Migrating Library System

UPT IAIN is a library within the university of IAIN in Yogyakarta, Indonesia. This library is supported by 45 people with different responsibilities. The library requires many people supporting its business processes because around 70% of these processes are still performed manually. At the moment the process that has been supported by computer system is only the transaction process (i.e., lending and returning books).

The library has 32,259 books and 102,719 book copies. Data of these book collection was managed using a system that has been adapted from the CDS/ISIS system (downloadable from http://portal.unesco.org) to meet their specific requirements. The system was developed using Pascal and supports networking. The system uses no database system to store its data, but rely on text-based data storage. Recently the library has invested to develop a java-based system replacing the CDS/ISIS. Nevertheless, text-based data storage is still in use.

In order to anticipate the needs of larger and reliable data storage system to manage the growing number of library collections, it has been decided to migrate the system into a more reliable and scalable system. Furthermore, the library will soon add more collection types such as CD, student's thesis, etc., which will require more space in the library. One solution was to store them electronically and allow access within the library network.

In addition to the need for a reliable storage system, the management also identified that the growing number of collection will attract more students to visit and borrow books (or other collections) from the library. The limited number of usable PCs as well as space in the library site would not allow convenient collection searching using current OPAC (Online Public Access Catalog) system that is currently installed in three PCs – let alone if students want to reserve books, which will require them to wait in long queues at the transaction counters.

Apart from the above needs, the management felt that it is necessary to have not only automated processes, but also efficient business processes. Currently there are three main processes in the library department, namely *collection procurement, collection processing*, and *transaction*. The processes are illustrated in the figure below (the process indicated with grey color is already automated).

Process Description:
1. Collection Procurement
   In this process, potential books or other collections are identified and proposed to the management. Normally this process gets input from faculty members, book stores/agencies offers, and students. The staffs working in this process will propose new procurements periodically to the management. The management has to approve the proposal before it can finally be realized.
2. Collection Processing
   This process mainly deals with collections of the library. New arriving books from the procurement department have to be prepared so that they are ready for students to borrow. The process includes creating book copies, identification/categorization, barcodes, catalogues, etc. However, the most important activity is to register the books to the system. The staffs working in this process also responsible for allocating the books into shelves according to certain topics of interest (also applies for books returned by students). Further, the staffs responsible for checking the condition of returned books and repair them if there is defect. This activity is registered manually.
3. Transactions
   Transaction process mainly deals with lending, returning and the reservation of library collections. So far, this is the only process that has been supported by a computer system, i.e., the java-based system.
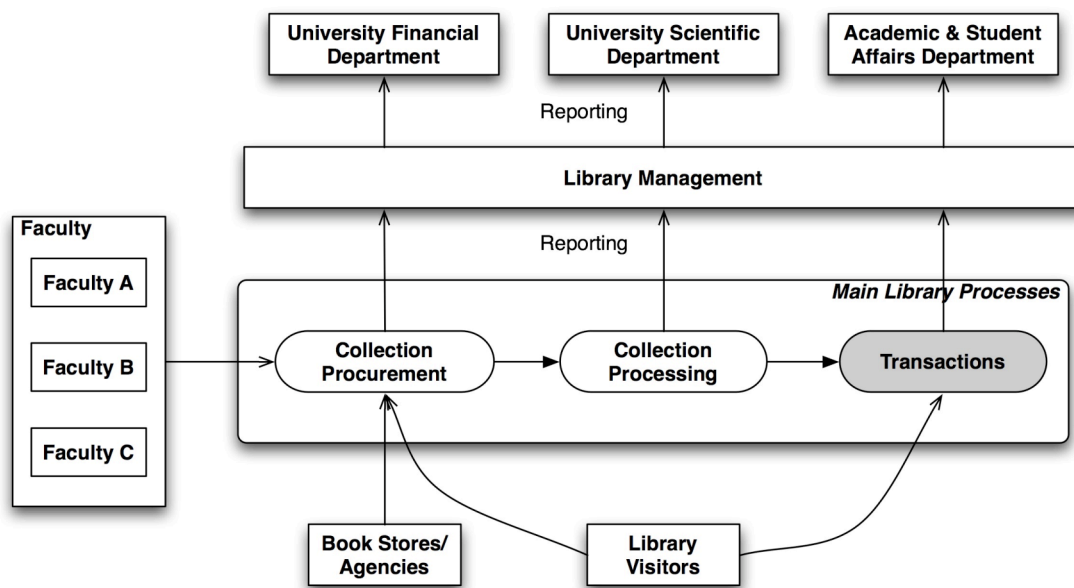
The Library's Main Processes

With respect to the above issues, the management decided that the system must take into account the following aspects:

1. It must scale and allow future extensions to be done easily.
2. It must delegate some of the processes to other parties' time and space to deal with limited resources (e.g., the OPAC & reservation system is publicly accessible via the internet).
3. It must be designed in such a way that it also embraces all processes and integrates them into one seamless, efficient, and automated business process.
4. It would be nice to have the system interacting via alternative communication channels, e.g., text messaging on mobile phone, to check book availability.
5. It would be nice if the system can provide machine-to-machine access so that other library systems can request/look up for available collections.

The above points are just some initial thoughts of the management. They are still working on realizing more concrete form of the implementation. They also realized that the migration might not only affect their processes, but also the people and other organizations involved with them. These have to be identified and anticipated to assure smooth system migration and change management.

Your tasks:

1. Identify all actors involved in the system.
2. Identify all the required use case and provide brief description of those use cases.
3. Create a use case diagram(s) depicting all the requirements including the actors involved.
4. Create a class diagram(s) that describes the business model of the new system.
5. Identify five risks in implementing the new system.

Note: Use the provided <u>document template</u> to work on your tasks.