

Networks, media and automation

International Baccalaureate · IB Diploma · Digital Society · HL

IB Diploma Programme Digital Society HL (first assessed in 2024). This topic covers the other five content areas: **computers** (3.3), **networks and the internet** (3.4), **media** (3.5), **artificial intelligence** (3.6) and **robots and autonomous technologies** (3.7). It also teaches how to work with **sources**, which you need for Paper 2 (1 hour 15 minutes; 20% at HL, 30% at SL), a paper of questions on sources you have not seen before.

In March 2011 an earthquake and tsunami damaged the Fukushima nuclear power station in Japan. Within days, a rumour spread across China by text message and social media: iodised salt protects you from radiation, and soon the sea would be polluted, so there would be no more salt. People queued outside shops and bought bags and bags of salt; in some cities the shelves were empty. The rumour was false: eating salt does not protect against radiation, and China had large salt reserves. A false claim had travelled faster than the truth through a network of phones. This topic asks how that happens.

Must-know for networks, media and automation:

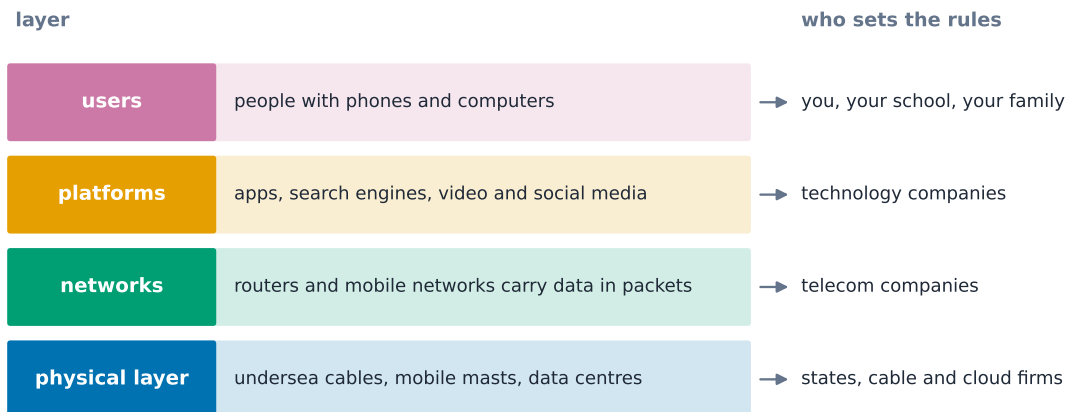
Area	Key content
computers (3.3)	hardware and software; more power, less size and cost
networks (3.4)	the internet as a network of networks; cables, data centres, platforms
media (3.5)	everyone can publish; feeds ranked by engagement; misinformation
AI (3.6)	machine learning; narrow and general AI
robots (3.7)	machines that sense, decide and act; who is responsible?
sources	claim, perspective and origin; Paper 2

Computers and networks

A computer runs **software** (instructions) on **hardware** (the physical machine). For decades the number of transistors on a chip roughly doubled every two years, so computers became smaller, cheaper and more powerful. A smartphone today is a powerful computer that most people carry everywhere.

The **internet** is a network of networks. Data travels in small packets through routers, and almost all data between continents travels through cables on the sea floor. At each layer someone has control: the companies that own the cables and **data centres**, the platforms (the apps and websites people use) and the governments that make rules. Whoever controls a layer can set its rules, and that is a

question of power.



Each layer has owners, and each owner can set rules for the layers above it.

Media

Digital media changed three things:

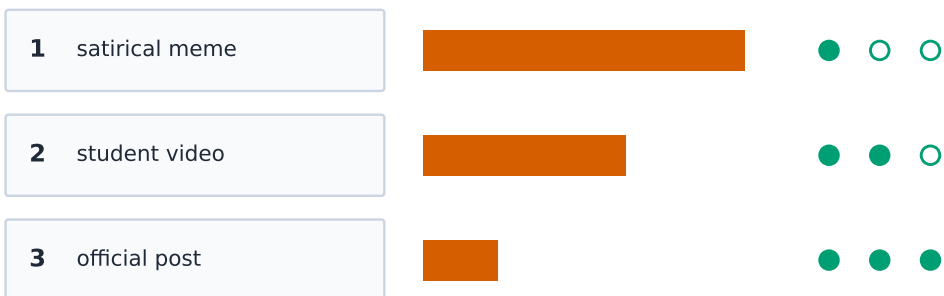
- **Creation:** anyone with a phone can publish text, photos and video.
- **Distribution:** a feed is ranked by an algorithm, usually by **engagement** (likes, shares, comments, time watched), not by date or by accuracy.
- **Participation:** users comment, share, remix and join campaigns.

Misinformation is false information shared by people who believe it, like the salt rumour. **Disinformation** is false information spread on purpose to deceive. A 2018 study in the journal *Science* looked at about 126,000 stories shared on Twitter: false stories spread further and faster than true ones, and true stories took about six times as long to reach 1,500 people. False news is often new and surprising, so people share it.

feed position

engagement

accuracy



The ranking rule reads engagement only, so the least accurate version travels furthest (schematic).

The feed ranks by engagement, so the least accurate version rises to the top.

Artificial intelligence

Artificial intelligence is computer systems doing tasks that usually need human intelligence, such as recognising faces, translating or writing. Most modern AI uses **machine learning** : instead of following rules written by a programmer, the system finds patterns in large amounts of data.

Type	What it can do	Example
narrow AI	one task, or one kind of task	face unlock on a phone; a translation app; AlphaGo, which beat the Go champion Lee Sedol 4–1 in 2016
generative AI	produces new text, images or sound from patterns in its data	ChatGPT (2022), image generators
general AI	any task a human can do, at human level	does not yet exist

AI raises questions in every context: who owns the data it learned from (economic), whether its answers are true (human knowledge), and whether it treats groups fairly (social).

Robots and autonomous technologies

A **robot** is a machine that senses its surroundings, makes decisions and acts in the physical world. An **autonomous** technology acts without a human controlling each step: a warehouse robot, a delivery drone, a self-driving car. Since 2022 Baidu's Apollo Go robotaxis have carried passengers with no safety driver in

parts of Wuhan and other Chinese cities.

When an autonomous machine makes a mistake, who is responsible? In March 2018 a self-driving test car run by Uber hit and killed a woman crossing a road in Tempe, Arizona. The car’s sensors detected her seconds before the crash but the system did not brake, and the safety driver in the car was looking at a phone. Was the fault the driver’s, the company’s, the programmers’, or the car’s? Autonomy moves decisions away from people, but responsibility still has to land somewhere.

Working with sources

Paper 2 gives you sources: texts, images, charts and data. Read each one for three things:

Ask	Question	Salt rumour example
claim	what does the source say?	a message says iodised salt protects against radiation
perspective	who made it, and what are their interests?	an anonymous forwarded text; a government health notice; a scientist
origin and purpose	where, when and why was it made?	made in panic, to warn friends, with no evidence

Then compare: where do the sources agree or disagree, and which is more reliable? Diverse sources means really different perspectives (users, companies, governments, researchers), not several sources that all say the same.

Paper 2 questions usually move from finding information in one source, to explaining and comparing sources, to a longer answer that uses the sources together with your own knowledge and real-world examples.

Worked plan. *Using the sources and your own knowledge, discuss whether social media makes false information more dangerous.*

- Sources: the 2018 *Science* study (researchers: false news spreads faster); a platform statement about labelling false posts (company: the problem is under control).
- Own example: the 2011 salt panic, which spread by text message as well as social media, so the problem is older than today’s apps.
- Judgement: social media makes false information faster and wider, but ranking by engagement is the main cause, and it can be changed.

Checklist

- Computers: hardware, software, growing power.
- Networks: a network of networks; cables, data centres, platforms; who controls each layer.
- Media: creation, distribution, participation; misinformation and disinformation; the 2018 *Science* study.
- AI: machine learning; narrow, generative and general AI.
- Robots: sense, decide, act; autonomy and responsibility (Tempe 2018).
- Sources: claim, perspective, origin and purpose; the Paper 2 plan.