, and a vertical dual-camera and central fingerprint scanner at the rear.

Recently leaked information suggests the Mi Mix 3 will come with the 7nm Snapdragon 845 processor.

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PREVIEW



Samsung Galaxy S9

MARIE BLACK rounds up everything we know so far

It's interesting, given that the Galaxy S9 is rumoured to appear in early 2018, just how few images have leaked. We've yet to see a photo of the Galaxy S9 in the flesh, and even renders and concept images are notably thin on the ground. At a guess we'd say this is because it's going to look an awful lot like the Galaxy S8.

That certainly seems to be the case, judging by the first Galaxy S9 cases from accessory maker Olixar (shown at the top of this page). With the Galaxy S9 on the left and Galaxy S9+ on the right, it's clear that a



key difference between the two is a dual-camera on the larger model. This is backed up by a rear Galaxy S9 panel unearthed by Sammobile, which reveals space for only a single camera and fingerprint scanner.

Interestingly, both images – and the Galaxy S9 schematic that leaked via Weibo (shown above) – suggest there will be a fingerprint scanner on the rear, but in a new position below the camera. This goes against rumours that the S9 will get an embedded under-glass fingerprint scanner at the front.

As before we'd expect to see a 5.8in Infinity Display on the Galaxy S9, and a 6.2in version on the S9+. The new phones should see a performance boost with either the 7nm Snapdragon 845 or 10nm Exynos 9810 inside depending on your location. With a Snapdragon 845 inside the Galaxy S9+ has posted a multi-core score of 8351 points in Geekbench 4 (that's very fast).

There is rumoured to be a new purple colour option, but less likely are reports that the Galaxy S9 could have a modular design. Samsung is allegedly



planning to introduce magnetic pins on the back of the phone that will allow the attachment of external modules. And the DeX dock, sold as an optional extra, will now operate wirelessly and resemble a pad rather than a dock, reveals Galaxy Club.

Release date

Predicting the Galaxy S9 release date is no longer as easy as it once was. Traditionally Samsung has launched its flagship the day before MWC, which would put its announcement on 25 February 2018.

However, in 2017 it delayed the Galaxy S8 launch until March, with the phone going on sale at the end of April. While it said it used this extra time for thorough battery testing (the earlier Note 7 was taken off sale due to battery problems), it also had the exclusive on the Snapdragon 835. By delaying its launch it prevented other manufacturers using that chip in their flagships until after it had gone on sale.

Though we are fairly certain the Snapdragon 845 will feature in the Galaxy S9, at least in the UK, we do not yet know whether Samsung again holds the exclusive on the chip. If it does, we may see another March launch event.

In 2018 there is talk of LG announcing its rival G7 early in January at CES 2018, which Samsung may choose to copy. There are some rumours to back up this theory – Samsung began shipping OLED panels two months early in November, and the Galaxy S9 was (allegedly) first spotted on Geekbench way back in July – but the company has denied that a January unveiling is likely. (To be fair, if the G7 really is coming early we should expect the company to start revealing its features via press releases in the very near future.)

VentureBeat sources claim the phones will be on show at CES 2018. It's usually a very reliable source, though we suspect it might merely mean that the Galaxy S9 will be seen by some people behind closed doors at CES.

Price

The Galaxy S8 and S8+ were Samsung's most expensive S-series phones yet at £689 and £779 respectively. Part of this extra cost can be attributed to the new features, but finances following both Brexit and the Note 7 disaster have almost certainly come into play here, too.

Until this year, Samsung always kept its pricing reasonably constant, and in line with other flagship phone makers. For that reason we'd be surprised to see the price go any higher than the current RRP.

It's always worth considering with Samsung phones that – more so than with any other manufacturer's smartphones – SIM-free prices fall rapidly in the few months following launch.

New features and specifications

Samsung reportedly began working on the Galaxy S9 in late March 2017, which would mean it is already six months ahead of schedule compared to where it was with the Galaxy S8 and S8+ last year. And that means more time for quality control, more time for building in new features and, hopefully, more happy customers.

Amazingly, in July 2017 an early version of the alleged S9 was spotted in the Geekbench database – that's some seven or eight months before we expect to see the phone announcement. A device with the model name SM-G9650 is listed with a 1.78GHz quad-core Snapdragon 845 processor and just 4GB of RAM. It scored 7371 points in the RenderScript test, which is lower than the Galaxy S8 managed in the same test. There are no performance scores.

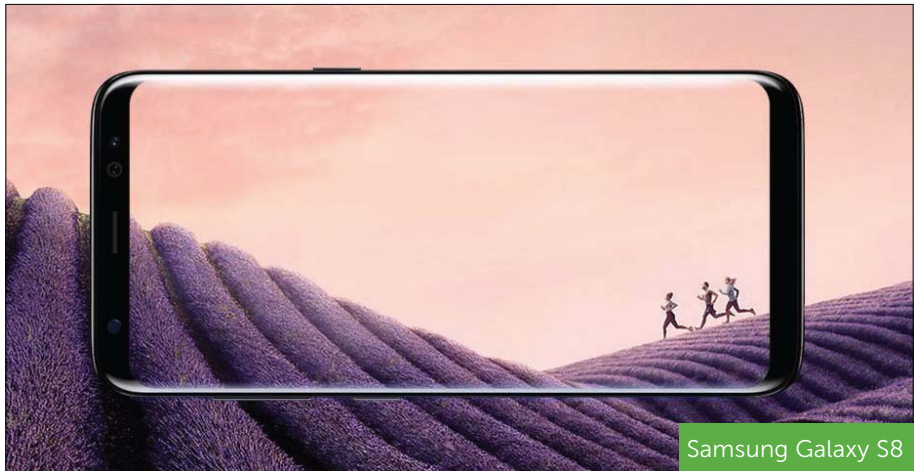
Display

An unnamed source suggests the first work on the Galaxy S9 began with the screen, and that there is not expected to be any change with the sizing: so we'll see a 5.8in Galaxy S9 and 6.2in Galaxy S9+.

The Bell reports that Samsung has already ordered these screens from suppliers, but with one key difference: they will feature the in-display fingerprint-scanning tech that was rumoured for but never made it into the final spec of the Galaxy S8.

Rumoured specifications	Samsung Galaxy S9	Samsung Galaxy S9+
Price	£689	£779
Operating system	Android 8.0 Oreo with TouchWiz	Android 8.0 Oreo with TouchWiz
Processor	Qualcomm Snapdragon 845/Exynos 9810	Qualcomm Snapdragon 845/Exynos 9810
GPU	Adreno 550	Adreno 550
RAM	6GB LPDDR4	6GB LPDDR4
Storage	64GB with microSD support	64GB with microSD support
Display	5.8in (2960x1440, 570ppi) Super AMOLED	6.2in (2960x1440, 529ppi) Super AMOLED
Fingerprint scanner	Yes	Yes
Ports	USB-C	USB-C
Audio	Stereo speakers	Stereo speakers
Camera	12Mp camera	12Mp camera
Battery	Circa-3,000mAh, Adaptive Fast Charging (wired and wireless)	Circa-3,500mAh, Adaptive Fast Charging (wired and wireless)
Waterproofing	IP68	IP68
Extra features	Heart-rate sensor, Bixby AI	Heart-rate sensor, Bixby AI

As we approach the Galaxy S9 release date, however, that's looking increasingly unlikely. The Investor reports that the in-display fingerprint-scanning tech won't be ready in time, while Ice Universe says the fingerprint scanner will remain on the rear but under the camera rather than to its side.



We'd expect to see the same 2960x1440, 570ppi, Super AMOLED 'Infinity' panel on the S9, and another 529ppi panel on the S9+. Given that Samsung by default limits the screen resolution to Full-HD+ (2220x1080) in the Galaxy S8, we really don't think it will push up the resolution up to 4K.

It is possible that despite keeping the same dimensions and resolution the display technology itself could be improved. Samsung is reportedly using screen tech code-named 'Sunflower' for the Galaxy S9 – it's still Super AMOLED, but should improve display fidelity and be more consistent and reliable.

The new virtually full-screen 18.5:9 ratio will also likely remain, as will features such as the always-on display and edge functionality. However, in 2018 we could see Samsung follow the route Apple has taken with the iPhone X and minimize the top bezel even further.

Rather than a thin strip at the top in which to house the sensors, camera and speakers the iPhone 8 features a notch at the top and then minimizes the bezels to the left and right of this. It's not an attractive design, but it does allow for a higher screen-to-body ratio. Patents unearthed by Galaxy Club suggest Samsung has the same idea.

Samsung will allegedly implement its Y-OCTA tech into both models this time around, with only the standard Galaxy S8 getting the treatment in 2017 (the Galaxy S8 Plus does not and the Note 8 apparently will not get it either). Y-OCTA uses a single manufacturing process for the screen and the touch-film element.

In 2016 Samsung patented a glass-coating technology that helps water to bounce off the screen, making it much easier to use in the rain. This tech could well be introduced in the Galaxy S9, which will itself most likely be waterproof. (The Galaxy S8 is rated IP68, which means it is resistant to submersion up to a depth of 1.5m for up to 30 minutes.)

Processor

In the UK we'll almost certainly see the Snapdragon 845 powering the Galaxy S9, which was in early December confirmed by Qualcomm at a special press event in Hawaii. It may once again hold the exclusive on this chip, forcing rivals to wait until the Galaxy S9 has been unveiled to use that same chip, but for now that is merely a rumour.

The 10nm Snapdragon 835 Samsung helped Qualcomm to manufacture was 27 percent faster and 40 percent more energy-efficient than the company's

PREVIEW

previous 14nm chips. The upcoming Snapdragon 845 is said to be built on the 7nm manufacturing process, and will be even faster and more efficient than ever.

(The nm figure relates to the distance between transistors, and the more you can squeeze on to a chip the faster it will be.)

Key new features offered by the Snapdragon 845 include a secure processing unit (SPU) that Qualcomm says offers “vault-like security” with the microprocessor, memory, crypto engine and random number generator all sitting on its own power island. Performance and battery life will also improve, thanks to an octa-core Kryo 385 CPU with four 2.8GHz high-power cores and four 1.8GHz low power cores; the 845 is 30 percent more efficient than the 835 for gaming, video and AR/VR, says Samsung.

Qualcomm’s new super-fast X20 LTE modem is built-in, offering CAT 18 speeds of more than 1Gb/s, as well as an enhanced Spectra 280 image



signal processor. Qualcomm has bumped up video recording potential to Ultra-HD, and added in various AI improvements.

Performance from the Galaxy S9 with the Snapdragon 845 inside is expected to get a real boost. Geekbench 4 scores for the Galaxy S9+ have been revealed on the site's database, and as you can see in the chart below they are quite a bit faster than that of the Galaxy S8+. (Interestingly the database also reveals 5GB of RAM, suggesting there is 6GB on at least one of the Galaxy S9+ models.)

Elsewhere in the world Samsung uses its own Exynos chips, and has just announced the Exynos 9810 which is the most likely candidate.

We don't know a great deal about the 9810, but we do know it's built on the second-generation 10nm process, which is interesting given that the Snapdragon is thought to be 7nm. We also know that it features M3 cores, and builds in improvements to the GPU, which may now be the Mali-G72.

Samsung has announced that its next-generation Exynos chips will feature LTE modems that support six carrier aggregation (6CA). A first in the industry, Samsung says this unlocks a maximum download speed of 1.2Gb/s (20 percent faster than the Galaxy S8, which has a 5CA modem). It should allow you to download an HD movie in just 10 seconds, and eliminate buffering.

Samsung is also said to be looking to build AI processing right into its chips, which will perform better when hard-coded to the chip than left to the software. So Bixby could become a lot more efficient.

Storage and RAM

You get 64GB of storage as standard with the Galaxy S8, along with microSD support. That's already quite generous, so we're not expecting to see any changes here. Something we might see in the S9, though, is for Samsung to finally push up the RAM allocation from 4GB to 6GB, as it has done for the Note 8. This is by no means out of the question, with some phones that are now a year old offering this amount of memory. It would also help it in its quest for ever-increasing performance.

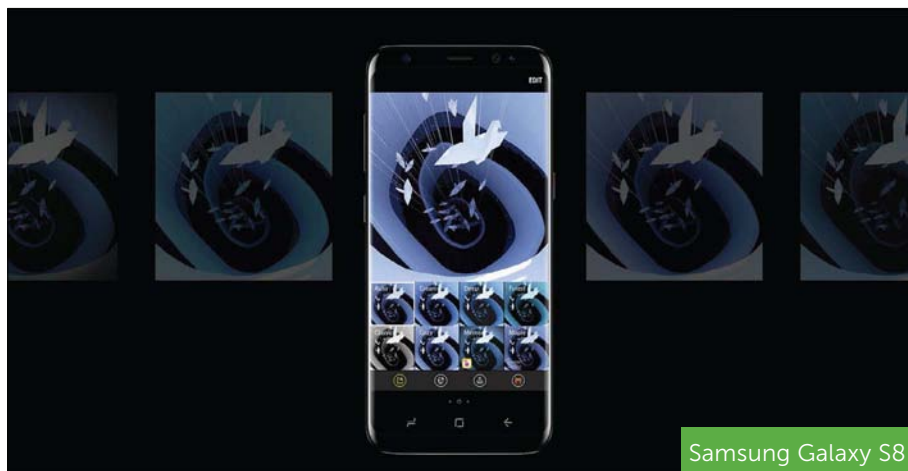
Battery

Although the size of the phone is not expected to change, we could see battery capacity get a boost with the Samsung Galaxy S9. ET News reports that Samsung will facilitate this using a new type of motherboard that uses substrate-like PCB technology to squeeze in more layers of components – or extra room for the battery pack.

Fast charging – both wired and wireless – will likely feature, though we suspect Samsung will continue to use its own Adaptive Fast Charging tech rather than the Quick Charge built into Snapdragon processors.

Camera

Samsung traditionally leads the pack when it comes to new smartphone features, so we're somewhat puzzled by the fact it has yet to introduce a dual-camera on its S series. Nevertheless, one does feature in the Note 8, so expect it to feature in the Galaxy S9 too, but likely only in the Plus variant.



Samsung's Note 8 has a 12Mp dual-lens camera with dual-OIS and 2x optical zoom.

It's been claimed that the Galaxy S9 will be able to shoot incredible 1,000fps slow-mo video. This will apparently be achieved using a three-layered image sensor that adds DRAM to the sensor and logic chip, which began mass production in November. This builds on the two-layered approach seen in current high-end smartphones, though Sony has also used a three-layer system in its XZ Premium and XZ1 phones.

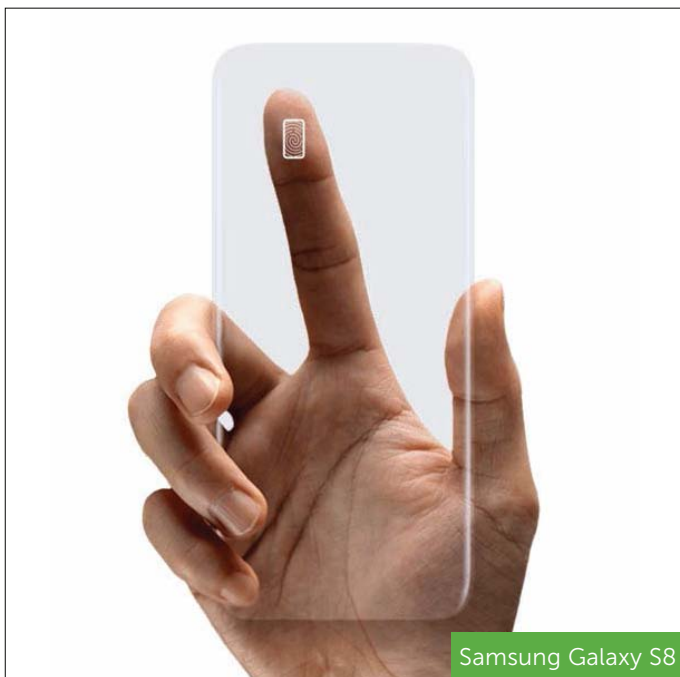
Ports and connections

Samsung introduced USB-C rather than Micro-USB for the Galaxy S8, though it didn't follow the likes of Apple in removing the 3.5mm headphone jack and relying on wireless or USB-C audio. There is a danger it could take that plunge this time around, though nothing has yet been confirmed.

Fingerprint scanner

One change we would like to see in the design, and something we hope Samsung will take into account following significant consumer criticism, is the awkward placing of the rear fingerprint scanner. It's not so much being on the back of the handset that offends us, but how it is wedged in beside the camera as if it were an afterthought. It's looking likely that this will be moved to a new position below the primary camera.

However, the Galaxy S9 could be the phone in which we finally see the fingerprint scanner built into the screen glass itself. Qualcomm has announced



Qualcomm Fingerprint Sensors, a new ultrasonic technology that allows fingerprint-sensing tech to be built directly into a phone's OLED screen. It also works in glass and aluminium.

Synaptics has also announced its Clear ID FS9500, an under-glass fingerprint sensor that it says will be found in a top five smartphone company in a bezel-free OLED infinity display. There's no evidence that it is referring to the Galaxy S9, but that is the exact same name used by Samsung for its own displays.

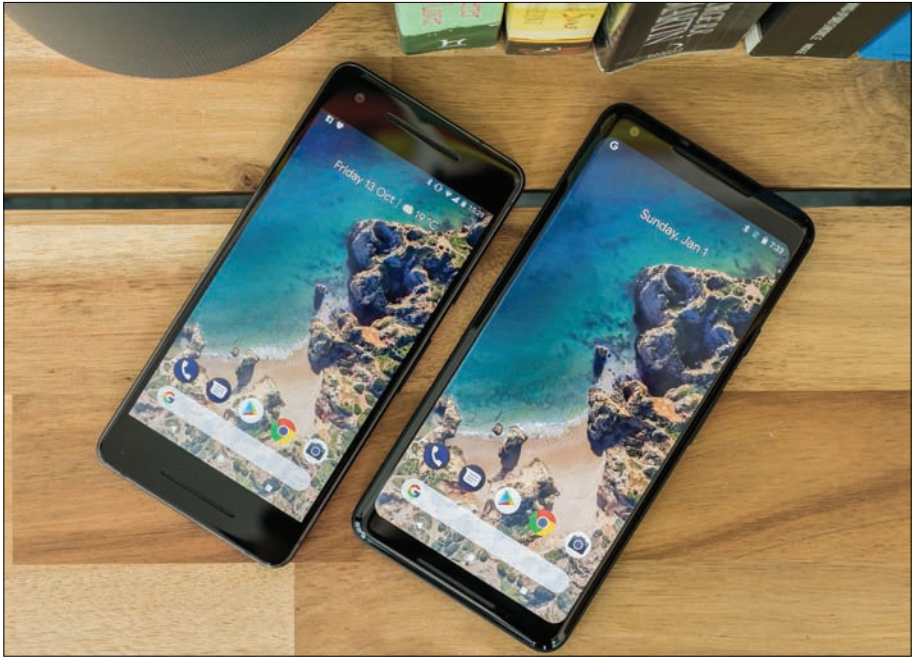
Just in time for the Galaxy S9's release Samsung has been awarded a patent for an under-glass fingerprint scanner. According to GSMarena, the patent suggests that a smartphone could have up to 12 pressure points on the whole screen for the fingerprint to allow secure apps, contacts, and messages.

Audio

The audio on a phone can be a bit forgotten but Samsung won't with the Galaxy S9. According to rumours it will not only keep the headphone jack but also come with wireless AKG headphones in the box. They might just be tuned by AKG like the current Galaxy phones but it still sounds good.

Software

Android O is almost certainly the operating system you'll find on board the S9 and S9+, albeit with the TouchWiz UI on top. Samsung also introduced the Bixby AI assistant in the Galaxy S8, which we would have thought would have only got more intelligent for the Galaxy S9.



Google in 2017

MICHAEL SIMON looks at the firm's hits and misses

After jumping head first into the hardware game last year with the Pixel phones and Home smart speaker, Google seriously picked up the pace in 2017. Not only were there two awesome new Pixel phones, but also smaller and larger Google Home devices, as well as a pair of Pixel-branded earbuds. And through it all, Google's AI-powered Assistant got smarter and smarter.

But it wasn't all smooth sailing. Google took its share of lumps over the past 12 months, and proved that making great hardware isn't as easy as it looks. Here are all the hits and misses in 2017:

Hit: Pixel 2 and Pixel 2 XL

The Pixel phone was one of the best Android phones of 2016, and the Pixel 2 is just as good, if not better. The Pixel 2 XL has a bigger screen and slimmed-down design, and both models have better chips and batteries. But you need look no further than camera to see how Google has really set its handsets apart from the pack.

Unlike the Galaxy Note 8 and LG V30, there's a single camera on the Pixels, but it does the work of two, with excellent zoom and spectacular portraits. And you don't need to spring for the more expensive model to reap the benefits, like some other companies make you do.

Miss: Pixel problems

The Pixel 2 XL is a fantastic phone, but its release wasn't without its problems. First there were display issues, with some users complaining about dull colours, image retention, and an aggressive blue tint. Google kind of remedied those issues with a software update and a warranty extension, but other problems continued to crop up: clicking noises coming from the receiver, random rebooting, and poor audio recording quality, to name a few. With such intense competition among Android phones, it put a damper on what should have been a stellar launch.

Hit: AI/machine learning

Google Assistant only just turned one, but it's already smarter than most adults. Assistant learned a ton of new skills in 2017, including how to make calls and distinguish between voices, but user friendly features are just part of Google's AI push. AI and Machine Learning were the buzzwords of 2017's I/O conference, where Google demonstrated a mobile version of its TensorFlow neural network, which will let an AI engine run on your phone to make AI apps smarter, faster, and more secure. Google is already way ahead of Apple and others with Assistant, and now it's just showing off.

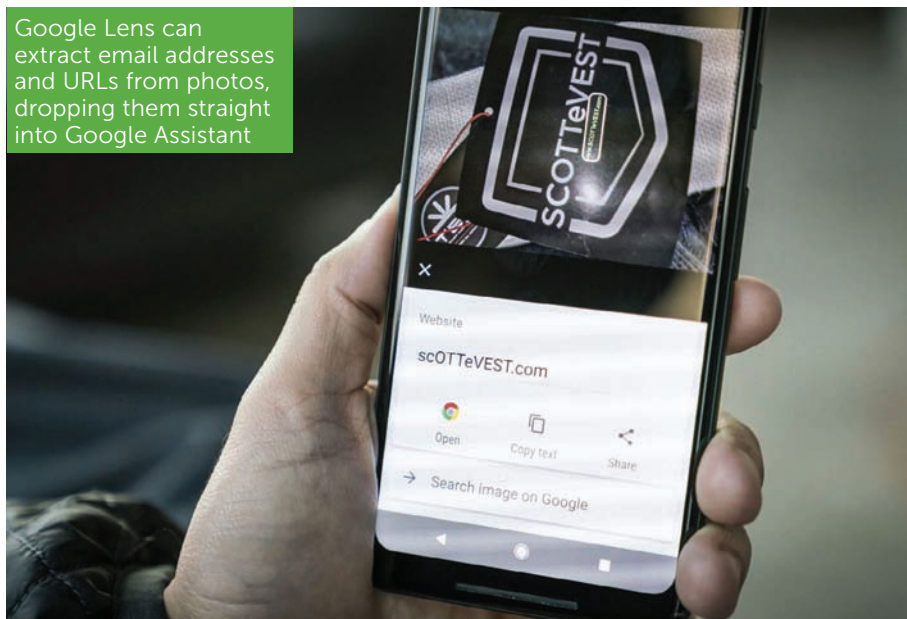
Miss: Google Home Mini listening too much

While there are benefits to AI-powered phones and speakers, there are some serious detriments as well. Chief among them is privacy. That issue reared its ugly head with preview units of Google Home Mini. One early reviewer found that his model was recording everything he said, whether or not it was preceded by, 'OK, Google'. Google blamed it on a faulty touch controls that was always depressed and thus always listening, and responded by permanently disabling the button on all Mini units. But it's still a reminder of the fine line between creepy and convenient.

Hit: Google Lens

Google Lens can extract email addresses and URLs from photos, dropping them straight into Google Assistant. In 2016, Google gave its AI engine a voice

Google Lens can extract email addresses and URLs from photos, dropping them straight into Google Assistant



and in 2017 it got eyes. Baked into Assistant on Pixel phones and soon to on Android phones everywhere is Google Lens, a new technology that uses the camera to interact with the world around you.

You can identify landmarks, get restaurant reviews, scan addresses, and even input cumbersome Wi-Fi passwords just by holding your phone up to something. Lens is also able to ID things in pictures you've already taken, so if you've forgotten the name of the church you visited in Italy a couple years ago, it will ID it for you. And lead engineer Rajan Patel is already teasing the next wave of features, including shopping and augmented reality. You might even call it the new Google Glass. Too soon?

Miss: Google Pixel Buds

Much to the chagrin of Android audiophiles, Google opted to follow Apple's lead and dump the headphone jack in the Pixel 2 (though it is kind enough to supply a USB-C-to-3.5mm adaptor in the box). To compensate, Google started selling £159 Bluetooth Pixel Buds, with a charging case, five hours of listening time, simpler pairing, and real-time translation.

The only problem is, they're not very good. Not only are they not truly wireless, people have complained about poor fit, wonky connection, and a poor integration with Google Translate. Which quite frankly, only makes us miss the headphone jack more.

Hit: Google Assistant expands

Sometimes it seems like the AI wars are going to go on forever. With Siri, Assistant, Alexa, and Cortana all carving out niches among their users bases, we seem to forever be segmented to the devices they live on. But Google took a step toward breaking down those barriers in 2017. Not only did it greatly expand its reach on Android devices by opening Assistant up to all Marshmallow and Nougat handsets (and coming soon, tablets), it also brought an Assistant app to the iOS App Store. It's a small step for sure, but it opens Assistant to a whole new segment of users and puts a little more pressure on Apple to make Siri more friendly to Android users. And that's okay in our book.

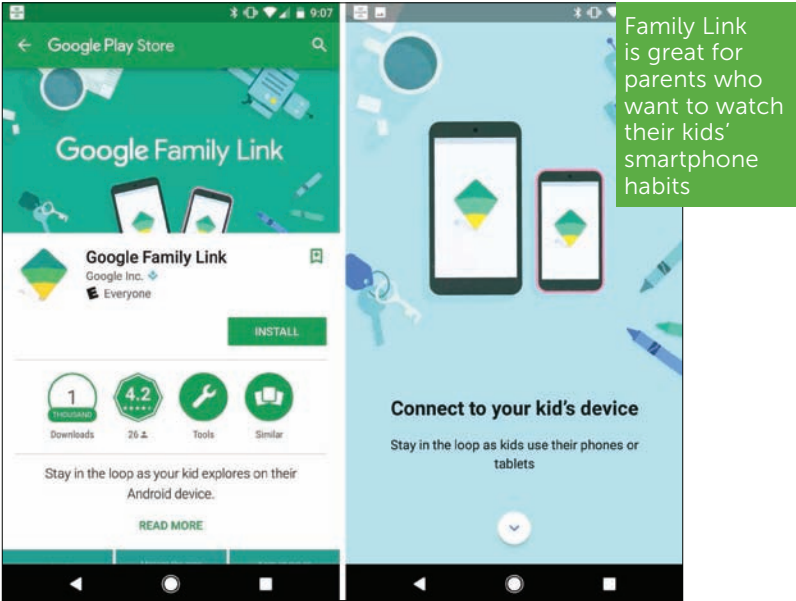
Miss: Android Wear

There was a time when it looked like Android Wear would be the most ubiquitous platform for

smartwatches, offering universal support and a robust app platform. But after a series of delays to Android Wear 2.0 last year, Google finally released the new software update in February alongside two watches co-designed with LG. Unfortunately, neither release did much to bolster Android Wear. The watches were universally panned, the OS update took months to reach first-generation devices, and most manufacturers passed on releasing new 2.0 models. Maybe the third time will be the charm, but we kind of doubt it.

Hit: Family Link

It's a fact of life that are kids are going to be using smartphones before they can even read, and limiting



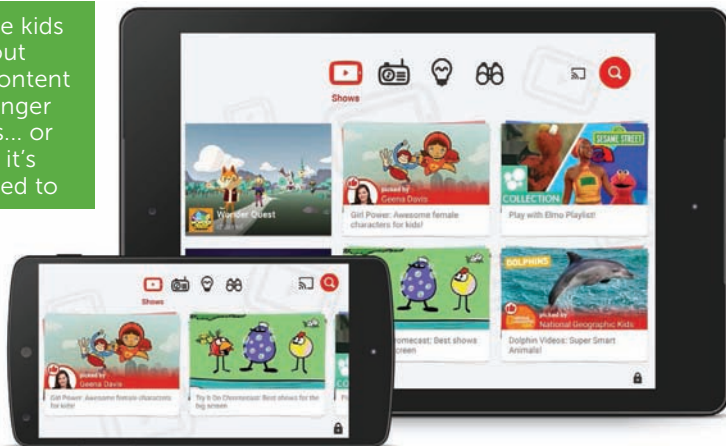
FEATURE

what they can see and how long they can see it can be tough. Family Link makes it much easier to keep tabs on your kids' Android habits. With an easy interface and cross-platform integration with the iPhone, Family Link gives parents full control over their kids' Android phones, letting them hide apps, set time limits, and manage the content they watch, all from their own phone. Now, if it would just put our kids to sleep.

Miss: YouTube Kids content

YouTube is a great place to discover new content just be following the recommended links. And just like us, kids love to spend hours falling down a video wormhole, too. But sometimes the algorithm gets it wrong, and Google's lack of attention delivered questionable content to kids. Lots of it. Google is taking steps to make it right by increasing staff and pulling thousands of objectionable videos from the site, but it took far too long for it to address the

YouTube kids filters out adult content for younger viewers... or at least it's supposed to

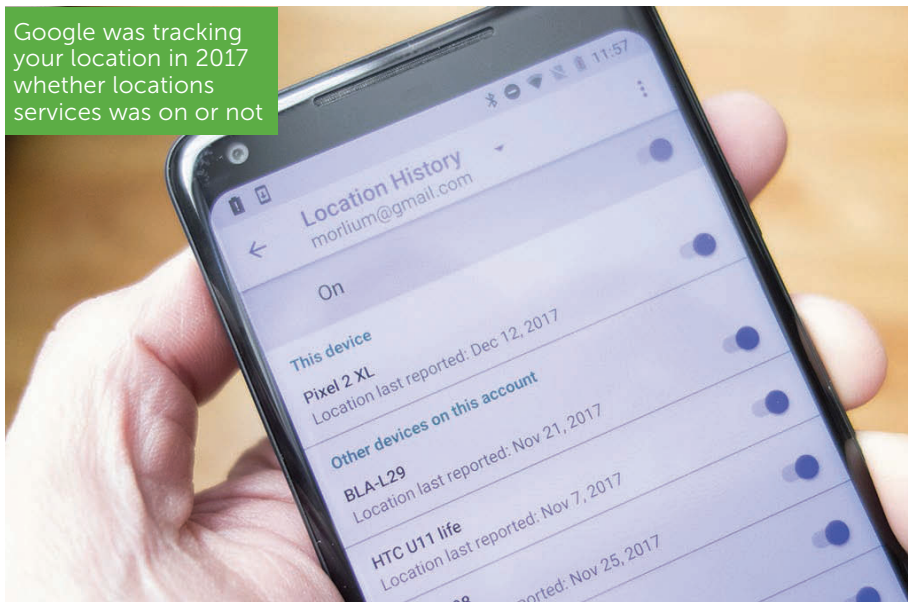


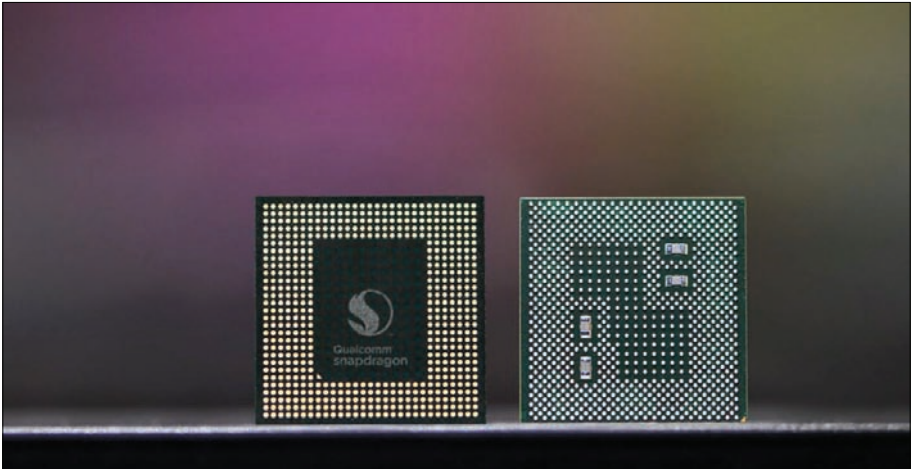
issue. We want our kids to watch Big Bird, not ... oh, you get the idea.

Miss: Location spying in Android

Those Android users who want to keep Google from spying on their whereabouts have always been able to switch off the location services toggle. But an investigation by Quartz revealed that Google has been using cellular antennas to spy on Android users' location even if they switched location services off. Google says it was all part of a test to deliver messages quicker and was all "don't worry we're not even looking at the data," but conveniently it forgot to remove the code until called out in public. OK, Google, tell me another one.

Google was tracking your location in 2017 whether location services were on or not





How the Snapdragon 845 will impact your phone

MICHAEL SIMON reveals how it will improve this year's flagships

If you thought 2017's Android flagship phones were fast, wait until this year. Qualcomm has unveiled its next-generation chip, the Snapdragon 845, and it's more than just the next number in the evolution: It's a ground-up redesign of the platform's architecture. And it's sure to have a profound affect on 2018's crop of premium Android handsets.

While the 835 was mostly focused on performance and speed, the 845 brings a slew of enhancements to how phones will use the processor for AI, photos, and, of course, battery life. We'll probably have to wait until

the Galaxy S9 to see it in action, but once the new chip arrives, it will mean great things for mobile power users. Here are five ways the new chip will impact future Android flagship phones.

1. Your data will fly

The architecture of the Snapdragon 845 is the same 10nm octa-core processor as the 835, so it's unlikely that the Galaxy S9 or LG V40 will bring much of a performance boost over the S8 and V30. Qualcomm says the 845 chip will bring 30 percent faster graphics than the 835, an impressive technical increase over an already powerful chip, but one that's not likely to be all that noticeable in real-world use.

The real speed boost will come from the modem. The 845 uses the second-generation X20 Gigabit LTE modem, which supports for 1.2Gb/s Gigabit LTE Category 18 as well as multigigabit 802.11ad Wi-Fi for even faster downloads. Of course, your mileage will vary depending on the network, but Qualcomm says the new modem will allow users to download a 3GB movie in less than three minutes over LTE.

2. They'll last longer

The 835 brought serious gains in battery life, with many phones using the chip easily making it through a full day of regular use. Qualcomm says the 845 will be 30 percent more power-efficient than the 835, which could push phones into a second day without needing to be charged. Qualcomm has focused on optimizing the chip's cores with the 845, so the processor will be able to delineate tasks intelligently

FEATURE

based on power needs. As a result, video recording will utilize 30 percent less power. Thanks to the new Adreno Foveation system, which uses eye-tracking to determine which areas of the screen to fully render, graphics-intensive games and apps won't harpoon your battery life, either.

3. They'll be smarter

Last year, Huawei released the Mate 10 with a dedicated Neural Processing Unit, and the Snapdragon 845 isn't about to be outsmarted. The third generation of the neural processing engine will fully unleash Android phones' machine learning and AI capabilities.

Qualcomm says the 845 will support AI frameworks such as Google's TensorFlowLite and Facebook's Caffe2, as well as being optimized for newer networks. Using a new Hexagon Digital Signal Processor, the chip will be three times faster with AI performance, meaning phones will be more efficient and use less



power for common and repetitive tasks. It'll also use a low-power audio subsystem for digital assistants, so talking to your phone all day won't kill your battery.

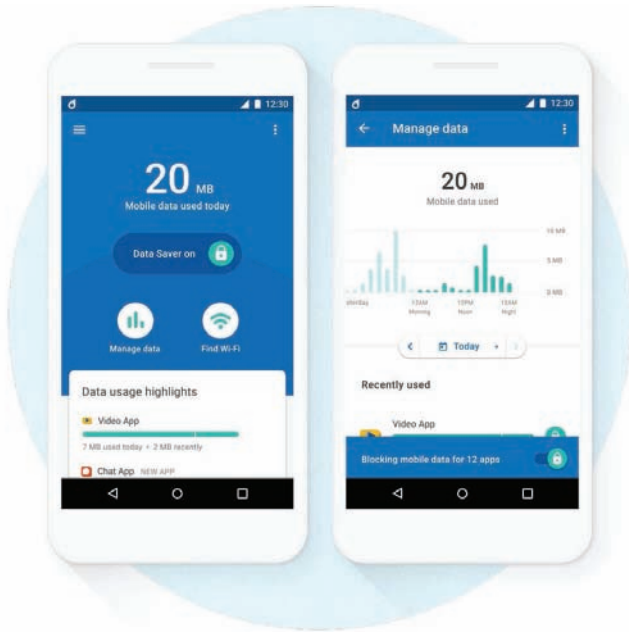
4. Your pictures and video will be even better

The cameras on our smartphones only do part of the work when it comes to taking pictures. Much of the heavy lifting is handled by image signal processors. Qualcomm's Spectra 280 ISP has been greatly improved in the Snapdragon 845. Instead of enhancing the resolution, which has pretty much been maxed out on smartphones, the new chip focuses on colour volume, meaning photos will be richer, deeper, and more accurate than before.

The new chip will be able to take better photos in low light, thanks to multi-frame noise reduction, faster auto-focus, and accelerated image stabilization. The ISP will also enable better portraits with depth-based face recognition. On the video side, it will enable ultra HD premium video capture for 4K 60fps video, as well as 720p 480fps slow-motion video capture.

5. Security will be locked down

Like Apple's Secure Enclave, Qualcomm is introducing a Secure Processing Unit on the Snapdragon 845 that will keep your data from falling into the wrong hands. With its own dedicated processor, the SPU will set up a 'secure island' to protect fingerprint, iris, and face biometric scans. The secure chip will also store payment information and SIM card data for ultimate peace of mind.



HOW TO Stops apps using up your data

MICHAEL SIMON shows how to shut down data-hungry apps

Google’s newest Android app might be its most useful of all. It’s called Dataly (free from fave.co/2CmfF19), and it has one function: to stop apps from gobbling up your precious gigabytes of data. The simple, intuitive app is designed to help you get a handle on your mobile data usage and

stop rogue apps from surreptitiously using it up. So, if you get a message from your carrier about using an abnormal amount of data, you can use Datally to pinpoint the app that's doing the most damage and shut it down.

There's nothing necessarily new in Datally – data trackers have been built into Android for a while – but never has it been presented in such a user-friendly way. Many Android users don't know to venture deep into the Settings app to see their mobile usage, so Datally pulls those features out of Settings > Network & Internet > Mobile network, and presents it in an easy-to-understand way.

After a brief setup, where you'll need to allow Datally access to a VPN in order for it to work, you'll be taken to a screen that clearly shows how much data you've used today. From there, you can dial into your weekly or monthly usage (via the manage data button), set up threshold alerts, and control which apps have access to your mobile data. There's also a Data Saver kill switch that will shut down all mobile data at a tap.

But the coolest feature might be its Wi-Fi tracker. Tap the 'Find Wi-Fi' button and Datally will retrieve a list of nearby places that offer public Wi-Fi networks. You can even get directions via Maps and rate the quality to help other users in the area.

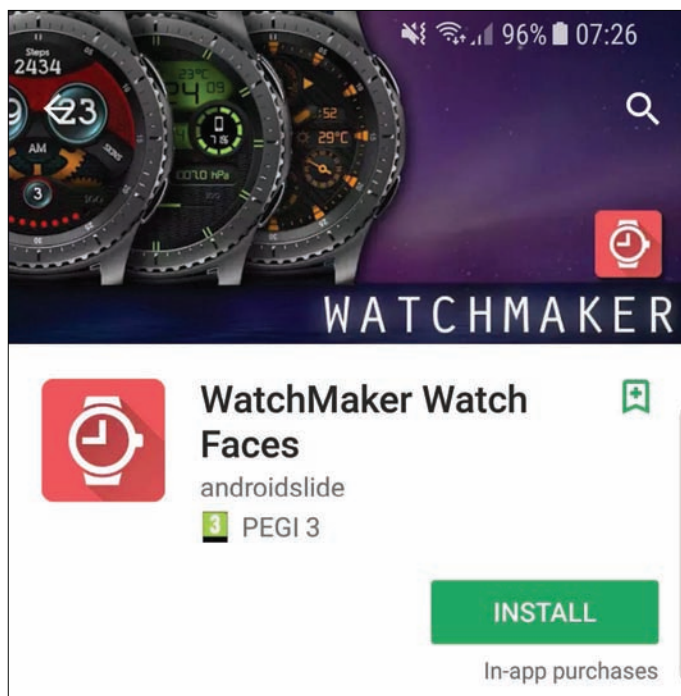
Google says it has been testing Datally in the Philippines over the past few months and it has saved people up to 30 percent in their data. The app is available in the Play Store for phones running Android 5.0 and above.



HOW TO Create an Android Watch face

MARIE BLACK reveals how to produce a custom watch face

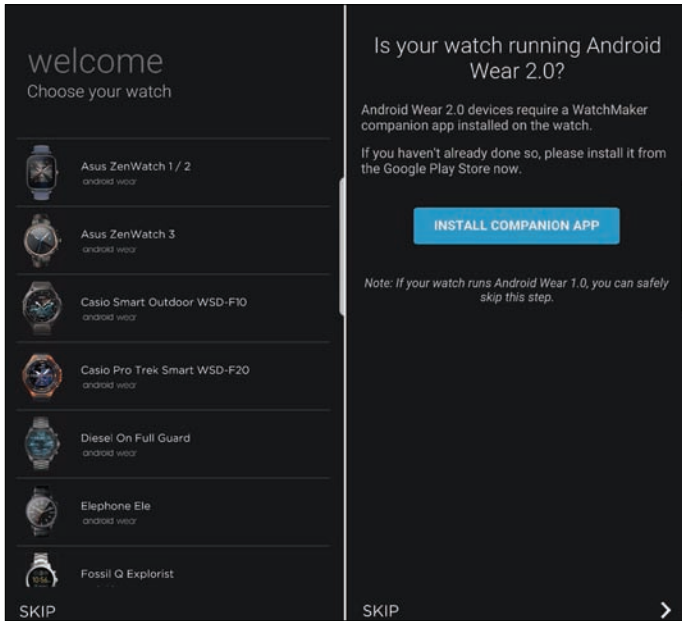
You'll get a choice of watch faces for your Android Wear smartwatch, but if none fit your exact needs it's really easy to create your own using a simple app.



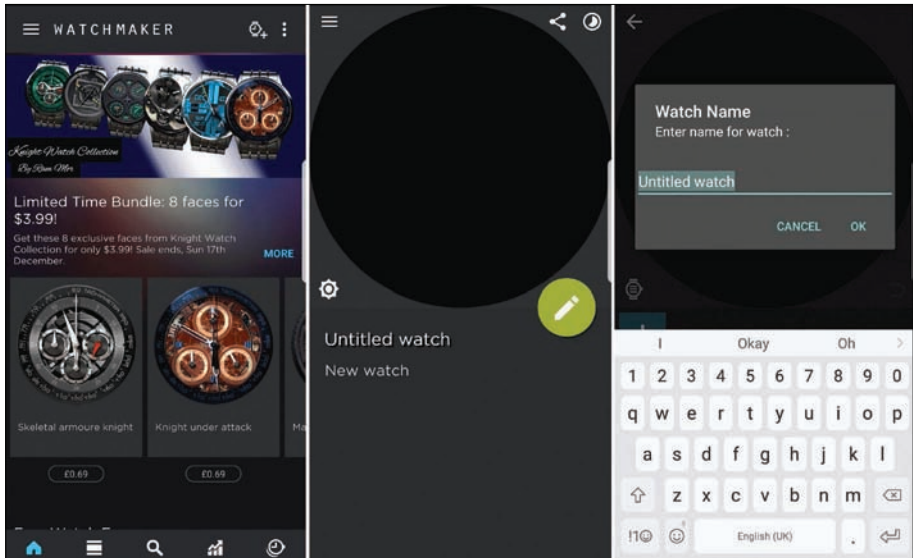
1. Download the WatchMaker Watch Faces app from Google Play (fave.co/2Cn6p0d). There is a free trial version, which we recommend you try first to see if it's what you're looking for, but if you decide to stick with it and unlock all the features you'll want to purchase the premium version for £2.99.

The premium version unlocks 40,000 watch faces with 50 new faces added every day; the ability to use your own photos and images; more widgets; more fonts; animated GIFs, and more.

HOW TO

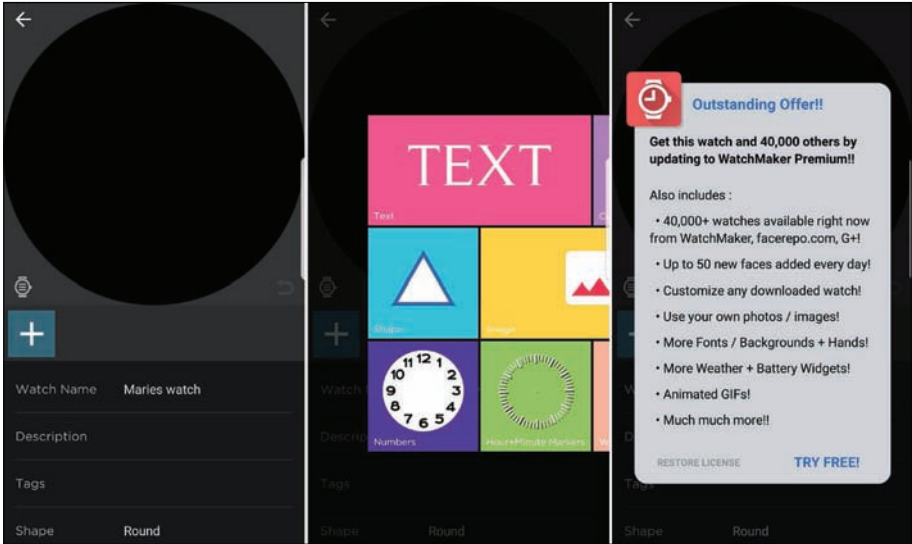


2. Launch the app, accept the permissions, then choose your smartwatch from the list. We've selected the Huawei Watch 2. You'll be prompted to install the companion app on your watch.

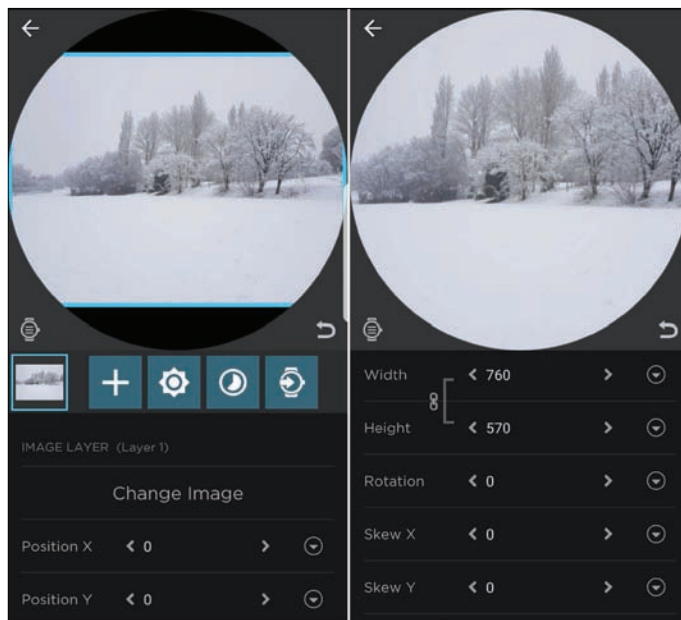


3. Now you're ready to get creative. From the main screen tap the watch icon with a '+' symbol at the top right corner. This will open a new 'Untitled watch' – tap the pencil icon to give it a more appropriate name and begin customizing it.

HOW TO



4. To start adding items to your watch face click the large '+' sign below the preview. We recommend you start with a background image, assuming you want one, so select Image on the next screen. You'll be prompted to unlock the Premium version to do this – you can continue experimenting with the free version, but if you decide to use this you'll need to purchase the app. Now browse to and select the photo you'd like to use in your Gallery.



5. It's unlikely that the image is going to be an exact fit for your watch face, so you'll want to zoom in on the picture to fill all the available space. Scroll down and play around with the Width and Height parameters until it fits. You can also use controls here to move items around on screen, which may be preferable to dragging them with your finger if you'd like to keep everything central.

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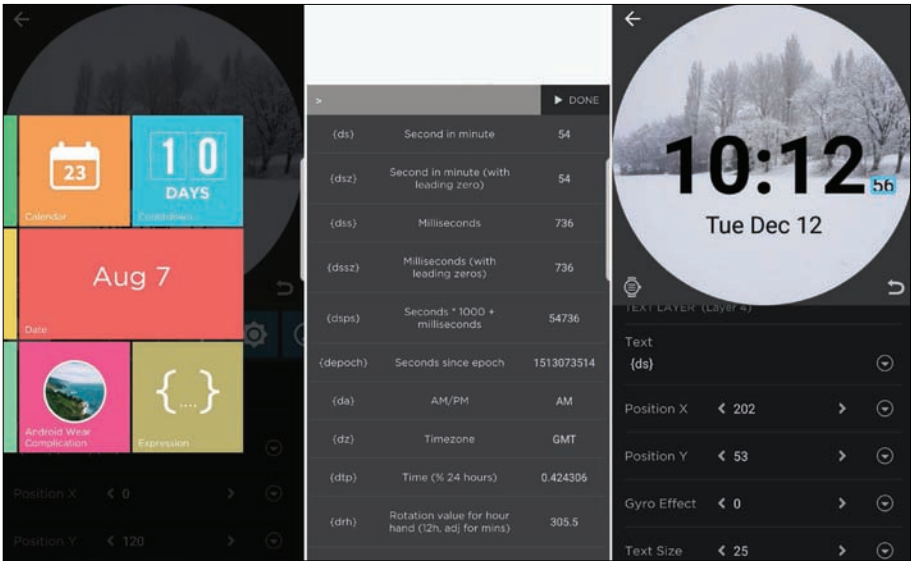


6. The next most important thing for a watch face is the time. Tap the '+' icon below the preview and this time select Time from the menu. It will place on screen a digital clock. Once again use the settings below to resize and move around the text. Depending on your background image you may also want to change the text colour and font in order to make it easier to read at a glance.



7. We've also added a date to our watch face, which is available when you tap the '+' icon and choose Date from the menu. Use the same controls to adjust its size, colour, position and font.

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8. You'll find various options in the menu for items you can add, from Wi-Fi signals to battery meters and a countdown clock. A lot more functionality is available in the Expression menu, where you'll find options to add local weather, a seconds clock and so on. Have a play around, and if you change your mind about adding a particular item just tap and hold it under the preview window and click the cross that appears to remove.



9. When you've finished creating your watch face, preview it on your smartwatch. Scroll along the various icons now appearing under the preview window to the far right, then tap the icon depicting a watch with an arrow.

