



Oxford Cambridge and RSA

Tuesday 17 January 2023 – Afternoon

Level 3 Cambridge Technical in Applied Science

05874 Unit 22: Global scientific information

INSERT



INSTRUCTIONS

- Do **not** send this Insert for marking. Keep it in the centre or recycle it.

INFORMATION

- This Insert contains the pre-release material you have already seen.
- This document has **8** pages.

Pre-release research brief

You should carry out your own research on the themes given in this research brief. Your research will help you to prepare for your exam.

Your research is only for your own use. You must not bring your notes into the exam.

A clean copy of this research brief will be provided in the exam.

In your research you should consider the following themes:

- Categories of information holders
- Global information protection, legislation and regulation
- Principles of information security

The questions in Section A of the exam will require you to draw on the knowledge and understanding which you have gained while researching these themes.

Instructions:

Read the following pages of information.

Carry out your own research on the themes given above.

The Transforming Farming Alliance

A number of organisations support farmers in developing countries. One such organisation can be called 'The Transforming Farming Alliance' (TFA).

The TFA aims to provide information and training on sustainable and profitable land use. It also provides legal advice and funding for introducing new technologies.

Azmi Das is a Project Manager for the TFA. Recently, Azmi has been visiting groups of farmers to provide training seminars for the use of a new hand-held device (1) for measuring the quality of grain (**Fig. 1**).

Fig. 1

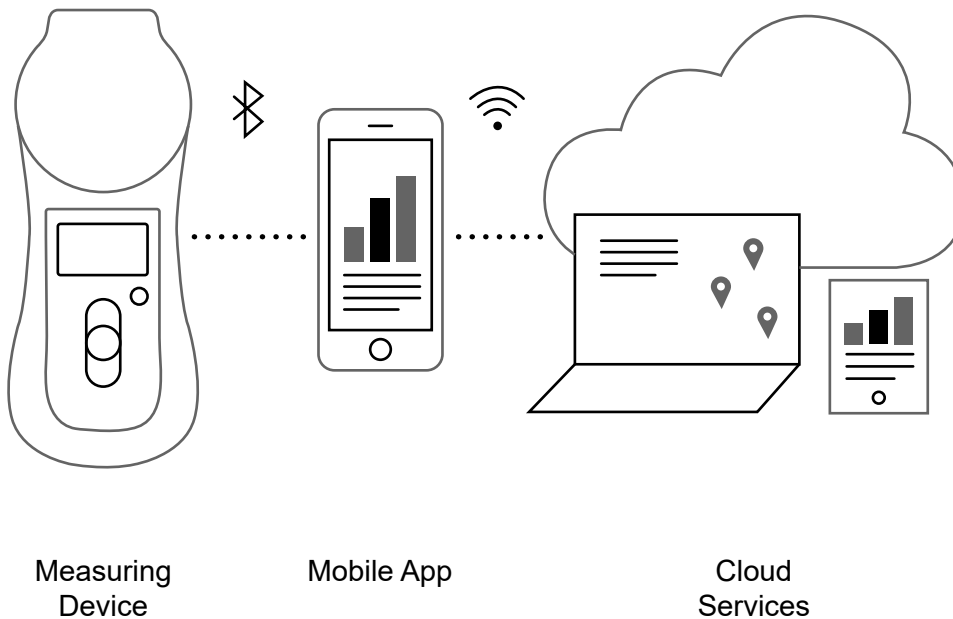


The device measures the protein, moisture, oil and carbohydrate content of cereals and other crops. These are the key parameters in deciding which crops to harvest, when and where to begin harvesting. It helps farmers determine which grains to keep and which to sell for seed sowing or processing into food. Meat producers can easily adjust the protein content of the mixture of grains they use to feed to their livestock.

The device offers the accuracy of a laboratory machine but without the delay of sending samples away for analysis.

In the training seminars, Azmi demonstrates how the device works. It takes a few seconds to make the measurement. The data are then transferred via Bluetooth® to a smartphone and then a cloud storage service for analysis (**Fig. 2**). It is then returned to the user as an update that is displayed and stored using a smartphone or PC app.

Fig. 2



Included in the data are the date, time and GPS location of the measurement, enabling the farmer to compare the productivity of the crop in different parts of the field and different areas of the farm day by day, from one season to the next.

Azmi also discusses some of the other features, requirements and limitations of the technology.

The features include:

- automatic software updates from the device manufacturer as new value-added services are introduced
- automatic device recalibrations
- unlimited data storage.

The requirements are:

- a personal user account for the use of the device
- an annual service charge for the storage, analysis and processing of the data.

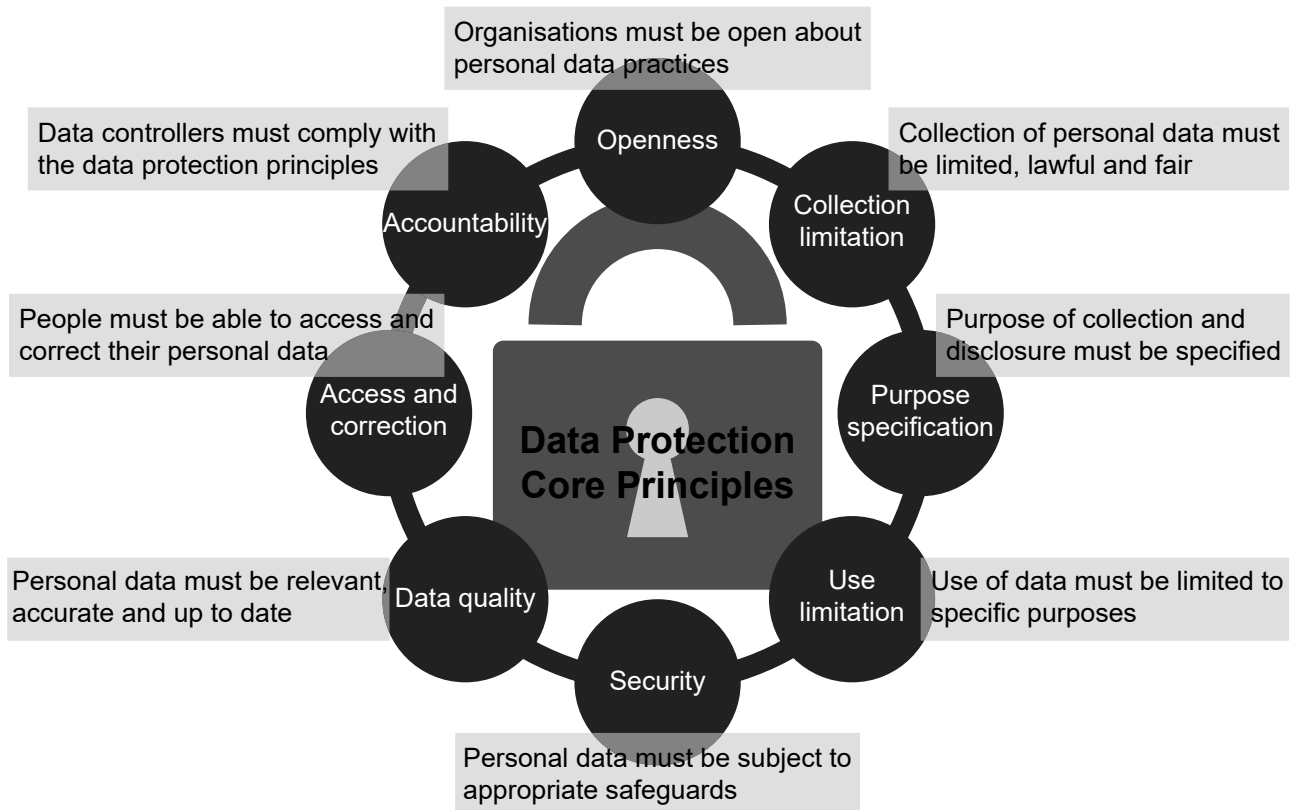
In exchange for a subsidy from TFA to purchase the device, users must also agree to share their measurement results with other members of the TFA as well as the device manufacturer. The data will be used to provide advice and support more sustainable and profitable farming practice across the TFA.

The limitations include:

- the adequacy of local ICT infrastructure
- different legal systems regulating the protection of data
- uncertainty regarding which jurisdictions apply to cloud services
- whether nations or regions will, in the future, place restrictions on cloud services.

Azmi is keen to offer assurance to TFA farmers that despite these limitations, the TFA and the manufacturer are committed to the core principles of information security and data protection. In his training seminars Azmi uses a graphic from a United Nations report (2) to highlight these principles and how they relate to ideas about the confidentiality, integrity and availability of data.

Fig. 3



From the same report, Azmi explains that while there are national differences in the legislation regulating the transfer of information across borders, most countries enforce some restrictions and many have a long list of exceptions (3). He explains that the TFA is confident that any data that are generated and transferred will not be subject to any restrictions. Farmers can therefore be assured of a continuous and reliable service from the device manufacturer.

Further information.

- (1) https://www3.weforum.org/docs/WEF_A_Roadmap_for_Cross_Border_Data_Flows_2020.pdf page 20
- (2) https://unctad.org/system/files/official-document/dtlstict2016d1_en.pdf page 57
- (3) https://unctad.org/system/files/official-document/dtlstict2016d1_en.pdf pages 12, 13 and 14

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