Digital Health Tools & Clinical Decision Making

**TA3:** Review a digital health tool in use in the local healthcare organisation and map the data architecture underpinning it

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| **Part A:** Please complete at the beginning of the TA | |
| **What is a digital health tool?** | A digital health tool is any technology used to support healthcare, this could be apps, wearable devices etc. |
| **What is a data architecture map?** | A data architecture map is a visual representation that illustrates how data is managed and flows within software. |
| **Why are they useful?** | They can aid with data management, processing, storage and usage across different systems and applications. |

# Activity

**Comment:** You are free to pick Alissa or Congenica for this task; however, on reflection it might be quite challenging to map the data architecture because of IP associated with commercial products. You’re welcome to try with one of these examples but if you can’t find anything within a couple of hours, I would pick the example below:

## Part 1 – PrimerDB app

* Used to assist design of new primers; this is different from the new primer app that was released before Christmas last year in the department. My understanding was that PrimerDB was being replaced by the new primer app; however, some colleagues are still using PrimerDB and the lost of the P/S/N drives last year broke the app, as reference database files were stored on these drives. Consequently, it would be helpful to have a data architecture map for this app, to assist with future troubleshooting.
* Documentation: [Primerdb user guide v0.5\_ECA\_20240807.docx](https://nhs.sharepoint.com/:w:/r/sites/RQ3_BWC_RGU_Genetic_Laboratory/Bioinformatics/Documents/WebApps/PrimerDB/Primerdb%20user%20guide%20v0.5_ECA_20240807.docx?d=wc11181d26d5c4633bc9082a53e46d38d&csf=1&web=1&e=CAoGcj)
* The application can be accessed from the bioinformatics home page (<https://bioinformatics/> - you may need to create an account.

A screenshot of a computer

AI-generated content may be incorrect.

* The code can be found on Github here: [WMRGL/PrimerDB-STP: A django project containing a primer database app.](https://github.com/WMRGL/PrimerDB-STP) If you require access to this repo, please ask Chipo. The code base is not up-to-date, so hopefully this can be resolved early next week.

## Part 2 – TASK

### Create a data architecture map for the primerDB app

* How the apps data is structured, processed and managed.
* Where are the databases and data sources stored?
* Potential tools to aid drawing: draw.io [Untitled Diagram - draw.io](https://app.diagrams.net/)

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| **Part C:** Please complete at the end of the TA | |
| **What is a digital health tool?** | A digital health tool is any software, app, or platform that uses technology to support healthcare delivery, research or patient management. They assist healthcare professionals in improving patient outcomes through better data handling and analysis. |
| **What is a data architecture map?** | A data architecture map is a visual or structured representation of how data flows through a digital system. It shows how data is collected, processed, stored and accessed. They highlight the different components, sources, databases and users involved and help explain the relationships between systems and how information is managed end-to-end. |
| **Why are they useful?** | They make complex systems easier to understand. They help teams troubleshoot problems, plan updates, ensure data is handled safely and identify potential risks. They are essential for ensuring that systems remain reliable and aligned with data protection standards. |
| **Reflect on the following statement in relation to data architecture maps:**  *“Applicability of data protection principles in the way the tool stores, processes and analyses data”* | This exercise made it clear that digital health tools must be designed with data protection principles at their core. For example, in PrimerDB, it matters where sensitive data is stored (local vs cloud), how external references (like gnomAD) are accessed, and how user submissions are validated and archived. Mapping out the architecture highlights points where patient or research data could be vulnerable, and shows how important it is to apply privacy, security, and integrity principles at every stage of processing. |
| **What have you learned from completing this task?** | I learned how critical it is to understand not just how a digital tool looks to a user, but how the "invisible" background systems, like servers, databases and reference files support it. Even a relatively small tool like PrimerDB relies on multiple reference points and careful validation and losing access to any part can break the whole system. |
| **How will you apply what you have learned to your future clinical practice?** | I understand now that good clinical software isn’t just about user-friendliness, it’s also about having solid architecture underneath to protect patient data and ensure accuracy.  Good software architecture also makes clinical tools more reliable, secure, and easier to maintain over time. It supports safe data handling, integrates better with other systems and helps with scalablity as patient demands grow. In practice, this means fewer errors, smoother workflows and greater confidence in the tools we rely on. |
| **What are the benefits of using a digital health tool in preference to an alternative method?** | Using a digital health tool like PrimerDB offers multiple advantages over manual methods of primer design and data tracking. Unlike spreadsheets or paper records, PrimerDB automates complex tasks such as SNP checking, this reduces human error and saves time.  It also provides a structured, searchable database for managing primer sets, with built-in version control and archiving, which would be difficult and inefficient to replicate manually.  In general, digital health tools are better than manual methods because they improve accuracy, efficiency and consistency. They reduce human error, automate repetitive tasks and make it easier to store, search and share data securely. This supports better clinical decisions and also frees up time for patient care. |