**Data Flow Diagrams**

* Modelling method used in structured systems analysis to create analysis models and, very often, the requirements model during the system specification stage. These methods centre around modelling both the system and subject worlds, although they mainly use the system world terms. Consequently, they require analysts to have particular skills in expressing subject world requirements in system world terms.
* Models in structured systems analysis are made up of three components:
  + The process
  + The data
  + The system functions
* Data flow diagrams model system processes and are one of the most important modelling tools used by systems analysts.
* DeMarco (1978) and Gane and Sarson (1979) suggested that data flow diagrams should be the first tools used by systems analysts to model system components.
  + Where these components are the system processes, the data used by these processes, any external entities that interact with the system, and the information flows in the system.

**DFD Symbols**

* Symbols are used to represent systems.
* Most DFD’s use four kinds of symbols to represent four kinds of system components:
  + Processes
  + Data stores
  + Data flows
  + External entities

**Processes**

* Processes show what systems do.
* Each process has one or more data inputs and produces one or more data outputs.
* Processes are represented by circles in a DFD.
* Have a unique name and number which appear inside the circle of the process.

**Files or data stores**

* A file or data store is a repository of data.
* Processes can enter data into a data store or retrieve data from the data store.
* Each data store is represented by a thin line in the DFD and has a unique name.

**External Entities**

* External entities are outside the system, but they neither supply input data into the system nor use the system output.
* These are the entities that the designer has no control over.
  + E.g. an organisation’s customers or other bodies with which the system interacts.
* Alternatively, if we are modelling one section in an organisation, other sections are modelled as external entities.
* External entities are represented by a square or rectangle.

**Data Flows**

* Data flows model the passage of data in the system.
* They are represented by lines joining the system components.
* The direction of flow is indicated by an arrow, and the line is labelled with the name of the data flow.
* Flows of data in the system can take place:
  + Between two processes.
  + From a data store to a process.
  + From a process to a data store.
  + From a source to a process.
  + From a process to a sink.
* we have no control over flows between external entities so we do not model them.

Diagram on data flow of each system (split system, central system).

Diagram of data flow when a patient moves from one centre to another.

Diagram on differential privacy