

The Future of Selfies: More than just a picture
A Futurizon Report for Sony Mobile
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Taking selfies is an activity on which some people spend hours a day, but like any trend, it evolves as new uses are invented. At Sony Mobile we are committed to developing the most advanced camera technology for a seamless and enjoyable experience.

In the past five years alone, we have seen smartphone photography take great leaps in terms of camera technology; our latest flagship smartphone, Xperia XZ, with its superior 13MP front facing camera with fantastic low-light capabilities together with its 23MP rear camera with triple image sensing technology which captures the most spontaneous of shots without blur, has shown that the quality of smartphone photography is second-to-none.

With technology continuing to develop we asked, what is next for selfies? Can they become even more compelling and rewarding as every day parts of our lives?

With such detail now at sitting in a smartphone, it is easy to see how its photography and selfies can and will be intrinsically linked to many future uses.

- *83% of those polled across Europe have taken a selfie*
- *Of those who take a selfie over 64% take at least one a month*
- *On average, taking 40 selfies a month*

Introduction by Dr Ian Pearson

To see where selfies will go next we need to look at the needs they meet. Human nature changes very slowly, and technology just changes how we meet needs that have mostly existed for hundreds of thousands of years.

Human nature underpins most successful markets. Psychologists often talk about Maslow's hierarchy of needs, with physiological needs such as food and drink as the most basic, followed by safety. Once those basic needs are met, people can focus on social needs such as love and belonging, and once those are met, they look to achieve social status and self-esteem. Finally, they can devote time and effort to self-actualization, personal growth and fulfilment. It is clear that selfies started off as part of the social status layer but have spread rapidly to the others. They now have important uses in all of these layers.

We share Maslow's needs with our cavemen ancestors, but cultural developments based on them such as finance, retail and even fitness and health play important roles today too. These provide the opportunity for selfies to become more than just a picture.

- *Of those surveyed across Europe, 40% take a picture for social media alone, with nearly half (44%) taking a selfie to send to a partner or lover*
- *40% (4 in 10) see selfies as being part of their everyday life*
- *Half (52%) would use selfies for a more functional use, if there was one*

SELFIES FOR THE EVERY DAY

How we achieve personal safety and security is an important factor in our everyday lifestyle and self-expression. Many people are investing in internet-of-things devices such as smart locks. Entry to the home, car or office can now be enabled via selfies. ***An entrance camera can do the job, but having a phone with its***

own security credentials take a selfie at a particular angle with a particular facial expression or gesture adds a high degree of extra verification of identity. Using the selfie gives extra peace of mind.

Selfies could similarly be used as part of entry procedures to tourist attractions or cinemas instead of using tickets or fingerprints. After entry, selfies could then be used to authorise any other payments, while uploading selfies from the park to social media could even be used as a means of getting discounts or queue priority. So selfies could effectively take on the form of a currency, trading advertising value for the park for real discounts for visitors. Selfies could also be useful for linking in other personalised features such as personalised audio tour guides. In fact, you could have your friend's face via their selfie acting as your tour guide if you want.

Dating uses will feature heavily too. Images can be used to identify if someone else finds you attractive by analysing factors such as their pupil dilation or body language when they were looking at you, and both of these are well suited to today's AI capability. **You could pretend to be taking a selfie while having coffee with a new date, sitting opposite, and while you are pretending to be getting just the right smile, your phone could be analysing their image to see how much they like you, or not.** If you have other friends nearby, pictures of your date from their phones could also contribute to the advice. This capability will make dating and partying much more fun, but it will also help avoid embarrassing rejections if you know someone isn't attracted before you approach them. Just by pointing the camera at a stranger while appearing to be taking a selfie and making your favourite expressions and gestures will tell your phone a lot about whether or not they are attracted to you.

- *No surprise that over 96% of those surveyed under 24 years old have taken a selfie*
- *In contrast, over 64% of over 55 year olds have taken a selfie*
- *Over a quarter (26%) of 18-34 year olds would use a selfie to enhance their dating profile*

ARE SELFIES BREAKING NEW GROUND IN MEDICINE?

The potential medical benefits for selfies are enormous. Medical selfies will clearly be more important in low density population areas than in cities and will enhance medical care for emergencies for many who live far from a doctor or don't have easy transport access. However, even people with easy access to doctors will benefit. Uploading a selfie is an excellent way of linking to cloud-based AI systems that can advise on numerous health-related issues.

Medical AI has been progressing very rapidly in the last year or two and is still accelerating so even though this field is embryonic, it offers significant potential to improve health while reducing health care costs, mainly by aiding early diagnosis and encouraging people to take more proactive involvement in their own health. High resolution selfies of the skin can be perfect for helping doctors to remotely diagnose rashes, warts, or even skin cancers for example. Medical AI can then do a lot of the pre-work by advising on whether a doctor should be consulted. Light emissions and reflections from skin give clues about blood flow, so a computer can directly check pulse rate and estimate blood pressure. They can also indicate body temperature – to help diagnose a fever, heat changes - to check blood circulation, skin moisture - that indicates stress levels.

Using more image analysis, pupil dilation and face and gesture recognition can be used to help diagnose phobias or commercially to spot things people prefer. Automated image recognition can even be used to monitor a crowd for individuals acting suspiciously, helping to keep people alerted to any nearby potential threats so they can stay safe. Selfies can be used to monitor sunbathing to help avoid sunburn and keep a check on the ageing process.

- *Over a quarter (29%) of those polled would rather see a doctor via a selfie / video call in the first instance*
- *With 25-34 year olds keener to experience this, with 40% expressing a wish to see a doctor via selfie / video call*
- *Men too, more so, would rather see a doctor via a selfie / video call*

CAN SELFIES ENHANCE HOW WE STAY FIT?

Sports action selfies obviously don't let a user hold a phone in their hands to take them, so drones are starting to play a part in sports selfies too. Drones can already carry a camera and follow a skier down a run. They are often controlled by smartphone apps and can relay images to the phone too, so this can augment the phone's own capabilities with a remote camera. If a person is holding their phone, its accelerometers can detect movement in any direction so can be used automatically as a control device and a tracking device to ensure that the drones stay in the best position to get the best pictures. It won't be long before some people will be accompanied by swarms of small drones giving multiple camera locations for full 3D video capture. With augmented reality or image processing later, skiers could appear to be skiing down a cliff edge in Alps like James Bond, even though actually on a dry ski slope in Ipswich.

As well as drones, robots will soon be used frequently to take selfies of themselves or of people. They could be used to get selfies in dangerous locations, by using the robot as a stand-in and use AR to replace with a picture of the person. So you could get your robot to stand on the edge of the cliff and take a selfie and you would be edited in afterwards. If you are actually brave and are actually on the cliff edge, but you need your arms free to balance or pose, then the robot still offers the better location from which to take the selfie. Certainly, with robots and drones, selfies will no longer be constrained by the length of a selfie stick.

IoT gym lighting can even be expected to adapt to phone selfie apps. Many lighting systems now include such capability so phone apps could easily talk to the gym customer service system to control lights both in direction and colour balance. So provided your gym membership level allows, you could use the extra enhanced selfie capabilities they provide.

Maintaining fitness is important to ongoing health, so potential markets are large and fitness activity is a current focus of internet-of-things (IoT) activity. Some of the earliest progress in this field was when games machines started recognising fitness movements for direct use in sports and fitness games with the avatar in the game acting as a sort of selfie in itself. Cameras obviously were central to that trend, but now cameras in phones are far superior, as are the processors, storage, and of course links to the cloud, so the capability to analyse body movements precisely is very much better now. ***An AI engine today could analyse body movements to not only check calorie burn and heart rate, but also advise on how accurately a move is being performed and show what needs to be changed. Selfies won't be used just to show off, but to tell us how to do better next time.***

- *A quarter (26%) of people surveyed who go to the gym take a selfie when they are there*
- *With 83% commenting that the lighting in gyms is good for selfies*
- *Men are more likely to take selfies in a gym than women*
- *Nearly half (46%) would take more daring selfies if a robot took them*
- *Half (51%) of those who do extreme sports take a selfie doing so!*

WHAT IF YOU COULD ACCESS YOUR BANK WITH A SELFIE?

Finance and retail provide strong pillars of the physiological and safety layers of human needs, so they are large markets and selfies can tap into them well. ***Selfies already play a role in identification and will become increasingly important in financial transactions.*** They can be used as biometric identifiers and if taken by a

user's own phone, the phone itself automatically provides other security tokens that can be used to prove the selfie originated directly from the owner at that time, rather than a fraud using an older one copied from a website. Companies such as Square have already started using face recognition to automatically execute payments in coffee shops and we should expect selfies to grow in popularity similarly. Obviously, people can use a particular expression for that purpose if they want.

Making interfaces more natural makes them easier for people to understand and remember, in contrast with increasingly complex passwords and user IDs. Taking a selfie is becoming a very familiar activity for many people, so it naturally combines biometric security with electronic security. Rather than just using a straightforward snapshot, video capability allows extra security by incorporating gesture recognition. A particular hand gesture while smiling or winking could be far more secure than a still selfie. Taking a selfie while shaking hands or making a signature gesture combines several security 'tokens' to make high quality authentication and security, also allowing very natural payments. People might use different gestures to access different banking and payment systems, just as you might have different gestures when you greet close friends than when you meet strangers.

Voice recognition can also be added to make a record of the transaction as well as to understand what needs to be transferred and to whom. Phone ID, voice print, face image and gesture makes four tokens at least that can be combined. That could be enough security to verify even large financial transactions or contracts. Cloud-stored transaction logs underpinned by block chain technology could be legally enforceable verbal contracts.

- *A third (34%) of those polled would find bank safer if a form of selfie identification was able to be used*
- *Nearly half (42%) of 25-34 year olds are interested in selfie technology in banking*
- *A quarter of over 55 year olds and over (26%) would trust bank security more if selfie technology was used*

CAN SELFIES MAKE SHOPPING A MORE PERSONAL EXPERIENCE?

In human nature terms, retail is the modern equivalent of cavemen hunting and foraging, or bartering with other people, so is another area guaranteed to provide selfie applications. ***The same technologies used for finance can also be used to provide a foundation for discount cards, personalised vouchers, tickets and travel cards, indeed any personalised form of value storage.*** However, retail also picks up on the other layers of human needs, such as social belonging, status and self-actualisation. A phone can use augmented reality to overlay highlights onto a shop to help a user find the best offers that match their preferences and requirements. ***A quick selfie can tell the phone what sort of mood the person is in and how they are dressed, giving clues about what they might be interested in.***

A selfie can show how a user might look in assorted outfits, so they might try on one colour, and the image-processed selfie would show them in the same outfit in other colours, or a totally different outfit. Voice control of the app could even add on optional modifications. Some gadget lovers carry tiny projectors, so they could project a life size selfie onto a nearby wall, making a virtual mirror for these virtual clothes. ***Although shops may not like it, shoppers can already use phones to see competitor offerings even while they are trying something on and virtual selfies can allow easy visual comparisons.***

Rapid manufacturing, customisation and delivery are already accelerating but selfies will provide a big boost to it and soon it will be the norm and we'll be used to wearing clothes that fit properly. To do that, manufacturing systems need to know our precise shape and size, as well as our personal preferences. A selfie taken in underwear in a changing room from different angles as we twirl allows automatic body sizing, so the user can get clothes made to precisely their shape and size, even if they are trying on outfits off the

peg. Personal preferences can be stored by the phone every time a user makes a purchase and over time, the phone will know quite a lot about what you like or don't like, and will be able to show you some potential modifications that you might like and would be available for anything you buy. These selfie-enhanced features will accelerate hybridising of online and high street shopping, forcing shops to adapt quickly.

CAN SELFIES HELP THRILL SEEKERS CAPTURE THE MOMENT?

On a theme park trip, rollercoaster provide many of the most intense thrills. Often that involves people holding their arms up during scary bits to show how brave they are, but of course that prevents them easily taking a selfie, and in any case, their arms would be moving wildly. Rollercoasters may have built-in phone carriers for this purpose. The coaster could offer a secure holder that is cushioned from vibration and that is in a good location to take pictures from.

The camera features on the phone could even be controlled directly by the coaster, and of course its designers know exactly where the best photos would come from. Since the phone also has accelerometers, it can capture the movement and acceleration forces over an entire rollercoaster ride for later reproduction regardless of the angle the phone was in. Riders will certainly want to know what the accelerations were when a photo was taken. The phone also knows where it is so could arrange for pictures to be taken at precisely the same parts of the ride that your friends' selfies were taken.

- *Nearly half (44%) of those surveyed would most likely take a selfie on a rollercoaster if they could, safely*
- *Nearly half (48%) think a selfie on a rollercoaster would create a better picture than the photography currently taken on the ride*
- *57% of under 34 year olds adults would like to be able to take a selfie, safely on a rollercoaster*

CONCLUSION

Selfies already play an important part in everyday life, but there is still so much future potential. Looking at how well selfies already appeal to basic human needs and desires, it is clear that the market is far from saturated, and many areas still remain largely untapped. They could be used far more effectively in security, making banking, finance and shopping easier and more secure. There is lots of scope to increase the role of existing image processing techniques and tools to make selfies into a personal imagination tool, and a means for better self-expression. The selfie craze started with people just wanting to fit in, to be part of a group, to be fashionable and show off a little, to stake their claim for status, to make more of themselves. Those needs won't go away any time soon. Selfies will survive the test of time, they'll just include a whole lot more.

TOP 10 WAYS WE COULD SEE SELFIES IN USE IN THE NEXT FIVE YEARS

10 ways we could see selfies in use in the next five years

1. ***Dating:*** *Checking to see whether a stranger fancies you*
2. ***Medical:*** *sending a selfie to the doctor, to check for early self-diagnosis or remote doctor consultations*
3. ***Selfie security:*** *for banking and financial transactions*
4. ***In leisure:*** *imagine the 'Selfiecoaster' – a rollercoaster that lets you safely take a selfie*
5. ***In a gym / fitness:*** *selfies that work with AI to capture body monitoring e.g. testing heart rates*
6. ***Made to measure clothes:*** *getting a 3D body image for made-to-measure clothes*

7. **In retail:** taking a selfie to see what different outfits will look like on your body shape
8. **Social currency:** paying for entry to cinema or tourist attraction through a selfie
9. **Robots:** Phones controlling drones or robots to get selfies from other or extreme locations
10. **Home:** Using selfies to secure and access our homes and cars

NOTES TO EDITORS

About Sony's Xperia XZ

[Xperia XZ](#) perfects the fundamentals of a flagship smartphone. Packed with innovations in technology, it boasts one of the most advanced cameras in a smartphone, an intelligent battery technology and smart features that adapt to you. All delivered in a stunning, loop surface design. Key features:

- 23MP rear camera with triple image sensing technology for blur-free pictures and true-to-life colour
- 13 MP front camera with superior low-light capabilities
- 5.2" Full HD display with curved glass
- Stunning loop surface design
- Fast Qualcomm® Snapdragon™ 820, 64-bit processor

About the report

The report has combined the work Dr Ian Pearson, global futurologist at Futurizon with market research company OnePoll who conducted survey / data research across Europe. The statistics within the report are a collective of 6500 respondents across four territories – UK, Germany, France and Spain.

A note about the statistics throughout the report

All statistics in the report are not representative of the general population but are of those surveyed. A sample size of 6500 across four European markets were polled.

About the author

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Ian Pearson is a full time futurologist, tracking and predicting developments across a wide range of technology, business, society, politics and the environment. He is a Maths and Physics graduate, a Doctor of Science, and has worked in numerous branches of engineering, from aeronautics to cybernetics, sustainable transport to electronic cosmetics. His 1700+ inventions include text messaging and the active contact lens. He was BT's full-time futurologist from 1991 to 2007 and now runs Futurizon, a small futures institute. He writes, lectures and consults globally on all aspects of the technology-driven future. He has written several books and made over 700 TV and radio appearances. He is a Chartered Fellow of the British Computer Society and a Fellow of the World Academy of Art and Science, the Royal Society of Arts and Commerce, and the World Innovation Foundation.