ANGLAIS

Synthèse type CCINP — 3 heures

N.B. Le candidat attachera la plus importance à la clarté, la précision et à la concision de la rédaction.

Rédigez en anglais et en 400 mots une synthèse des documents proposés qui devra obligatoirement comporter un titre.
Indiquez avec précision à la fin du travail, le nombre de mots utilisés (titre inclus), un écart de 10% en plus ou en moins sera accepté.
Vous aurez soin d'en faciliter la vérification, soit en précisant le nombre de mots par ligne, soit en mettant un trait vertical tous les 20 mots.

Veuillez à bien indiquer, en introduction, la source et la date de chaque document. Vous pourrez ensuite, dans le corps de la synthèse, faire référence à ces documents par "document 1", "document 2", etc …

Ce sujet comporte les 4 documents suivants :

— **document 1** : Augmented Reality Everywhere (extrait de *Scientific American*, September 14, 2018)

— **document 2** : How augmented reality technology erases the human v. machine boundary (extrait de *The Guardian*, July 14, 2016)

— **document 3** : un dessin humoristique (provenant du site www.ITwirld.com)

— **document 4** : Why augmented reality will be big in business first (extrait de *The Economist*, February 4, 2017

Les documents ont une égale importance.

Doc 1 : Augmented Reality Everywhere *Coming soon: the world overlaid with data*

Scientific American / By Corinna E. Lathan, Andrew Maynard on September 14, 2018

Virtual reality (VR) immerses you in a fictional, isolated universe. Augmented reality (AR), in contrast, overlays computer-generated information on the real world in real time. As you look at or wear a device equipped with AR software and a camera—be it a smartphone, a tablet, a headset or smart glasses—the program analyzes the incoming video stream, downloads extensive information about the scene and superposes on it relevant data, images or animations, often in 3-D.

Two examples: the display that helps your car to back up safely and the popular game Pokémon GO. A multitude of consumer apps—including ones that translate street sign for foreign visitors, enable students to dissect virtual frogs and allow shoppers to see how a chair will look in their living room before they bring it home—also feature AR. In the future, the technology will enable museumgoers to conjure up guides resembling holograms; surgeons to visualize tissues underneath a patient's skin in 3-D; architects and designers to collaborate on their creations in novel ways; drone operators to control their remote robots with enhanced imagery; and novices to speedily learn new tasks in areas ranging from medicine to factory maintenance.

Easy-to-use software for designing apps should expand consumer offerings in the coming years. At the moment, though, AR is having its greatest impact in industry, where it is an integral component of the "Fourth Industrial Revolution," or "Industry 4.0": the systemic transformation of manufacturing through the integration of physical and digital systems to improve quality, lower costs and increase efficiency. Many companies, for instance, are testing its use on assembly lines. AR can deliver just the right information at the very moment it is needed (such as when a worker has to select one part over another)—thereby reducing errors, enhancing efficiency and improving productivity. It can also visualize stresses in equipment and create real-time images of where problems lie.

Market analysts, such as ABI Research, IDC and Digi-Capital, believe that augmented reality is on the cusp of going mainstream. They expect the total market for AR, currently valued at about $1.5 billion, to grow to $100 billion by 2020. Major technology companies—including Apple, Google and Microsoft—are devoting large financial and human resources to both AR and VR products and applications. And venture capital is starting to roll in, with $3 billion invested in AR and VR in 2017—half of that amount in the fourth quarter alone. *Harvard Business Review* recently highlighted AR as a transformative technology that will affect all businesses.

Obstacles persist. At the moment, limitations of hardware and communication bandwidth pose barriers to scaling up for everyday use by consumers. For example, many existing museum and travel apps that use AR to enhance an experience have to be downloaded in advance. Even then, the quality of the graphics may not meet users' expectations. But the field is set to grow dramatically as cheaper, faster AR-ready mobile chips become available, more versatile smart glasses come to market and bandwidth increases. Then augmented reality will join the Internet and real-time video as an unexceptional part of our everyday lives.

Doc 2 : How augmented reality technology erases the human v machine boundary

The Guardian, Tom Chatfield, Thursday 14 July 2016

Tom Chatfield is a British author and commentator on digital culture. His most recent book is Live This Book (Penguin).

In his 1963 book God and Golem, the founder of the cybernetics movement Norbert Wiener suggested a compelling thought experiment. Imagine cutting off someone's hand, he wrote, but leaving intact the key muscles and nerves. Theoretically, a prosthesis could connect directly both to nerves and muscles, giving the subject control of the replacement organ as if it were real (I'm indebted to Thomas Rid for highlighting Wiener's thought experiment in his new book, *Rise of the Machines*).

So far so sensible: this scenario was a reasonable extrapolation at the time, and is close to becoming a reality today. Wiener, however, went further. Having imagined an artificial hand able to replace its original, he wondered why we should not now imagine the addition of an entirely new kind of limb or sensory organ? "There is," he wrote, "a prosthesis of parts which we do not have and which we never have had." There was no need to stop at nature. Human-machine integration could in theory blur its boundaries well beyond replacement.

It's 14 July 2016, and between typing this paragraph and the last I dashed outside with my iPhone to catch a Pokémon lurking next to a tree (a cute orange lizard: Charmander, weight 8.5kg, height 0.6m).

What would Wiener have made of this? I suspect he would have been delighted. While I'm playing Pokémon, my smartphone functions much like a sensory prosthesis. In order to move my avatar around a map, I must move myself. When I get close enough to a target, I hold the device up and through its camera see something superimposed on the world that would otherwise be invisible. It's like having a sixth sense. My Pokémon-gathering escapades place me somewhere between a cyborg and a stamp collector.
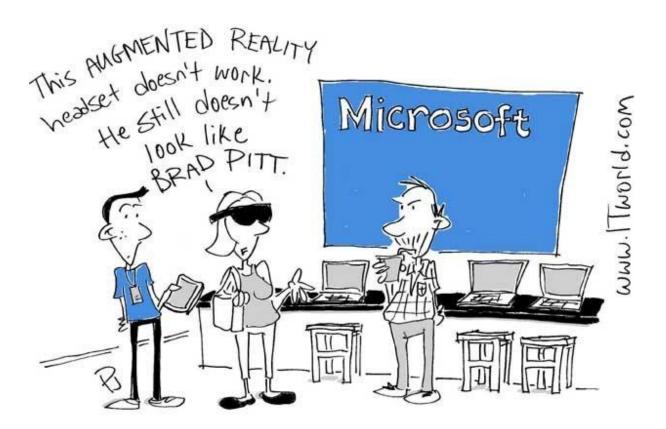
Yet there are also elements in this species of enhancement that clash with Wiener's vision. If I had a superhuman prosthetic eye able to see infrared – like Arnie's beloved cybernetic organism in the Terminator movies – I could step outside into the dark with clear vision. I would have access to actuality in a fresh way: a machine-enhanced grasp of what's under my nose. This is the kind of enhancement that technology has offered humans over millennia. We move faster, further; we enhance the strength of our limbs, the reach of our wills; we look deep into space, or at the microscopic order of things. We magnify our scope and capacities.

None of this is quite like playing Pokémon. What I see and do while lobbing tiny balls at a cartoon orange lizard does not exist outside of the machines I'm using. Yet nor is it a straightforward piece of mediation like reading a book or watching a movie. The experience is present on my screen, in my mind, and in the dance of data between mobile device, GPS satellites, mobile networks and distant servers. And everyone else with the right app is welcome to join in.

A clue to what's going on lies in a term first coined in 1990: augmented reality. What's on offer is a supplement rather than straightforward enhancement: an act of layering and addition. My smartphone is not helping me to see the world with superhuman acuity (quite the reverse: I nearly fell into a canal while capturing that Charmander). Rather, it's like a third eye opening onto the information realm – a gaze overlooking the Earth's oceans of data.

(…) As Wiener foretold half a century ago, the boundaries between human and machine experience are not so much interlacing as being erased. Is it a new sensory organ, this ever-more-intimate interface with information? Perhaps. It's certainly a mental prosthesis whose absence already feels crippling. We are beginning our migration towards a networked sensorium. The question is no longer how technology makes us feel. It's whether, without it, we are even ourselves.

Document 3 : cartoon / ITworld.com

Document 4 : Why augmented reality will be big in business first

THE history of computers is one of increasing intimacy. At first users rented time on mainframe machines they did not own. Next came the "personal computer". Although PCs were confined to desks, ordinary people could afford to buy them, and filled them with all manner of personal information. These days smartphones go everywhere in their owners' pockets, serving as everything from a diary to a camera to a voice-activated personal assistant.

The next step, according to many technologists, is to move the computer from the pocket to the body itself. The idea is to build a pair of "smart glasses" that do everything a smartphone can, and more. A technology called "augmented reality" (AR) would paint computerised information directly on top of the wearers' view of the world. Early versions of the technology already exist (see article). If it can be made to work as its advocates hope, AR could bring about a new and even more intimate way to interact with machines. In effect, it would turn reality itself into a gigantic computer screen.

For the time being, the most popular AR apps are still found on smartphones. Pokémon Go, a smartphone game that briefly entranced people in 2016, used a primitive form of the technology. Another popular application is on Snapchat, a messaging app whose parent firm is gearing up for an IPO (see article): when teenagers overlay rabbit ears onto the faces of friends and family, they are using AR.

But the technology is advancing rapidly. Several companies already make fairly simple glasses that can project flat images for their wearers. They are increasingly popular with warehousing and manufacturing firms, who can use them to issue instructions to employees while leaving their hands free. Meanwhile, firms such as Magic Leap, Meta and Microsoft, are building much more capable headsets that can sense their surroundings and react to them, projecting convincing, three-dimensional illusions onto the world. Microsoft is already running trials of its HoloLens headset in medical schools (giving students virtual cadavers to dissect) and architectural practices (where several designers can work together on a digital representation of a building).

Designing a nifty piece of technology, though, is not the same as ushering in a revolution. Social factors often govern the path to mass adoption, and for AR, two problems stand out. One is aesthetic. The HoloLens is an impressive machine, but few would mistake it for a fashion item. Its alien appearance makes its wearers look more creepy than cool. One reason the iPhone was so successful was that it was a beautiful piece of design. Its metal finish and high-quality components, allied with a big advertising push from Apple, all helped establish it as a desirable consumer bauble.

The other big problem surrounds consent. The history of one much-hyped set of smart glasses should give the industry pause. In 2013 Google launched its "Glass" headsets to a chosen segment of the public. As well as those who thought the product looked silly, plenty found the glasses sinister, worrying that their users were covertly filming everyone they came into contact with. "Glassholes" became social pariahs. Two years later, Google withdrew Glass from sale.

Both of these problems are solvable. Computers only ever get smaller. Costs shrink relentlessly, too. It may well be possible one day to build a capable and affordable AR computer that looks like a pair of fashionable glasses. Social etiquette also evolves. The Snapchat generation may not be troubled by the idea of being perpetually on camera.

In the meantime, AR's first inroads will probably come in the world of work, where bosses can order their employees to use headsets with little concern for the finer social niceties, or for how much of a berk they make people look. AR seems likely, in other words, to follow the same path to popularity as smartphones. The first mobile phones were clunky, brick-sized devices, mostly used by self-important bankers and a frequent target of mockery. You would not wear a HoloLens on a night out. Twenty years from now, though, your children may well be showing off a distant descendant.