
Group 16

FDM Employee Portal

**ECS506U Software Engineering
Group Project**

Problem/Domain Analysis Report

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1. Introduction

FDM Group are an international recruitment organisation who specialise in the recruiting, training and deployment of IT and business professionals from around the world. Founded in East Sussex in 2001, FDM now operate offices in 11 different locations all over the world and hires individuals into one of three programmes; Graduate, Returners and Ex-forces [1]. Their main headquarters is a stone throw away from London Bridge, however they have offices in locations such as Germany, Singapore, Hong Kong as well as Australia. FDM currently have over 5000 employees of which around 3500 consultants operate alongside clients on-site [2].

The problem:

One of the biggest problems that FDM are currently facing is that Human Resources (HR) have an excessively heavy workload. This is largely due to employees being unable to independently perform basic tasks such as viewing and updating their own personal information. As a result, if employees of FDM require personal information changes, they must contact HR and have them perform the requests on their behalf. Requests can range from the changing of an employee surname as well as requesting to view all the information FDM have on that particular employee. This current approach is not only outdated and slow but also quite concerning because if HR are unable to respond to the employee requests in a suitable time-frame, then FDM could be at risk of breaking the newly implemented GDPR legislation for their European based offices.

An additional difficulty discovered within FDM is that employees are unable to book their own annual leave. The on-going protocol within FDM is HR are responsible for the processing of employee annual leave requests. Due to FDM having a large number of employees, this current approach can be problematic. This is primarily due to its slow nature in regards to HR employees having to manually process the requests which often results in multiple employees trying to book the same time off. Furthermore, leaving this current responsibility down to humans can often lead to human error and thus further problems within FDM.

Another issue found is that employees find it challenging communicating with HR when trying to raise any concerns they may have, such as IT difficulties and problems in the current working environment. Due to HR's already heavy workload, the current protocol of employees just emailing HR with their concerns often just gets buried amongst the plethora of other HR emails such as personal information requests and annual leave requests. As a result, this often leads to HR responses being somewhat delayed.

In modern society, many FDM consultants and employees now opt for flexible working rather than just solely operating in the traditional office. According to the Office for National Statistics, in April 2020 46.6% of people in employment did some form of work at home [3]. This modern style of operation currently possesses some problems for FDM. Firstly, employees and consultants working outside the office are unable to access FDM-specific documentation such as the employee handbook and HR policies. As a result, this leads to a reduction in productivity as employees are unable to achieve the same quality of work quality outside the office as opposed to when they would operate in a more traditional working environment.

Lastly, due to many employees working both within the office as well as outside the office, HR are unable to guarantee that all employee announcements will reach all of FDM employees. This loss of communication can often mean that off-site employees miss out on important internal updates as well as potential HR process changes.

The need for the application (motivation):

In the event of FDM not finding solutions to the present issues they face; it could lead to an array of further problems. For example, the continuation of HR having an overly excessive workload can lead to employee dissatisfaction. As a result, this may lead to HR employees wanting to leave FDM. Finding suitable replacement employees is not only time consuming but also expensive. According to an analysis conducted by Oxford Economics, the average cost to employers in order to replace a single staff member is more than £30,000 [4]. Secondly, a similar situation may occur with other employees outside of Human Resources because currently they cannot have their needs and problems explored in a suitable time-frame.

Another motive as to why FDM require a solution to their current issues is because some of FDM's current methods of operation could potentially harm the organisation financially. For example, not being able to respond efficiently to personal information requests can result in FDM being heavily fined due to a lack of compliance with new European data regulations.

Proposed Solution (How the software solves the problem):

After analysing the current issues discussed previously, we believe that the best solution in order to eradicate these problems is the implementation of a web-based Employee Portal system. An employee portal is a centralised digital platform dedicated to be used by employees within the workplace. These types of systems often include an array of independently accessible HR services such as access to an employee handbook, booking holidays, viewing company documentation on policies and procedures as well as accessing employee directories.

Employee portals are sometimes found to be hosted locally (i.e., intranets that are only accessible from within an organisation's office). Nonetheless, we decided that it was essential that the system would be hosted on a web server. This is extremely advantageous for all employees of FDM because by using the online system, it provides them with 24/7 accessibility to the same HR services they desire, but without the current lengthy delays.

The system would be available from any internet connected device, anywhere in the world, so employees would not be restricted to being physically in the office in order to access files and/or conduct HR related tasks. By implementing an employee portal into FDM, it would significantly reduce the workload of HR. For instance, employees would no longer need to contact HR when it comes to either viewing and/or updating their own personal information that is stored with FDM. They could use the employee portal, perform the task themselves independently and have their needs fulfilled instantaneously.

Similarly, to the feature described above, employees of FDM would also use the portal for when it comes to booking their annual leave, as opposed to contacting HR. This approach not only reduces HR workload but also solves the problem of potentially having two or more employees book the same annual leave. This is because the portal would display the latest available slots due to the system updating instantaneously once the booking request had been performed by an employee, thus also eliminating any potential human error.

The implementation of the employee portal system also eradicates the need for employees to email HR with any concerns and/or requests they may have. The software solution would allow employees to submit a ticket to HR containing their request/concern, which as a result would be posted to a HR exclusive board where only members of the HR department can view and respond to the concern/suggestion. This is advantageous because the current approach results in lengthy wait times due to submissions being buried amongst other employee requests, whereas the portal implementation permits submissions to be effortlessly available for viewing and responding to.

Lastly, due to the nature of FDM, the employee portal solves the issue of offsite employees potentially not being made aware of any internal changes within the organisation. This is because HR would be able to use the employee portal system to make announcements to a dedicated employee announcements page, which would be available for viewing by all FDM employees. This means as long as they are able to login to the portal, they can view the latest announcements.

2. Customers and users

System Administrator: One of the main roles is a System Administrator (referred to as an Administrator). These are people who are considered to be technologically proficient, and thus should be able to understand the inner and outer workings of the employee portal. Their main responsibility would be the maintenance of the system and the everyday users of the system. Administrators would be responsible for monitoring the system's status, such as service uptime and ensuring that vital features are working correctly. Administrators should be able to create, delete and manage all user profiles in the platform directory. Employees should also be able to send support tickets and feedback to the administrators, so that the user experience can be improved upon and information passed on to the relevant roles. People of this role are expected to be able to be contacted out of hours, in the case that there are any problems that need to be addressed.

Employee: Employees are the main end-users of the portal platform, with the majority of people who interact with it being one. This role encompasses many company positions, such as consultants. These are employees of the company who have a need for the features of the portal – such as booking annual leave or viewing company announcements. The large size of this demographic where people will come from different backgrounds provides the assumption that there will be varying technical ability. To accommodate for this, companies may want to consider having live demonstrations or training days to familiarise each user with the system that they will come to use daily. Employees should also be able to view their own profiles in the directory and edit some of their personal information. The employees are primary users of the portal and so their traits and skill sets should be accounted for when designing it, so that they are able to use all the features intuitively.

General Manager: General managers can be considered a sub-role of employees. These are employees who are responsible for the management of other employees through teams and departments. Alike to employees, they will be of differing technical ability and the solution must be able to cater to this. To resolve this a special emphasis on training these managers would be made, which would also mean that they could be a first point of contact if an employee needs help with any portal features. On top of the features an employee is able to access (viewing announcements, annual leave, profiles), these managers will have extra features that they may use. They would be able to view other employee annual leave information, as well as approve or deny any requests to book annual leave. This role will also have the ability to create company announcements that can be viewed company-wide.

HR Manager: A sub-role of general managers would be HR managers. These have identical duties to that of a general manager, as well as additional access to features needed to perform HR duties. This would include features directly relating to human resources, such as being able to update job profiles and user information in the user directory. They would also be allowed to view feedback and complaints from employees which discuss the working environment. This could then be passed on to the company with suggested improvements to be made. The system should enable HR managers to manage employees, recruitment, job descriptions as well as ensuring that the work environment is suitable for every role involved.

3. The environment

The FDM employee portal is going to be developed as a web application. We selected the web as our platform to ensure that all employees can access the portal, irrespective of their computing device and operating system. With FDM having over 5,000 employees, it is likely that a large variety of computing devices and operating systems will be used to access the employee portal. As of December 2020, 71.7% of the global Operating Systems market consists of Windows OS's, ranging from Windows XP all the way up to Windows 10. The next biggest share of the market is Mobile operating systems, holding 13.5% share, alongside Mac OS possessing 9.6%, Linux 4.8% and Chrome OS 0.4% [5]. To provide all employees with access to the portal, we need a platform that would work on Chrome OS, Mac OS, Linux, Windows and mobile operating systems. For this reason, we chose for the employee portal system to be exclusively web-based. As a consequence of this, the portal will work on all devices which have a web browser and an internet connection. Thereby providing all FDM employees with access to the employee portal, regardless of where they are or what device they are using.

A web-based employee portal provides FDM employees with the option to choose their preferred device for the current task at hand. Some tasks are better suited to mobile devices, whereas others are better suited to a personal computer (PC). For example, when an HR manager is entering a new announcement onto the system, they may choose to access the portal through a PC to take advantage of a large screen and keyboard for easier text entry. Furthermore, an employee could use a smartphone to access the portal if they were in an environment where they do not possess immediate access to a PC. For example, an employee on the bus could quickly check how many days of annual leave they have left by accessing the portal with their smartphone.

A further advantage for a web application, is that it doesn't need to be installed and kept updated by the user. This is particularly beneficial for less technical FDM employees, who may struggle with installing and updating applications. The installation process of locally installed applications is a hurdle, which would need to be overcome before users could access the employee portal. This could result in employees not adopting the new employee portal, and falling back into the current routine of contacting human resources (HR) directly. Consequently, eradicating the benefits of developing the self-service employee portal. A web application would increase adoption levels of the employee portal, due to not requiring installation prior to first use.

A web application would also benefit non-primary users such as system administrators. For example, administrators would not have to be concerned with machines inside and/or outside the office potentially having portal functionality issues as a result of running older versions of the portal system. This is not possible with a web application, as the employee portal system itself is updated to the server that the employees access via the Internet and not the machines themselves, thus eliminating the possibility of employees running outdated versions of the employee portal system.

The competing software systems: SympaHR, Bitrix24 and BambooHR also chose the web for their platform and hence can be accessed using any device [12] [14] [9]. In order to compete with these systems, we must be able to run our software on the same number of devices. Otherwise, our solution could be deemed as less effective in comparison. By choosing the web as our platform, we support the same devices as our competitors and therefore we are not at a competitive disadvantage.

4. Tasks and Procedures

The functionalities discussed below within the system we want to implement will be tackling the issue of low productivity levels due to a lack of an employee portal and the various benefits an employee portal can bring to an organisation. For this system to be successful, it must carry out specific tasks for it to be useful, mainly for the individuals who are remotely working, in comparison to the in-office workers. This system will allow the individuals who are remotely working to be able to keep up with company changes and keep in contact.

Assumption being made:

- Due to FDM following the Recruit-Train-Deployment model, we will be making the assumption that any recruitment and/or training processes are conducted outside of the employee portal.
- Another assumption being made is that any FDM responsibilities relating to finance are conducted outside of the employee portal system. To expand, any aspects to do with payroll, profit and loss, etc, will not be performed within the employee portal system.

The portal will implement a multitude of different tasks, some of which can be performed by more than one actor/user, referred to as “Shared Tasks”. Other system functionalities may be exclusive to that particular actor. For example, an Administrator is the only actor who can perform the task of removing users from the portal system. For each task, the allocated actor(s) will either be shown within brackets or as a subheading.

Shared Tasks

Shared tasks as mentioned above will be system features multiple users can perform.

Logging In/Logging Out (Administrator, Employee, General Manager, HR Manager)

A system such as an employee portal must have a sign-in feature to be able to securely protect the system. Otherwise, individuals outside the organisation could gain unauthorised access and perform malicious acts such as view and leak sensitive data. System login will be required by all employees in order to verify that it them who is trying to gain access to the system and not someone else.

In order to login, users would be required to input their work assigned email (the username) as well as a password of their choice (as long as it met pre-required conditions such as include a capital letter, at least 1 number etc) which would be stored in the system database for verification purposes. Once this requirement had been successfully met, they will then gain access to their own individual profile as well as their permitted system functionalities.

View Announcements (Administrator, Employee, General Manager, HR Manager)

Every user would be assigned the functionality of viewing the employee announcements page. This is so all employees can be made aware of the latest news such as major decisions made by FDM as well as updates on any internal changes. Please note, that this specific feature only permits users to be able to view the announcements, not edit the announcement or even make announcements themselves.

View Profiles in the Employee Directory (Administrator, Employee, General Manager, HR Manager)

Similar to an address book or contact page, the employee directory will be home to the public information of all employees within FDM. The system users will be able to search for one another, which would return contact information such as their name, email address, job title and if available, a work number. Users can also be assigned to a group, such as the division they belong to. This will allow users to enhance their understanding of the departmental hierarchy as well as the organisational structure within FDM.

Book Annual Leave (Employee, General Manager, HR Manager)

The system will permit the booking of annual leave through the completion of a form which would then be submitted as a ticket. This ticket would then need to be approved by a manager. A response would be sent to the user in the form of an email.

Approve/Deny Annual Leave (General Manager, HR Manager)

General managers and HR managers can reply to annual leave tickets by either approving the requested dates or refusing. Once a ticket has been processed, a response would be supplied back to the user in the form of an email. If the request had been approved, the email would comprise of receipt-like information confirming that the request had been accepted. However, in the event of the request being rejected, the email would contain information personally wrote by a manager explaining why.

View Personal Information (Administrator, Employee, General Manager, HR Manager)

All users of the system will be able to their stored personal information. The functionality will consist of displaying all public and private information FDM store on that particular employee. For example, their full name, living address, CV, job description, start date of employment etc. Due to this functionality being completely self-accessible, the viewing of the information happens instantaneously and does not require any contribution from other FDM employees.

Update Personal Information (Administrator, Employee, General Manager, HR Manager)

The portal system will allow all users to update the personal information that FDM store on them. For example, they can change their name, their living address, their work number etc. Much like the viewing of the personal information, this system functionality is also self-accessible, with the updating of the information happening instantaneously and also not requiring any contribution from other FDM employees.

Make Announcements (General Manager, HR Manager)

Both General and HR managers will be able to post announcements to the announcements page. The announcements page will be centralised on the portal welcome page after they login. This makes it difficult for any employees to overlook any new announcements.

Exclusive to System Administrator:

Viewing/Replying to System Support Tickets

The Administrator/s of the employee portal system will receive support tickets. These tickets can range from explaining a particular problem that a user is currently experiencing, but can

also contain feedback on how the system could potentially be improved. This exclusive functionality will allow only the administrator/s to view and/or reply to those submitted tickets.

Creating Users

The system Administrator will be responsible for the creation of new user portal accounts. When using this system feature, the administrator will also be in authority of deploying the account with the correct user role as well as inputting any important information FDM have on that employee, such as full name, Date of Birth, CV, etc.

Modify other users' information

An administrator possesses the functionality of editing another user's public and private information. This can be performed for a variety of reasons, but most likely the feature would be there in the event of a user being unable to perform the task themselves. Additionally, administrators will also be able to alter the already assigned roles to existing users. For example, in the event of an employee being promoted to a manager.

Removing Users

Administrators will possess the ability to remove users from the system. This feature is primarily present in the event of an employee leaving FDM, for example, if they retire. Once this action is performed on a particular user, the system administrator would be unable to retrieve that user back to the portal system. In the event of a mistake, an administrator would have to manually find that particular user account on a previously stored system backup. From there, they can recover the account back onto the latest system version.

Exclusive to Employee:

Submit HR Ticket

Employees will be able to submit a HR ticket. This ticket would be sent directly to HR, containing any issues/concerns they may have. For example, queries about the workplace, clarification on policies, etc.

Submit System Support Ticket

Employees of the system will be able to submit a support ticket. This ticket is to be completed and submitted in the event of a user experiencing some form of issue with the system. For example, if a user is unable to view their personal information. The ticket will be sent to the system Administrator/s where they are responsible for responding to the ticket as well as addressing the stated issue.

Exclusive to General Manager:

There are no exclusive tasks dedicated solely to the general manager. The only system functionality they possess is the shared functionality listed above in the shared tasks.

Exclusive to HR Manager:

Viewing/Replying to HR Tickets

This system functionality will exclusively permit HR managers the capability of viewing and/or responding to the submitted HR tickets.

5. Competing software

Employee portals that are based on cloud technology allow an organisation to efficiently manage, automate, and streamline HR-related tasks such as; dealing with employee concerns, compliance of legislation, as well as employee benefits [6]. However, an employee portal that operates through Intranet-based technologies, restrict users of accessing said system features from outside of the office, putting some employees, particularly consultants who work off-site at a disadvantage.

Due to the COVID-19 pandemic, in 2020 the number of employees working from home has increased up to 43% [7]. Therefore, a cloud-based software would permit those employees to access office-based applications from home, in a context that advances productivity all via the interaction of a web app [8]. However, the following three applications could be considered as competing software due to their employee portal systems having already implemented a cloud-based approach and are already on the market for use. These are; BambooHR, SympaHR and Bitrix24.

BambooHR

BambooHR is the leading cloud-based software for online HR systems such as employee portals. It is designed for small and medium scale organisations and the platform is used by more than 20,000 organisations, which totals around 1.8 million users worldwide [9]. Its purpose is to facilitate employees' workflow and enforce a self-service process for tasks that are time-consuming (e.g., processing annual leave, recruiting new applicants etc.).

The following are key features and functionalities of BambooHR [9]:

People Data & Analytics - All employee records can be stored securely in a database therefore, tracking employee data for different departments is simpler.

Mobile App - Facilitates mobility for employees within the company and off-site working. Also makes sure employees can access the services they require on time.

Custom HR workflows - Makes the approval process of documents and annual leaves faster and reduces the time invested on tracking paperwork. As the workflow is automated, the self-service tasks are practiced more.

Tracking system for recruiting - Keeping applicant information organised through every phase of hiring. Simplifies the process of recruiting desirable people as the system stores their skills and information. Hence, less paperwork is required.

Time-off management - Provides employee vacation tracking software. When an employee makes a PTO (paid time off) request, their manager gets instant alerts via email and mobile.

Performance Management - Assessing employee performance is more efficient through their software as they use questionnaires and track employee performance data.

Competitive Advantages:

The advantage of BambooHR is that it has intuitive user interfaces which allow users to navigate and utilise the software in an easy way. Therefore, user experiences are excellent as usability is prioritised. The system also provides its services on a mobile app, which helps employees work remotely with their clients off-site or from home. Also, accessibility of the services is available all the time and can be accessed instantly. Other advantages BambooHR provides are the tracking and

approval of employees' annual leave through making the booking process uncomplicated and fast. This implemented self-service feature is less time consuming for senior members of staff such as managers and higher authorities [9]. User profiles is another feature that is considered advantageous within the system, mainly because it allows other employees the ability to identify another employee's skill set. This also aids the appraisal process. Lastly, BambooHR uses open API so integration with existing human resource maintenance services is straightforward [10].

Disadvantages:

Although this software is desirable to a large number of users, it still has improvements to make. Users have often criticised BambooHR for lacking benefits in regards to administration features, especially when compared to other software. Though their user interface is widely considered as user-friendly to all technological skills sets, procedures to access documents can often be lengthy and complex. This often leads to some users being stuck and confused. Lastly, the software is also more expensive when compared to some of its competitors.

SympaHR:

Sympa HR is an internationally used software that specialises in the tracking of employee skills and strengths within an organisation. The system allows the assigning of suitable tasks to employees based on their skill set, with the intent of improving the overall work performance. It is used in over 50 countries and has been adopted by more than 600 organisations, many of which hold a large number of users [11]. The system permits easy communication between employees and the HR department and can also be used to identify gaps in particular employees or teams in order to aid the recruitment and/or training decisions.

The following are key functionalities of the software [12]:

Human capital management - Ensures self-service and transparent practices within employees. This reduces time consuming approval processes and makes it a flexible system.

Talent Development - Provides powerful tools and support for competency evaluation and career planning. Also enables employee performance management through tracking their goals and achievements.

HR Analytics - Ensures that all the employee data is available for analysis in a single secure database. This permits the attainment of instant access to key statistics. For example, the average age of employees, average salary, etc.

HR Dashboard – An organisation can post key announcements in real-time with the customisable Sympa HR dashboard. This allows an organisation to specifically cater to their needs and wants. For example, some large organisations may have a priority on successfully communicating with all of their employees. Whereas, smaller organisation may not have that issue and thus take a lower priority on when it comes to employee announcements.

Recruitment – Allows the organised storage of all incoming applications into a single system. This is largely through the publishing of SympaHR application form templates for potential employees to complete. Furthermore, the system also allows the tracking of application progress as well as being able to retrieve necessary contact information.

Advantages:

SympaHR is largely ahead of its competitors due to its unique features that provides both recruiting and offboarding plans, which as a result can save an organisation time and money^[11]. Furthermore, the system enables employees to customise some of its features to suit their specific needs and wants, as well as providing a good user experience via friendly interfaces. Lastly, their services are provided at reasonable prices and can be suited for all organisational structures and sizes [12].

Disadvantages:

Despite its remarkable features, SympaHR has some drawbacks. Many users face issues due to no pre-built API for social media integration for the recruitment module [13]. Another major disadvantage is that user feedback is not revised, hence many issues remain unsolved for long periods. This can often result in high levels of employee dissatisfaction.

Bitrix24:

Bitrix24 is a popular award-winning software that provides tools to conduct business-related tasks such as management, collaboration and communication. The software is used by over 8 million companies worldwide. The system is cloud based and is available on-premises with open-source code access. A self-hosted version is also available to run on an organisation's server, which allows full control over their data, source code access as well as any additional tools.

The following are the key functions [14]:

Employee Directory & Management - Employee data is stored securely in databases. This allows senior staff to track the performance as well as achievements of its employees. Also, employee information can be accessed quickly when required.

Self Service and Workflow Automation - Reduces work leave and other document approvals so all employees can focus on their other work.

Real Time Communication - Enables fast and easy communication within all employees through an internal messaging system. The system has features such as a built-in telephony as well as video conferencing if required.

Employee Engagement - Implemented through eLearning and other interactive activities. It uses Kanban boards that increases employees' productivity level and encourages a more organised workflow.

Collaboration in the Extranet – The system caters to off-site workers through the use of an extranet. For example, it allows employees to work from home without difficulties.

Competitive advantages:

One advantage of using Bitrix24 is that the system assists in the management of multiple departments within an organisation such as HR, sales and marketing [15]. The services provided are free for unlimited users and also the set-up of the software is extremely efficient. This advantage can make the system more desirable to organisations when in comparison to its competitors. Furthermore, the system also offers an integrated communication platform between employees and departments as well as by offering a mobile application version of the system that is available to employees who want/need to work outside of the traditional office.

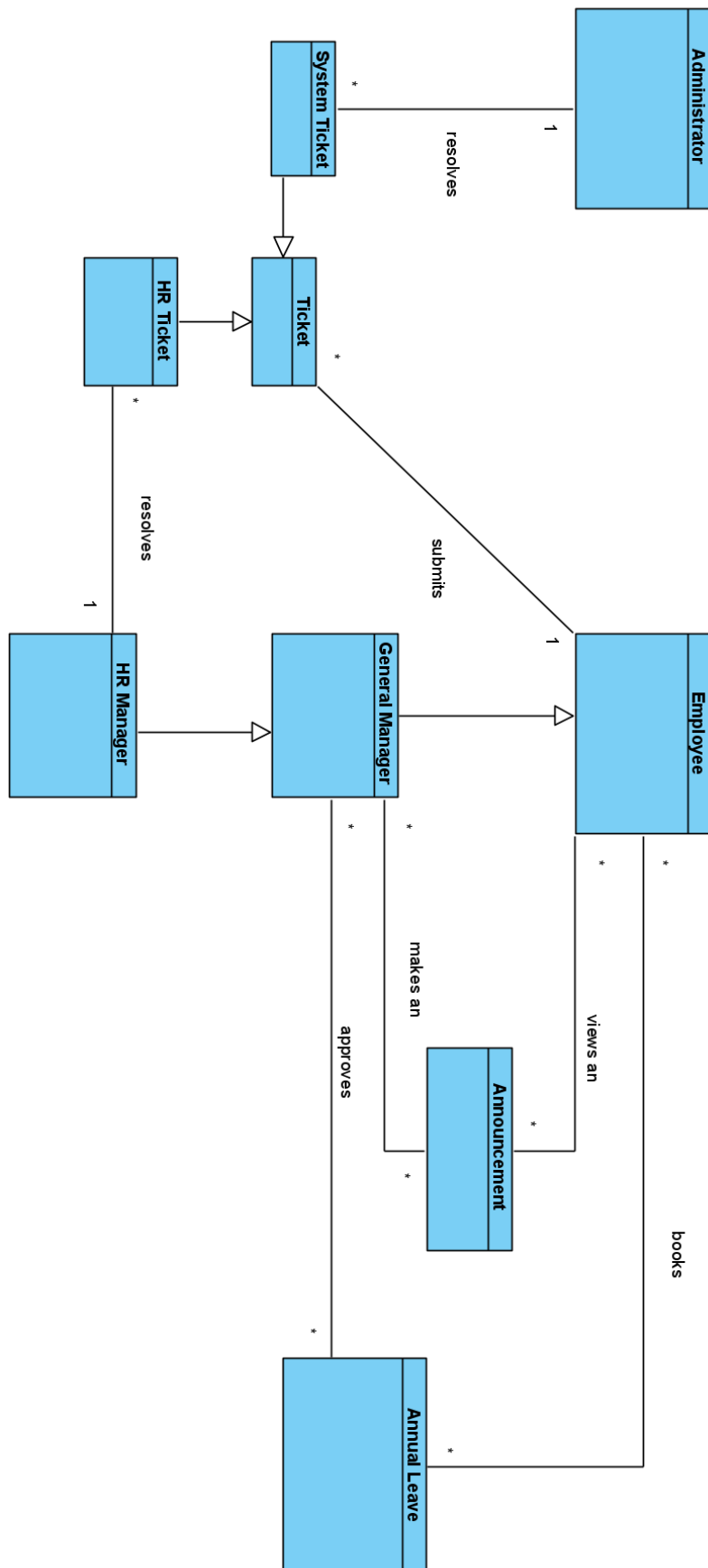
Disadvantages:

While Bitrix24 is a reliable award-winning software it also has some failures that require improvements. Many users complained about their customer support, which is often described as limited and inadequate. Additionally, users of the system have also encountered multiple bugs when using certain features. This decreases the level of user experience. Furthermore, it makes use of both intranet and extranet networks however, the intranet restricts employees to accessing certain services when off-site. Lastly, some system functionality is not available on the mobile app which is of great inconvenience for off-site workers.

Justification:

In conclusion it can be seen that the competing software provide numerous services that ease the tasks and responsibilities for all users of the portal system. This is through offering a range of features that permit automated workflow. However, none of the software applications were able to provide a solution which fully met all of the requirements for FDM. Therefore, our proposed solution will combine many of the advantageous features of the competing software such as; the HR dashboard, mobile application as well as the communication tools. As a result, we believe this will eradicate the discussed issues that FDM are currently facing.

6. Domain Model



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