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Classroom Technology: A Buyers' Guide

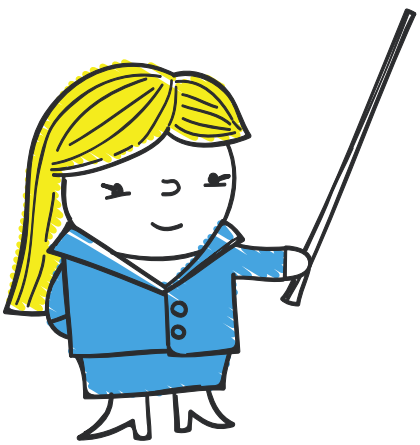
Everything you ever wanted to know about interactive classroom technology but were too afraid to ask

With the rise in academies and record high numbers of school leavers and international students accessing further education in the UK, there is even greater pressure for educators to deliver academic results and financial returns.

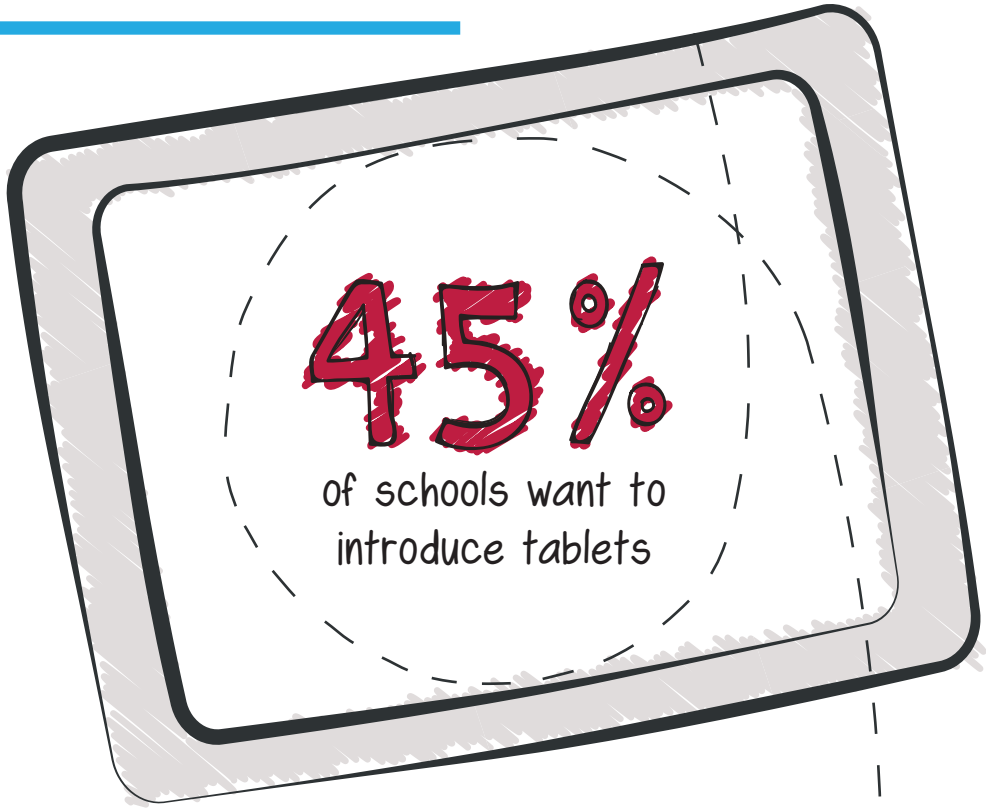
More emphasis is being placed on creating modern learning environments through the introduction of technology into the classroom, aimed at enhancing the learning experience of Generation Z and making the job of teaching them more meaningful. To that end, research suggests that a large proportion will be spent on improving technology in the classroom.

It's hard to imagine life without mobile technology, tablets and interactive touchscreens these days in spite of them only being around for a few years – they have become to Generation Z what the chalk board and slate were to Victorian children. Given the speed of change, tablets and other classroom technology will undoubtedly evolve over time but the biggest shift will be how we access it. The classroom of the future will therefore be one where devices are connected, where learning, sharing and collaboration is social regardless of physical geography and where data and software is stored in the cloud.

To help schools, colleges and universities future proof their learning environments and select the most advanced touchscreen technology, we've created this guide to demystify the buying process for teachers, lecturers, bursars and business/IT managers so they can make an informed decision.



The Rise of Classroom Technology



According to recent research by the education technology charity, Tablets for Schools, almost *"70% of primary and secondary schools in the UK now use tablet computers."*

The research indicated that the trend for tablets in schools and colleges would continue to increase. Of the 30% of schools not using tablets, 45% want to introduce them in the near future. According to a BBC News report, the number of tablets in schools is expected to rise from about 430,000 to almost 900,000 between 2014 and 2016.

In the report, an academic (formerly) from the University of Cambridge's education department, agreed that the role of technology would continue to grow in schools stating that ***"The type of device might change, but it's not going to go away. It will almost seem ridiculous if some of them [schools] are not using that technology."***

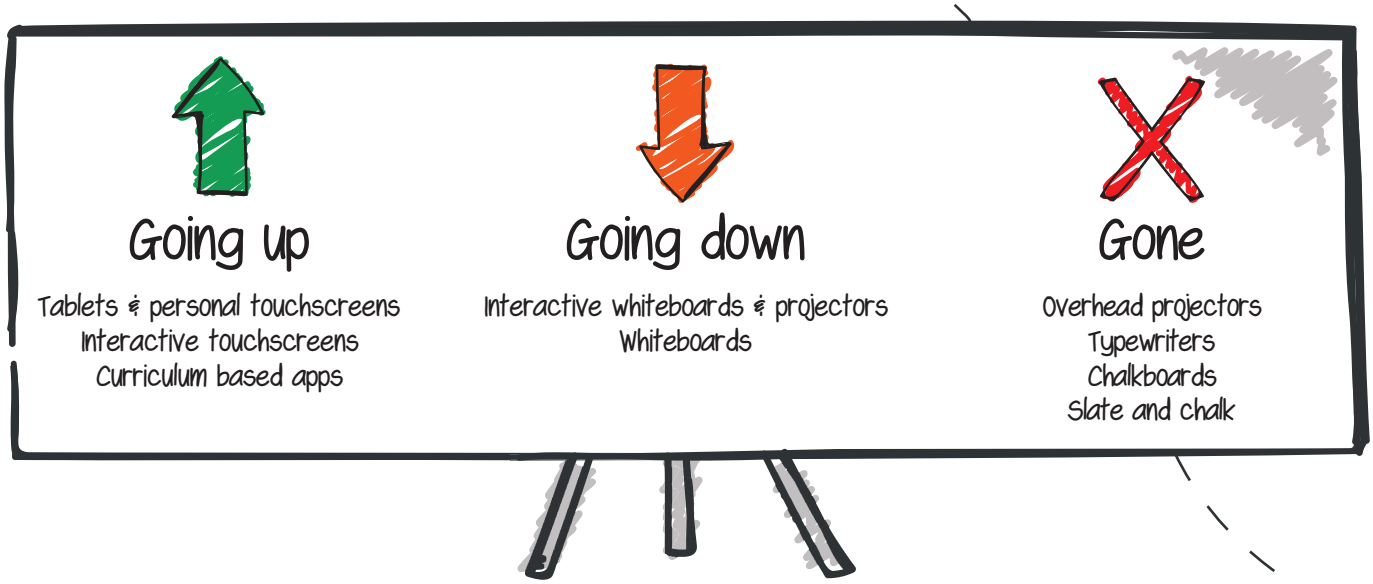
An additional study from the National Literacy Trust and Pearson, published in December 2014, suggested that touchscreen computers are particularly useful in helping boys and poorer pupils to learn to read. The research showed how much technology is part of everyday life for young people. For example, children from poorer households are more likely to read on touchscreen computers than printed books and the benefits of using them to teach children with learning difficulties is significant.

This was echoed by a head teacher in Essex, who stressed that schools need to exist in ***"the current century and not the last"*** in order to empower young people.

The shift to touchscreen has also happened with larger interactive touchscreens, which now sit at the front of the classroom (think giant tablet). Interactive touchscreens have overtaken interactive whiteboards and projector systems – the first digital technology to be used by teachers in place of chalkboards and whiteboards.

With the speed of change constantly biting at educators' heels, the following buyers' guide will show what's going up and down in the world of touchscreen technology and where to invest precious budgets.

The Choices



Interactive whiteboards

Connected to a teacher's lap top or PC and an interactive projector, an interactive whiteboard displays information from the connected device, which is controlled by touching the whiteboard screen.

The technology behind interactive whiteboards is 15 years old and as such there is a compromise on the resolution of the projected image coupled with poor projector brightness, which degrades over time. Shadowing is a major drawback and the cost of all the necessary equipment and running costs has become more expensive than 'total cost of ownership' of second and third generation interactive touchscreens.

Well-known brands include Promethean's ActiveBoard, Cleverboard, the SMART Board and Hitachi's StarBoard with prices ranging from £1000 for the interactive whiteboard and over £3,000 for the total installed solution.

Interactive touchscreens

Unlike interactive whiteboards, interactive touchscreens connect directly to a lap top or PC and don't need to be used in conjunction with an interactive projector. Some interactive touchscreens, like the Clevertouch Plus from Sahara, don't even need to be connected to a computer. Much like a personal tablet, the Clevertouch Plus has an inbuilt operating system and can be used in conjunction with pupils' personal tablets as well as a wide range of curriculum based teaching apps and IT ecosystems.

Interactive touchscreen technology has been around for over 6 years but in the last 2-years brands like Clevertouch, BenQ, C Touch and Smart have upped their game significantly.

Recent advances have done much to eliminate touch-lag, which previously hindered the formation of smaller letters on touchscreens. The latest technology tracks even the most subtle movements across a screen providing a massive leap forward in the quality of letter formation. Recent interactive whiteboard models use LED based sensors, which are far more sensitive than their predecessors. The Clevertouch Plus, which is released this year, goes one step further and includes its own Android app store with a range of downloadable teaching apps aimed at bringing lessons to life.

Interactive touchscreen brands in the UK include the Clevertouch, SMART, BenQ, InFocus and the CTouch with prices ranging from around £1100–£3000 for standard size screens and increasing for larger screens.

Personal tablets

There are a number of considerations when introducing personal tablets into the classroom. They include cost, battery life, special features and most importantly the operating systems they use. Android tablets have the most widely used operating system and have access to the broadest range of free educational apps through Google's Play Store. The iPad, which uses Apple's proprietary operating system (iOS), is the number one choice in schools. Microsoft Windows RT, which is used with Windows Surface Tablets, Windows 8 and Windows Metro Tablets, is another popular option.

The charity, **Tablets for Schools,** which we cited earlier in the Buyers' Guide, is an excellent resource for educators wishing to bring tablets into the classroom.

Commonly asked questions

What best fits our needs?

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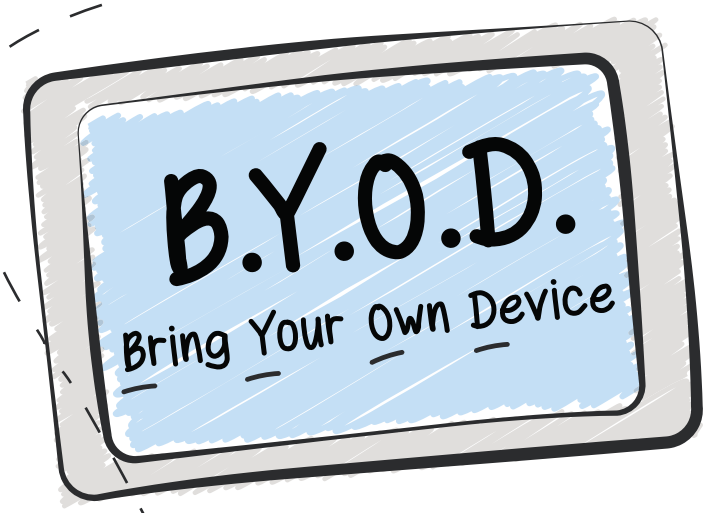
Having a strategy for how you bring personal tablets into the classroom is paramount – for example you may want to provide each pupil with a specific tablet or operating system that works in harmony with a teacher's interactive touchscreen. Alternatively, you can introduce a BYOD policy allowing students to bring their own compatible device.

The latest interactive touchscreens enable greater connectivity between student and teacher devices. The ongoing running costs for interactive whiteboard and projector systems are more expensive than touchscreens, which don't require costly bulb changes and generally have a longer life.

*total cost of ownership' can be found on page 10.

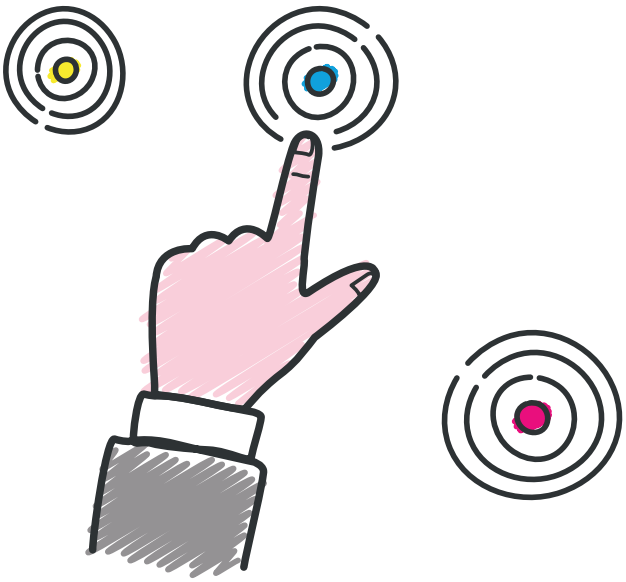
For up to date software, content and apps, it's advisable to choose the latest screen technologies for both interactive touch-screens and personal tablets as these are geared towards collaboration and increased access.

A secure Wi-Fi network, device compatibility and retaining a specialist UK based Cloud provider to back up and store files should be at the heart of your decision making process.



Where can I buy equipment?

AV Installs Ltd can provide equipment from all the manufacturers call 01604 493755 or visit www.avinstalls.co.uk for more info.



What's an operating system and why does it matter?

An operating system give mobile devices like tablets and interactive touchscreens a brain. The most common and adaptable operating system is Android. Android is 'open-source', which means developers can use it to make a variety of apps, games and software while Apple uses a 'closed-source' proprietary operating platform (iOS).

Although both operating systems are designed for tablets and mobile devices with touch technology at their core, Android is widely used and gives users access to a broad range of apps through Google's Play Store or other open-source app stores and websites.

Closed-source programs are owned by one organisation and built by an in-house team of developers. End user software licenses can be revoked, terminated or expire after a period of time. By contrast, open-source software usually involves a community of software engineers collaborating on the creation of apps, games and other software. As a result, open-source software tends to be more robust than closed-source software and end user licenses permit the use, copy and distribution of the software on a free or fee paying basis in perpetuity.

How does touchscreen technology work?

Touch technology is embedded in the frame of an interactive touchscreen using either optical cameras, infrared or a combination of the two. As you touch the screen a signal is sent to the frame indicating where it has been touched, allowing the user to control a connected PC or the inbuilt operating system.

How many touch points do interactive touchscreens have – and why does it matter?

Interactive touchscreens have anything between 4 to 32 touch points depending on the brand and model of the touchscreen. More touch points give the user greater gesture control and, providing the supplied software can support multiple touch points, the best overall user experience.

The Clevertouch Plus interactive touchscreen has 10 touch points and multi touch software, which means that a number of people can collaborate on group activities. For example, curriculum based apps can be split on interactive touchscreens so that children can work alongside their peers using a variety of gestures and movements to control the activities on screen without functionality or play being affected.

How reactive is an interactive touchscreen – can I write normally on it, do I need a stylus or can I use a finger?

Interactive touchscreen are very reactive – some more so than others. Before buying, check the responsiveness of the screen to ensure you can easily replicate letters and symbols of varying sizes.

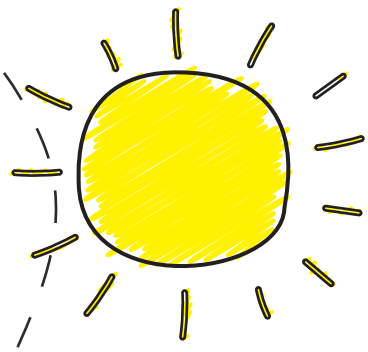
When it comes to how you touch the screen you can use a stylus, finger or anything with a soft tip.

How do I connect to an interactive touchscreen?

With most interactive touchscreens you simply connect the screen to your PC or laptop using an HDMI or VGA cable and enable 'touch' with a USB stick. The Clevertouch Plus range is the first interactive touchscreen to have its own integrated Android operating system, which means it can be used like a giant tablet without a PC. For even greater flexibility, the Clevertouch Plus can also be used in conjunction with a PC or lap top as described above.

Are interactive touchscreens affected by direct and indirect sunlight?

Because interactive touchscreens are mounted on a wall or placed on a stand in front of a class they often face direct and indirect sunlight throughout the day. For this reason most interactive touchscreens are fitted with anti-glare glass. Ask your reseller or check online for anti-glare specifications.



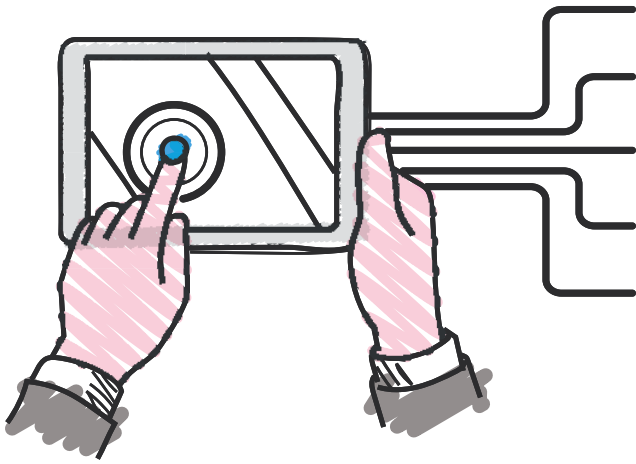
Are interactive touchscreens HD?

HD is most common however, newer 4K models are available too.

How do interactive touchscreens connect to personal tablets and the World Wide Web?

Most interactive touchscreens need to be connected to a Wi-Fi enabled lap top or PC using an HDMI or VGA cable to surf the net.

You can wirelessly connect multiple student devices to an interactive touchscreen using downloadable software like DisplayNote or the Air Share app.

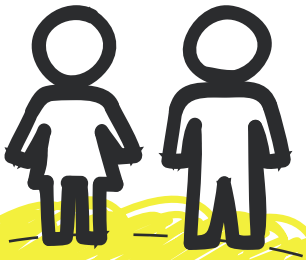


What size of interactive touchscreen do I need?

This depends on the number of pupils, size of room and what you want to use if for. Most classrooms of 30 children opt for a 65" touchscreen, but they are generally available in a range of sizes including 55", 65", 70" and 84".

How complicated is it to use an interactive touchscreen and is training required?

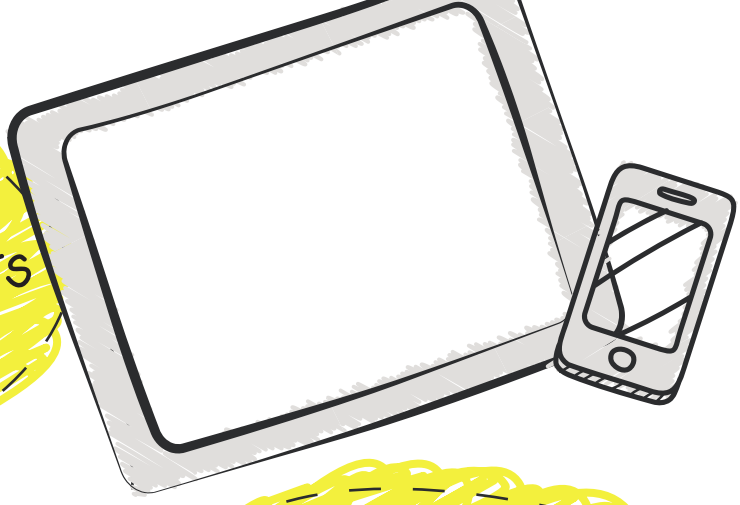
Interactive touchscreens using an Android operating platform will be familiar to most people – they will have used tablets and mobile technology at home. Interactive touchscreens are no different to tablets however, most suppliers will offer on-site staff training, which can be tailored to meet individual requirements.



Can children use large format touchscreens safely and easily?

Interactive touchscreens were primarily designed for use in schools and are extremely strong. Most models come with a 4-5 mm toughened glass screen, which means devices can withstand knocks and bangs directly on the display.

Can interactive touchscreens and tablets improve children's ability to learn?



There is a swathe of research, articles and experience based documentation on the benefits of using tablets and interactive touchscreens in the classroom. The general view is that learning is best optimised when a variety of multimodal channels and activities are employed. By their very nature, tablets and interactive touchscreens enable sensory based learning.

Can I use my current lesson plans and documents in other applications such as Word or PowerPoint?

Yes, by connecting your existing computer to the screen you can view and edit lesson plans and documents controlling the cursor by touch instead of using a mouse or laptop trackpad.

If you are using a touchscreen with an internal operating system and don't want to connect to a separate PC, you can download an app (e.g. Olive Office) that enables you to open and edit application files like Microsoft PowerPoint and Word.

What apps can I download for tablets and interactive touchscreens and do I have to pay for them?

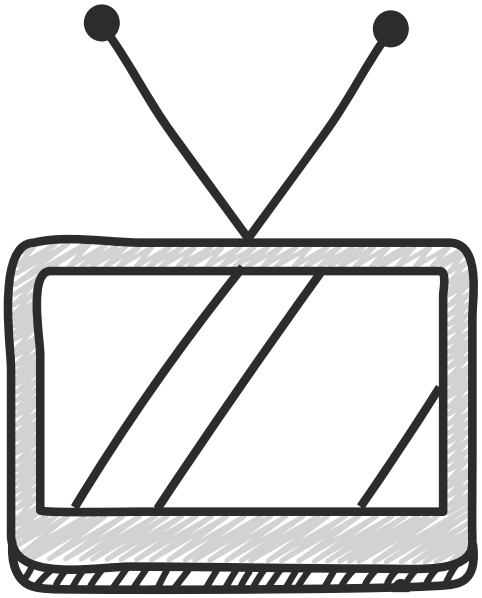
This very much depends on your operating system and the device used. Most free apps contain in-app advertising, which can be avoided by purchasing apps through a vetted supplier such as Google Play Store or the Apple App Store. Apps purchased for the Clevertouch Plus from the CleverStore are free to use and do not contain any advertising or in-app purchases.

Can I write over images when using an interactive touchscreen?

An on-screen annotation app such as CleverNote from Clevertouch enables users to write and draw over images and save them.

Is there sound and how loud is it?

Most interactive touchscreens have internal speakers, which are sufficient for typical classroom use. If you want to increase the audio additional speakers or sound bar can be added.
ractive touchscreens can be mounted directly onto the classroom



Can I play DVD's or watch TV on it?

You can play DVD's on most interactive touchscreens using a DVD player or laptop with a DVD drive. Alternatively, television and video can be streamed as easily as from a personal computer, tablet or mobile device.

Do interactive touchscreens need special wall fixings or do they come with a stand?

wall or used with a mobile trolley stand. You can control and adjust height screen height on a stand or a wall so that younger students and students at the back of the class can view it. It is important that all interactive touchscreens are fitted by a fully qualified installer as they are extremely heavy.

What happens if our interactive touchscreen goes wrong?

Check with your Account Manager – most interactive touchscreens have an extended warranty and on-site de-install/ re-install. For example, Clevertouch troubleshoot over the phone and will send an engineer to fix, remove or replace the device. Most brands offer a support and repair service.

How long do interactive touchscreens last?

Touchscreens last approximately 80,000 hours – that's equivalent to running 24 hours a day, 7 days a week for approximately 9 years. However, it's unlikely that an interactive touchscreen would be used this heavily so it should last until you decide to upgrade.

How much will all this technology cost?

Speak to your Acount Manager for the latest pricing and quantity based deals.

Are the running costs expensive?

We've compared the costs* of running a traditional interactive whiteboard system and a typical 55" interactive touchscreen on an annual basis.

Traditional Projector System
Total cost of ownership over 4 years:
£1519.92

Clevertouch Plus 55"
Total cost of ownership over 4 years:
£276.96

*Please note these calculations relate to Clevertouch models and results will vary between brands. Costs are calculated on 8 hours a day, 5 days a week, over 38 weeks for education use. Total cost of ownership includes an average figure over 4 years of service calls, bulb replacements, filter cleans and energy costs.

How quickly will touch technology be superseded by something else?

Although technology will undoubtedly change, touch technology is unlikely to be superseded anytime soon. The biggest changes will be seen in the way we enable technology, share content and back up, store and access data.

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