

How will parcels be delivered in the future?

Background information

The logistics industry is always looking at how new technology can be used to improve customer service and efficiency. The use of drones and autonomous vehicles (AVs) are being explored by logistics companies to deliver goods in the future.

Drones are controlled by a remote pilot. If a logistics company is going to use drones to deliver parcels over a large area the drone operator will not be able to see the drone. This is known as being 'Beyond Visual Line of Sight', known as BVLOS, which is not considered very safe and is not permitted in many countries including the UK. However, the latest drones have built-in detect and avoid technologies that enable drones to fly more safely out of sight of their operator.

An autonomous vehicle is a vehicle that can drive itself from one place to another with little or no human intervention. Some types of autonomous vehicle are small robots that are being used for deliveries in urban areas travelling along pavements. Other autonomous vehicles include driver-less cars which are being tested on roads in some parts of the world.

Both these technologies use sensors to help detect objects around the vehicle or drone. They also use other technologies to help them complete the tasks they have been set, such as to deliver specific items to a location.

Your task

1. **Research** and **investigate** the current applications of drones and autonomous vehicles.
2. **Investigate** how the Computer Misuse Act 1990 and the Data protection Act 2018 could affect the use of new technologies.
3. **Identify** the advantages and disadvantages of using each type of technology to make deliveries.
4. **Make a recommendation** to a delivery company as to whether they should or should not use drones and autonomous vehicles to deliver goods. **Justify** your recommendation by stating why you would recommend using or not using these types of technology. Use evidence to support your recommendation.

Here are some articles to get you started:

Drones:

- [BBC News - Amazon pledges parcels in an hour using drone deliveries](#)
- [BBC News - Site of hospital drone hub moved after objections](#)
- [Amazon drones can now fly further and deliver more to customers](#)

Autonomous delivery vehicles:

- [BBC News – Self-driving delivery van ditches 'human controls'](#)
- [BBC News – Self-driving delivery trial](#)
- [BBC News – Driverless cars](#)
- [Waymo self-driving cars are delivering uber eats orders for first time](#)

Here are some useful websites on the law and computers:

- [Computers and the law – BBC Bitesize](#)
- [Legislation – Isaac Computer Science](#)
- [Computer Misuse Act – BBC Bitesize](#)
- [Computer Misuse Act – Isaac Computer Science](#)
- [Data Protection Act – BBC Bitesize](#)
- [Data Protection – Isaac Computer Science](#)

(Please note - to use the free Isaac Computer science website, users need to register: <https://isaacomputerscience.org>)

Use the table below to record the advantages and disadvantages of both technologies and record your recommendation and justification as to whether a delivery company should use drones and autonomous vehicles for deliveries.

Delivery Drones	
Advantages	
Possible answers could include:	
<ul style="list-style-type: none"> • Don't have to follow roads • Stay out of traffic • Don't need breaks • Deliver around the clock 	
Disadvantages	
Possible answers could include:	
<ul style="list-style-type: none"> • Can't deliver beyond a certain distance • Battery life affects flight time • Flight restrictions with air traffic control • Privacy issues around routes over private property 	<ul style="list-style-type: none"> • Data retained by the drone may be accessed illegally • Hardware on the drone may be tampered with or accessed illegally

Use the table below to record the advantages and disadvantages of both technologies and record your recommendation and justification as to whether a delivery company should use drones and autonomous vehicles for deliveries.

Autonomous vehicles

Advantages

Possible answers could include:

- Can drive for longer without breaks
- Information sent to the car about adjustments to the route
- React quickly to circumstances that require route adjustments or delivery adjustments

Disadvantages

Possible answers could include:

- Can only go down roads it knows
- Can it adjust to accidents or roadblocks effectively
- Battery life affects distance
- Data retained by the driverless car may be accessed illegally
- Hardware on the autonomous may be tampered with or accessed illegally

Recommendation

Autonomous vehicles

Would you recommend a delivery company uses drones and autonomous vehicles for deliveries?

Justify your recommendation

There is no right or wrong answer for this section.

What is important is that the pupil justifies their answer with evidence from their research.