Interim Project Report

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Executive Summary

Dear Career Connect,

We would like to present to you our interim project report where we provide specific details and documentation for creating and prototyping a system that would match instructors, students and the community to promote learning experiences at UNT. Creating a Matching System for Career Connect is needed in order for participants (instructor, students, community) to receive and send notifications about opportunity matches within the system. This would improve the organization's ability to share useful information for everyone involved.

This report will be based on previous interviews with students and instructors, as well as the required sessions of discussion with you (The Client) to help us better develop a useful system. We have also gathered documentation on the as-is system, and users. Finally we have developed key functionalities of the system, key use cases and descriptions, Data Flow diagrams and ERD's. The system will contain external entities including students, instructors, communities, databases. It will store data about notifications and student's interests. Our team will be devoted to provide the best tools and expertise for improving our client's Career Connect development.

Our project will commence on September 22, 2016 and our calculated overall cost will be $14,000.

Sincerely,

The Leftovers

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Our understanding of client needs

Career Connect is a portal designed to strengthen the environment between students, faculty and the community. They create e-portfolios for the students during their first year of college and allow the students to build on these e-portfolios as they progress in their education. The system has been designed for engaging the students and faculty with activities in the community like internships, community service, study abroad and more. Their goal is to create a more structured and easier system for exchange of information between all parties. Identifying key businesses, user requirements and system components is is our main goal in creating the options.

This proposal will be developed to help our client create a matching system database that will connect students, instructors and the community partners. We will create a matching system that would send notifications to students and instructors based on matching opportunities offered by the community. The notification system will include signing up, searching opportunities, creating and viewing the matched results. After presenting and developing our proposal, Career Connect will be able to connect the intended parties without a need of having a middle man which. This will facilitate and create a more user friendly and interactive system.

Our understanding of client needs (cont'd)

Career Connect has been surviving with the increase of students and faculty that want to use them. However, with the flood of students coming in and asking for help, they cannot keep track of all the data they are receiving. Career Connect needs a system that better relates the amount of information from the students to the community, and the community to the students. To this point they have not had a useful system to match all parties, and this is what we will create.

The main focus is pointed at enabling UNT faculty to be able to communicate opportunities and needs to the community partners, and the other way around so that collaboration proposals and ideas can be shared among them.

Since most users are not very technically trained and with small amount of time, our client wants an easy, user-friendly, yet powerful and convenient system. Our matching and notifications system will expand the parties' opportunities so they can easily find what they are looking for.

Goal of the project

The goal of the project is to design a system for Career Connect that will provide an efficient, user-friendly system to match the community partner's opportunity with a student/s or faculty members search for a new opportunity. The goal is to link the external database of community partners' opportunities with students and faculty members through a push notification system that can instantly make suitable matches for every opportunity. The implementation of the push notification system will also allow administrators from Career Connect to focus their attention on other valuable activities of the organization, thus minimizes their administrative costs. The goal of the system is also to allow students and instructors to have easy access to opportunities from community partners. Through the system the students and instructors will always have the ability to view potential opportunities.

Project benefits

- The benefits of this project include providing an automated matching system that will find new opportunities for students/instructors —
- This will also be a tool for Faculty members to use in order to find opportunities for their students to get involved in the community.
- Create a user friendly system
- Create an time efficient system

Project Scope I

The system is designed to match the students and instructors with the opportunities offered by the community. The system will extract student, instructor, and community partner data from external databases. We will create a database for the matching system. Connecting the student , instructor, and community partner databases with the notification system is important to creating the matching system. We will work with the tech department at the university to implement a system that will allow us to gain the instructor's and student's data while maintaining the privacy and security of all parties involved. Our team will search for notifications systems that have been successful in the hopes of duplicating and implementing the notification system for the scope of this project.

We will send notifications to students and instructors based on the matching opportunities the algorithm creates. We will evaluate each method involved with the system to ensure functionality. The following are the methods involved in making the matching system work: signing up for notifications, searching for community partners, create notifications and view matched notifications. We have determined that each method is an essential part to the entire matching system we intend to build. A prototype will be presented detailing the use of the system as it relates to matching the students and instructors to the opportunities offered by the community. In addition, we will demonstrate how the matching system and notification system will work with the user interface.

Limitations

- The limitations of our matching system vary with the capabilities of the other systems that the other groups are developing. We do not have an evaluation plan of whether our matching system is successful in delivering notifications to the intended parties based on the matching algorithms. We do not have the data analytics to determine which segments to target specific and tailored notifications. We intend to work with the other groups in order to lift these limitations and help Career Connect meet their goals in this business endeavor.

Project Scope II

Our goal is to create a system Career Connect can use to facilitate the matching process among the intended parties. We think this tool will benefit Career Connect because it does not have a tool to bring the students, instructors, and community partners together. To develop the matching system, we will do the following:

- Collaborate with the tech department at the university to gain access to the student and instructors data.
- Evaluate an approach to connect the matching system with the external databases.
- Research and review notification algorithms that have been successful and select the best one that is aligned with our goals as it relates to this project.
- Create a user interface that will allow the students to search for community partners.
- Evaluate a method for students to sign up for notifications.
- Create a system that will send notifications to the students, instructors, and community partners based on the matching algorithms.
- Design a database that will run and store the matching algorithms needed to produce the notifications and bring the intended parties together.
- Prepare and develop a prototype demonstrating the functionality of our system.

Key Deliverables

- ❑ System proposal
- ❑ Interim report
  - ❑ Scope of the project
  - ❑ Requirements definition
  - ❑ Summary of our matching system
  - ❑ Use cases
  - ❑ Process models
  - ❑ Data models
- ❑ Final report
  - ❑ Interface design
  - ❑ Database specifications
  - ❑ Architecture report
- ❑ Prototype

Our approach to system design

For our system design will be using the traditional Waterfall approach. During the Planning Phase we will be developing our scope models using Use Case diagrams and Data Flow models to determine the who, what, when and where of our system.

During the Analysis Phase we will be determining the Requirements, (Business, User, Functional, Nonfunctional, and System), by identifying key stakeholders, interviewing users, analyzing documents and any current systems in place. We will be creating Data models with Entity Relationship Diagrams and Data Flow Diagrams. We will be creating Process models using BPMN, Data Flow Diagrams and Use Case descriptions.

During the Design Phase we will determine system acquisition strategy, design the architecture, design the database, select hardware and software, design system navigation and interfaces.

During the Implementation Phase we will be creating Prototypes using MS Access and Axure.

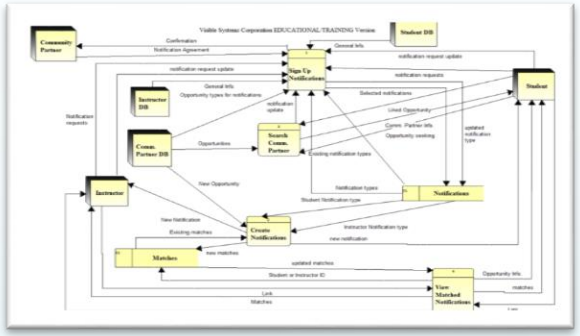
Phase Description

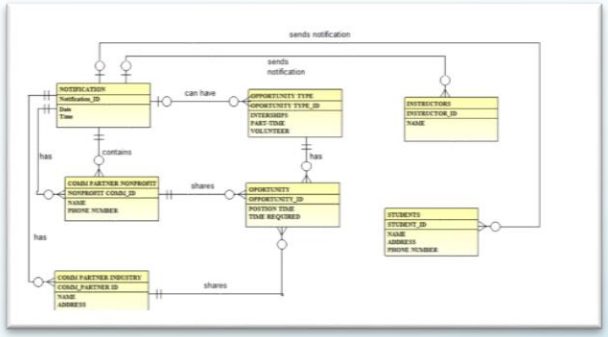
The goal of the definition phase is to gain an understanding of the functional and nonfunctional requirements for notifications on the Career Connect system. To achieve this goal we are working with the other groups in the class who are focusing on the prerequisites of our component as well as working with the project stakeholders including, Career Connect, students, instructors, and the community partners. At the moment Career Connect does not have a notification system in place, so we are examining existing notification systems that have been successful.

After examining the information we obtain from various notification algorithms and the information from the stakeholders we will create decomposition diagrams with use case descriptions, process models, description of of system functionality from the user perspective, description of system functionality through data processing, and a description of data requirements (with relation to key data entities). Team Leftovers will also perform a non-functional requirements analysis and record the requirements including, operational, security, user interface, cultural and political requirements.

Key Deliverables

1. The current situation with Career Connect.
2. The goal and scope of the project.
3. System functionality reports.
4. Functional requirement analysis for the matching system.
5. Non functional requirement analysis for the matching system.
6. Description of the performance phase





7. Appendix
   - ❑ Use Case Diagram with use case description
   - ❑ ERD
   - ❑ Level 0 and 1 DFD
   - ❑ Business Process Model

Overview of requirements elicitation process

Key system stakeholders

Career Connect is one of the key system stakeholders as a sponsor for this project. Their focus is more on relating information and they will be the ones to maintain the system. By the design and development of our component, Career Connect is expected to benefit by eliminating the middleman and allowing them to focus on other critical components of the system. We interviewed few users which included teachers and students, which created a better understanding of what they expect from our System. The instructor and students are one of the key system stakeholders in that they are the primary users of this system. Their main concern is the accessibility of exploring new opportunities through notifications.

Requirement elicitation activities and outcomes

First we had an interview with Career Connect in which we acquired pertinent information for their expectations and requirements for notifications. They explained the fact that they will like us to work on a push notification application. Then we conducted several interviews with currently enrolled students for what they would like to receive when it comes to notifications. From the surveys and interviews the Leftovers team came to the conclusion that students would like to receive the notification through their email and be able at any moment to easily access and view all of their notifications on the user interface. The team was also informed that the students would like to unsubscribe for notifications at any time they desire.

Overview of system functionality from the user perspective

Goal of the system

The notification application of the Career Connect system will provide instructors and students with new and existing community partner opportunities through push notifications related to their inputted notification types. The notification will appear on the user's email, at which point the user can access the notification through a link inside the email. At any given time, the user can log into the system and view all of their notifications by selecting the notifications tab at the top of the interface. Once inside of the notifications tab, the user can select the different notifications to view the opportunities. The user will also search inside the system for opportunities and have the ability to select notifications from their search.

Benefits for key stakeholders

There are several benefits for key stakeholders. One of the biggest for the students and instructors is that they have the unique ability to narrow down the amount of notifications being sent to them. The system will also satisfy the students and instructors need of minimal yet advantageous notifications. The benefit for Career Connect is having a easy way to relate community partner opportunities to the students and instructors, thus making their chances for helping more students to increase.

Overview of system functionality from the user perspective

Key use cases

Search community partners

- The student can search and browse through the list of available opportunities from community partners, including internships or volunteer work. The data for this is pulled from the community partner database.
- Key Actors: Student

View matches

- Students and Instructors can view a list of potential matches with opportunities from community partners based on their inputted notification type.
- Key Actors: Student and Instructor

Sign up for notifications

- Students and Instructors can agree and sign up to receive notifications and input the desired notification types.
- Key Actors: Student and Instructor

Create notifications

- A database system for the community partners' information can create new or edit existing opportunities and be placed and matched with the notification data store.
- Key Actors: Community Partner Database

Sign up for notifications

- Community partners can agree to allow new or existing opportunities to be sent out as notifications to students or instructors.
- Key Actors: Community Partner

Key system functionality – data processing perspective

Key processes within the system

1.Sign up for notifications- This model allows the instructor and students to allow the system to send them notifications for opportunities from the community partner's that relate to their input.

- 1.1 Sign up Community Partner- The community partner selects to allow their opportunities to be posted as notifications.
- 1.2 Add opportunity types- The community partner database adds the type of opportunities the community partner has.
- 1.3 Sign up student- The student selects the type of notifications he or she would like to receive and then confirms their selections.
- 1.4 Sign up Instructor- The Instructor select the type of notifications he or she would like to receive and then confirms their selections.
- 1.5 Add Edit Notification- Student or instructor select the option to be sent a notification when they like a particular community partner, interests, or opportunity. They also have the option to delete any previous notifications they have signed up for.

2. Create Notification- This model combines the new opportunities of the community partner with the desired notifications from students and instructors and sends them to the respected parties.

- 2.1 Add New Opportunity- Community partner database adds information about a new opportunity including, type of opportunity, location, contact info., requirements, etc.
- 2.2 Add Notification Types- The notification data store adds the different types of notifications that the student and instructor have selected including, type of opportunity, interests, name of community partner, etc.
- 2.3 Match Notifications- New opportunity and notification type data is queried and the matched notifications are displayed and sent to the matches data store..
- 2.4 Send Notifications- Matched notifications are sent to their respected student and instructors by email.

Key system functionality – data processing perspective (Cont'd)

Key processes within the system

3. Search Community Partners- This model allows the students to search community partners based off their interests and opportunities they are seeking.

- 3.1 Add Community Partner Info. - The community partner database will relate information about opportunities as well as general information to the system so the student will be able to search that particular community partner.
- 3.2 Make Searches- Student selects in the search box the type of opportunity they're are seeking, interests, or community partner name.
- 3.3 View Searches- Student can view a community partner and see what type of opportunity they are offering, the location, requirements, and their contact info.
- 3.4 Add Likes- Student selects that he or she likes this community partner and then sent to notification database to receive any notification from that community partner.

4. View Matched Notifications - This model allows the student and instructor to view a list of all their matched notifications with opportunities from the community partner database.

- 4.1- Select Tab- Student or Instructor select the matches tab in the user interface and then the user's ID is communicated to the matches data store.
- 4.2 -View list of Matches- The matched opportunities with notifications in the matches data store is queried to view the most recent notifications and then displayed to the user.
- 4.3 Click Notification- Student or instructor selects the the link inside the notification to view the opportunity.
- 4.4 -View Opportunity- Information about the opportunity and the community partner general information is displayed to the student or instructor.

Key system functionality – data processing perspective (Cont'd)

Key external entities

COMMUNITY PARTNER DATABASE- This external entity is provided to us from the other groups in the class doing the component of the community partner. The entity provides our system with new opportunities from the community partners as well as give our system general information of the partners.

STUDENT- This external entity is the actual student that is using the interface. The entity provides our system with what type of notifications they would like and the opportunities they are seeking. In return the system displays the matches the student has with their given inputs.

INSTRUCTOR- This external entity is the instructor that is using the interface. The entity provides the system with what type of notifications they would like. In return the system displays the opportunities that relate to his inputs.

Key data requirements

Key entities and attributes

NOTIFICATION - A message or information is displayed to the students and instructors for any activities that community partner has in their system. The notification is identified by a notification ID. Other notification attributes include: date and time.

COMMUNITY PARTNER NONPROFIT - A community contributes to a strong community by providing support and services to people who have special needs and their families. A community partner nonprofit is identified by a nonprofit community ID. Other community partner nonprofit attributes include: name and phone number.

COMMUNITY PARTNER INDUSTRY - A community is corporate between community partner and opportunity to provide the opportunities to student. A community partner industry is identified by a community partner ID. Other community partner industry attributes include: name and address.

OPPORTUNITY TYPE - An opportunity is the chance for the student who wants to join to any activities and work for a company or community. An opportunity type is identified by opportunity type ID. Other opportunity type attributes include: Internships, part-time, and volunteer.

OPPORTUNITY - An opportunity is an occasion or situation that makes it possible to have a work that student wants to do. An opportunities is identified by opportunity ID. Other opportunity attributes include: position time and time required.

INSTRUCTORS - An instructor is a head of the class desiring for course partner project. An instructor is identified by instructor ID. Other instructor attributes include: name, e-mail address and phone number.

STUDENTS - A student is a person who takes an interest in an opportunity from communities. A student is identified by student ID. Other student attributes include: name, e-mail address and phone number.

Key relationships

NOTIFICATION – a relationship between NOTIFICATION and COMMUNITY PARTNER NONPROFIT or COMMUNITY PARTNER INDUSTRY. A community partner nonprofit or community partner industry can have many notifications (optional), but a notification can belong only to one community partner (mandatory).

OPPORTUNITY – a relationship between an OPPORTUNITY TYPE and NOTIFICATION. An opportunity type can have zero or one notification and notification can belong to many opportunity types (optional).

OPPORTUNITY_TYPE – an associative entity corresponding to the many-to-many relationship between an OPPORTUNITY TYPE and OPPORTUNITY. For each opportunity-type combination we record position time and time required.

Shared_By – the relationship between an OPPORTUNITY and COMMUNITY PARTNER NONPROFIT or COMMUNITY PARTNER INDUSTRY. A community partner nonprofit or community partner industry can have many opportunities (optional), but an opportunity can have only one community partner nonprofit or community partner industry.

Sent_Notification_By – the relationship between NOTIFICATION and INSTRUCTORS or STUDENTS. A notification can be sent to at least one or many students or instructors. Instructor or students can have many notifications (optional).

Non-functional requirements

Operational and security requirements

- **Operational:** The system will run on any web enabled device, such as PC, laptop, tablet or a smartphone. The system will integrate with the existing database systems. The system will have the capability to integrate an algorithm in the future that will recommend opportunities to the student and instructor based off their activities within the system. The system should be compatible with any Web browser such as Chrome, Firefox, etc.

- **Security requirements**: the security of the students and instructors is the number one priority for the Career Connect Matching. Community partner will not have access to view students and instructor's notification without authorization.

User interface, cultural and political requirements

- **User interface:** The user interface for the Career Connect Matching is expected to be easy to interact with and display the available opportunities. The visual design of the user interface should be anticipated with what the students or instructors might need to do. The design should have a friendly-look and provide the visual elements to the student or instructor.

- **Cultural and political requirements:** Career Connect should have an authorization to customize notifications within the system.

Phase Description

The goal of the performance phase is to agree on the design to begin development of the notifications and the list of notifications on the Career Connect user interface. For the first step, team Leftovers will discuss and put into consideration the use of an alternative system acquisition strategy for the development of notifications in the Career Connect interface and make suggestions for the best option to use that fits what the students and instructors desire in notifications.

The Leftovers will then make suggestions for the architecture of the system. The team will also suggest to house the notification software inside the Career Connect's operating system. The system as a whole will most likely be a multi-tier client server architecture, which includes a user's inputs and outputs, but for the notification aspect of the system, different mobile application architectures will be put into consideration.

The team will then design a friendly user interface design. Because we are only focusing on the notification aspect of the system, the Leftovers will design a user interface for the list of matched notifications, as well as the design of the notification itself. The interface will be consistent with relative information and allow the user to easily navigation through notifications.

After user interfaces, the Leftovers will design a database for the notifications and provide considerations for the program design. At this stage the team will collaborate and come to the conclusion of which programming language will be implemented in the design. Depending on what the team determines what is best for the system, the specifications may include a relational database schema definition and query design using SQL.

Lastly, the Leftovers team will help with implementation of the new software, which will involve training requirements, data conversion needs, and testing the strategy.

Key Deliverables

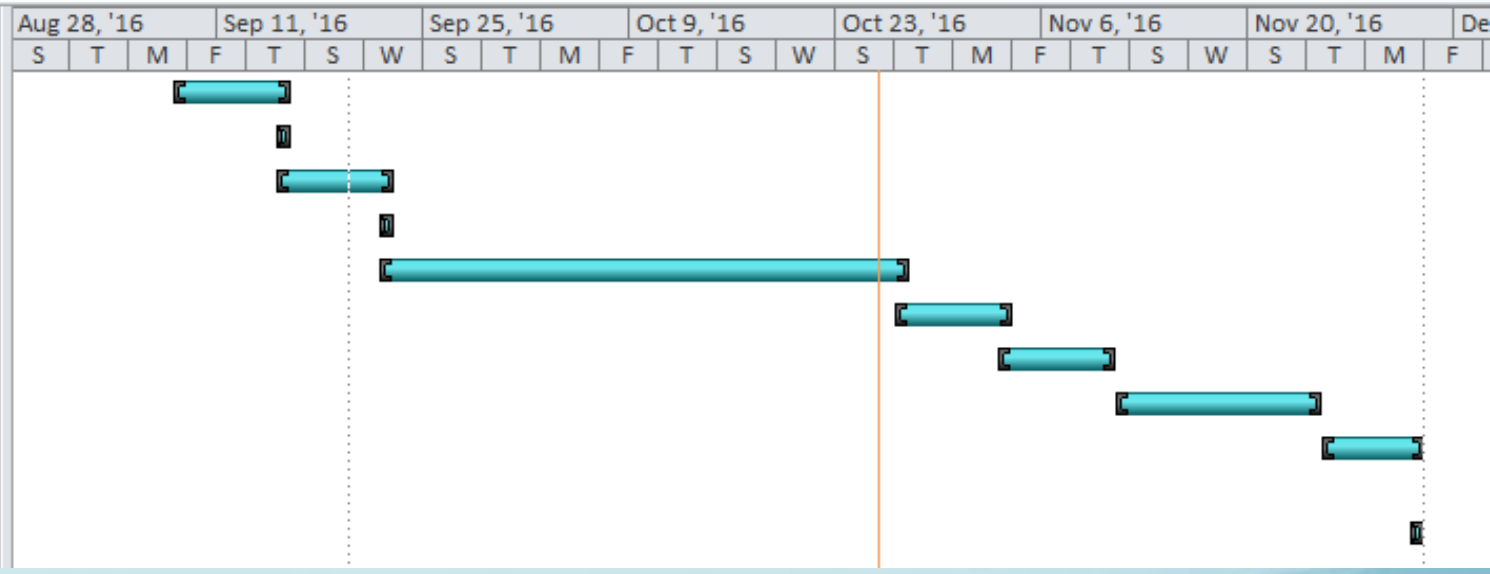
Once the performance phase is complete, the team will create a system requirements report, which entails the following:

1. Project vision and scope
2. Summary of functional and non-functional data requirements
3. Architecture recommendation and design
4. Interface design of notification using models
5. Programming design
6. Implementation strategy

Project Timeline

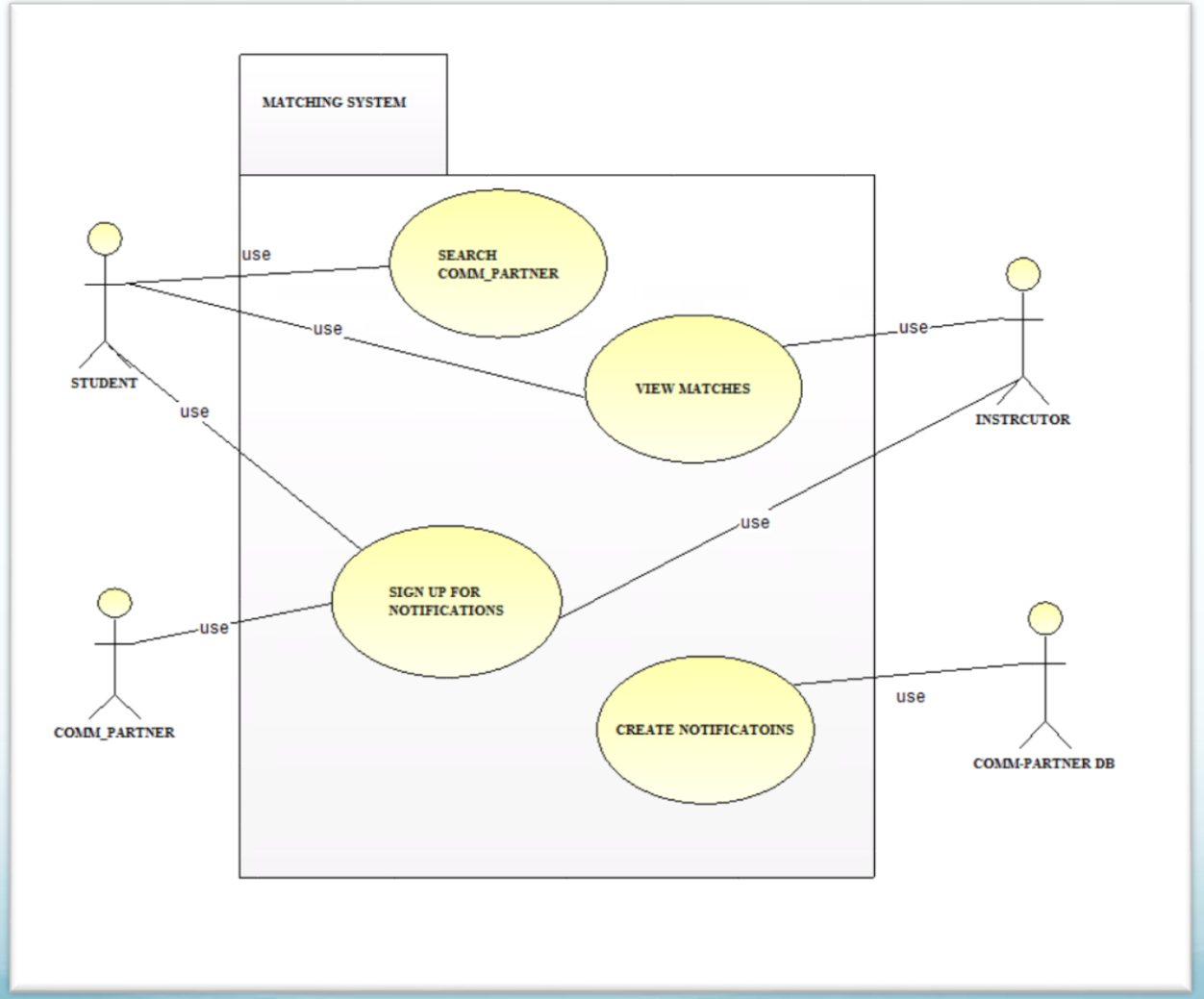
- The First milestone of the project is the interim report, because it places out the entirety of the project.
- Our second milestone is when we finish the design of both database and user interface, once we have accomplished that we will be on our way to developing the prototype and writing the final report.
- The prototype is due December 1st 2016 and the final report is due December 8th 2016

Task Mode	Task Name	Duration	Start	Finish
	Develop Project ID	6 days	Thu 9/8/16	Thu 9/15/16
	Present Project ID	1 day	Thu 9/15/16	Thu 9/15/16
	Build Project Proposal	6 days	Thu 9/15/16	Thu 9/22/16
	Present Project Proposal	1 day	Thu 9/22/16	Thu 9/22/16
	Interim Project Report	26 days	Thu 9/22/16	Thu 10/27/16
	Design Database	6 days	Thu 10/27/16	Thu 11/3/16
	Design Interface	6 days	Thu 11/3/16	Thu 11/10/16
	Develop Prototype	10 days	Fri 11/11/16	Thu 11/24/16
	Prepare Prototype Presentation	5 days	Fri 11/25/16	Thu 12/1/16
	Final Report	1 day	Thu 12/1/16	Thu 12/1/16



Appendix

Use case diagram



Use case description

Use case name: Sign Up For Notifications		UC ID: 1	Priority: High
Primary Actors: Community Partner			
Short description: Community Partner agrees to have their opportunities sent out has notifications.			
Trigger: Community Partner communicates the desire for push notifications.			Type: External
Preconditions: Community partner is in the system, community partner has opportunities to present.			
Normal flow: The use case involves the following steps: 1. Agreement form for notifications is displayed to the community partner. 2. Community partner accepts agreement. 3. The system sends a notification confirmation email to the community partner.		The following information is used in each of the steps: Accepted Agreement Notification confirmation	
Alternative flow: Community partner fails to accept the agreement.			
Post conditions: User views matches and receives notifications. User contacts the community partner.			
Summary inputs	Sources	Summary outputs	Destinations
Community Partner Data Agreement Form	Community partner	Notification confirmation Accepted Agreement	Community partner Notifications Data Store

Use case description

Use case name: Sign up for Notifications		UC ID: 2	Priority: High
Primary Actors: Students and Instructors			
Short description: Students and Instructors input the type of notification they would like to receive and the data is stored in the notification database.			
Trigger: Student or Instructor select “Sign up for Notifications” in the user interface.			Type: External
Preconditions: Student and Instructor decide to sign up, opportunities exist, notification types exist.			
Normal flow: 1.Data from the notification database is extracted. 2.User is presented with different types of notification they can receive. 3.User selects the type of notification. 4.Data from the selection is stored in the notification database.		Notification types Desired notifications	
Alternative flow: 1.User already has notifications selected. 2.The previous selections are displayed to the user. 3.User edits the selections to want they want. 4.Updated selections are stored in the notification database.		Notification types	
Postconditions: Student and instructor receive notifications based from their inputs.			
Summary inputs	Sources	Summary outputs	Destinations
Desired notifications	Student Instructor Notification database	Student notification type Instructor notification type	Notification database

Use case description

Use case name: Create Notifications		UC ID: 3	Priority: High
Primary Actors: Community Partner Database			
Short description: The Community Partner Database will create notifications of new opportunities for the students and instructors that chose to sign up for them.			
Trigger: A new opportunity is created and added into the database.			Type: External
Preconditions: The student or instructor has chosen to opt in for notifications.			
Normal flow: 1.The system receives new opportunity. 2.Notification type is extracted from the notification database. 3.The data from the community partner database and the notification database are queried. 4.The results from the query are displayed and stored in the matching database. 5.Data from results are organized into notifications for their respective recipient.		New opportunity Notification type(s) Alert Query Notifications	
Alternative flow: No results are displayed, no notification is created.			
Post conditions: The database sends out the notifications created to their respective recipients.			
Summary inputs	Sources	Summary outputs	Destinations
Opportunity Notification type	Community partner database Notification database	Alert query notifications	Student or instructor

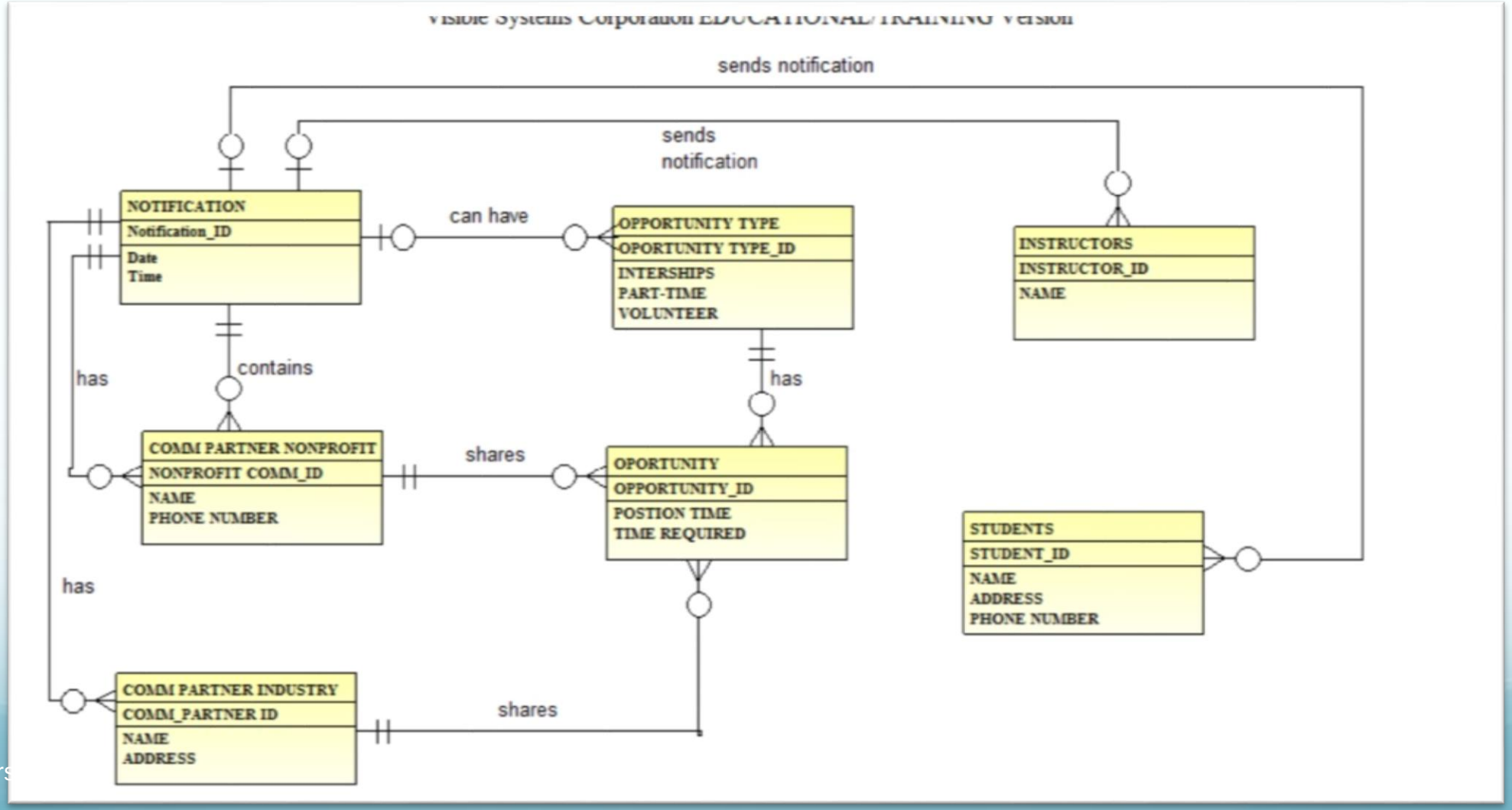
Use case description

Use case name: Search Community Partners		UC ID: 4	Priority: High
Primary Actors: Students			
Short description: Students will be able to search opportunities from community partners within the database.			
Trigger: The student clicks “search” to browse opportunities..			Type: External
Preconditions: Student desires to search for opportunities from community partners. Community partner exists.			
Normal flow: 1.Student enters in search criteria 2.System extracts data from community partner database. 3.Data from the community partner database that relates to the search criteria is returned to the student. 4.Student has access to the results from the search.		Search criteria Community Partner Info. Search Results	
Alternative flow: 1.No results are found 2.Loop to new search			
Post-conditions: Student selects opportunity or community partner from the results.			
Summary inputs	Sources	Summary outputs	Destinations
Search criteria Community Partner Info.	Community partner data	Search Results	Student

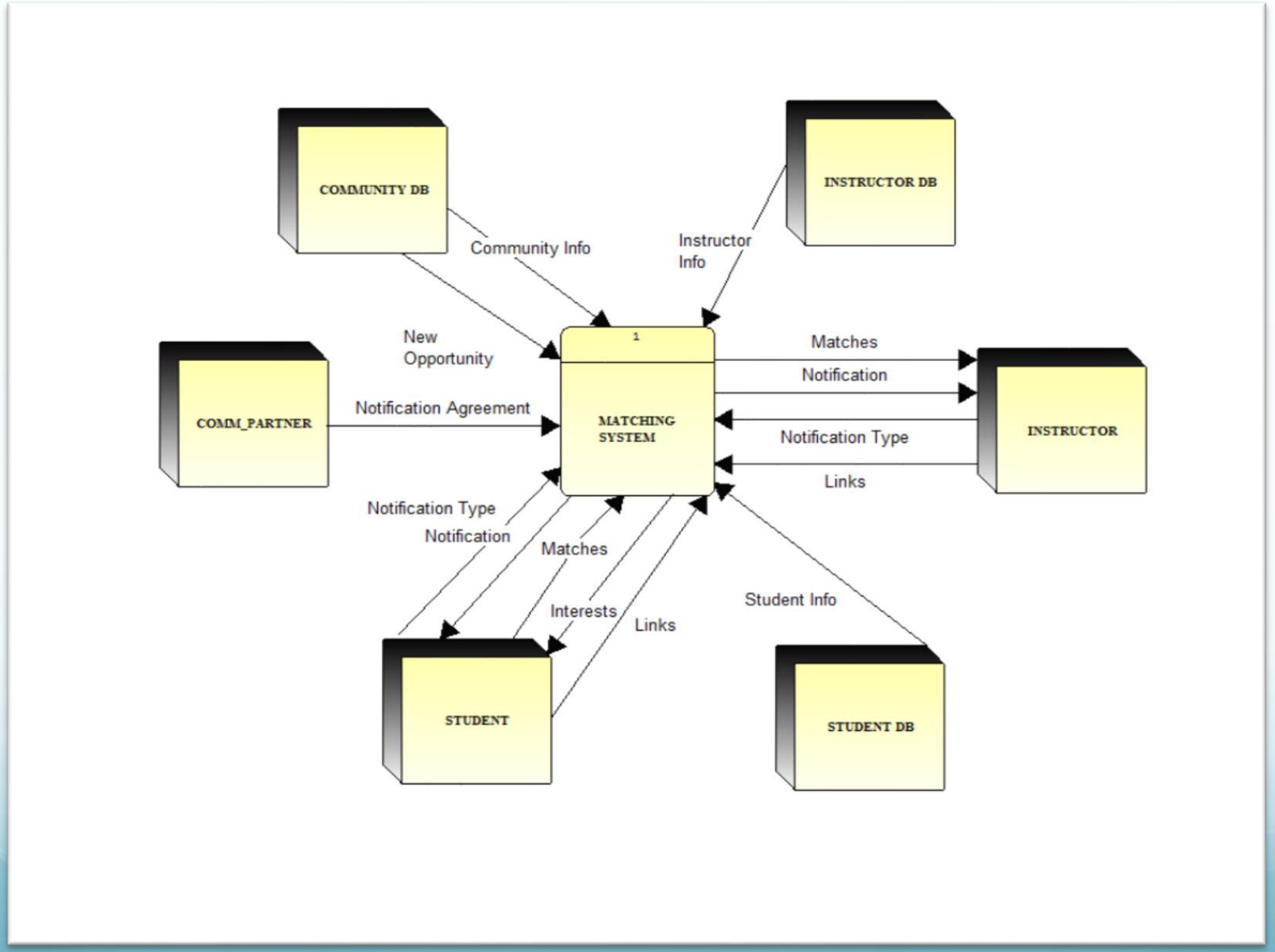
Use case description

Use case name: View matches		UC ID: 5	Priority: High
Primary Actors: Student and instructor			
Short description: The student and instructor view a list matched notifications in which are stored in the matches data store.			
Trigger: The student and instructor select “view matches” in the user interface.			Type: External
Preconditions: A matched notification exists in the system, the student view matches and get notifications.			
Normal flow: The use case involves the following steps: 1.User is displayed with a list of matches from the matches data store. 2.User selects an individual notification. 3.Community partner and opportunity information is displayed to the user.		The following information is used in each of the steps: Student data, student request data, opportunity data, notification data. Matched notifications	
Alternative flow: User enters invalid keywords; the system displays no matches.			
Post conditions: User views matches and receives notifications. User contacts the community partner.			
Summary inputs	Sources	Summary outputs	Destinations
Student data Student request data Opportunity data Notification data	Community partner Opportunity database Instructor database	Request data Request matched notification View matched notification	Community partner Instructor

Entity Relationship Diagram



Context Level Data Flow Diagram



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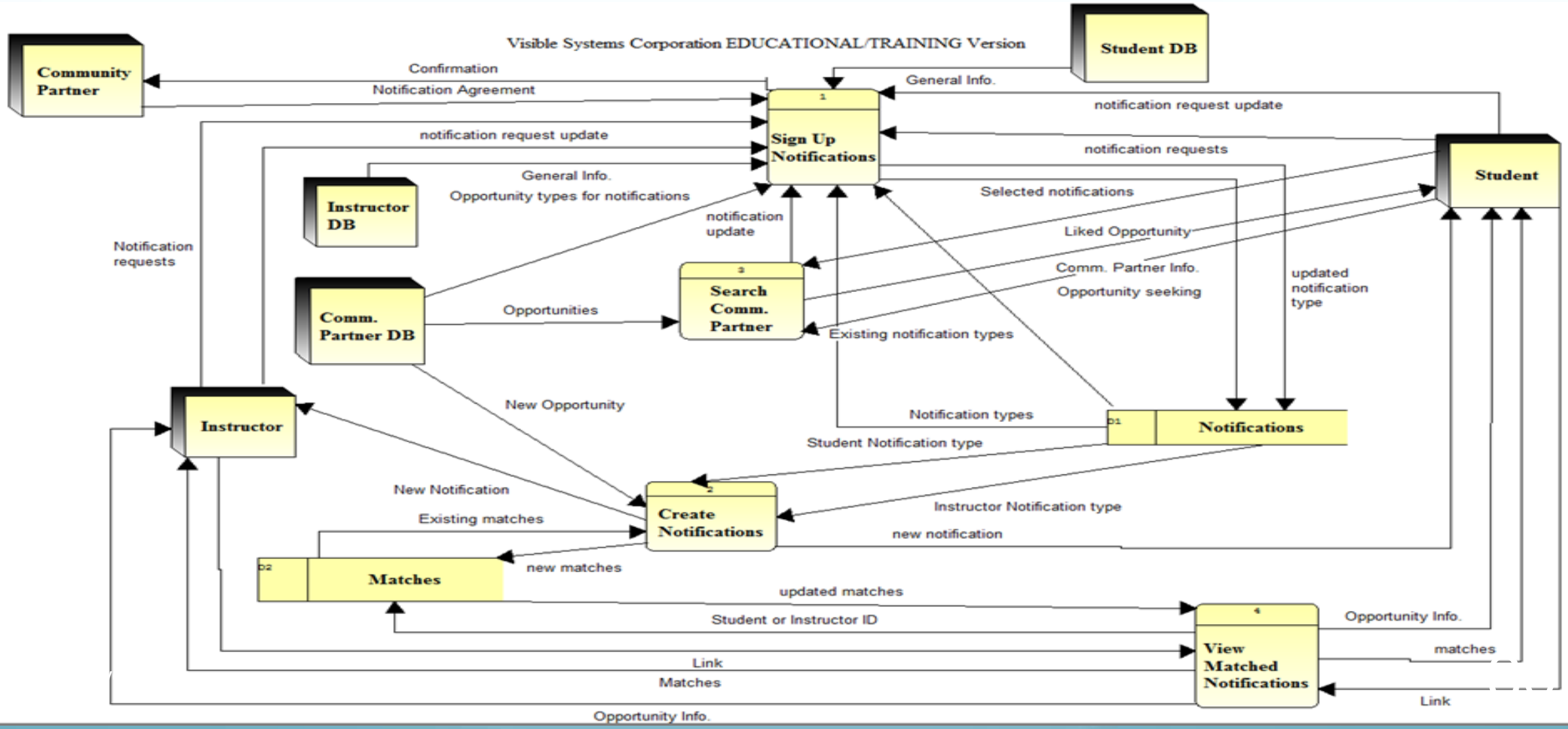
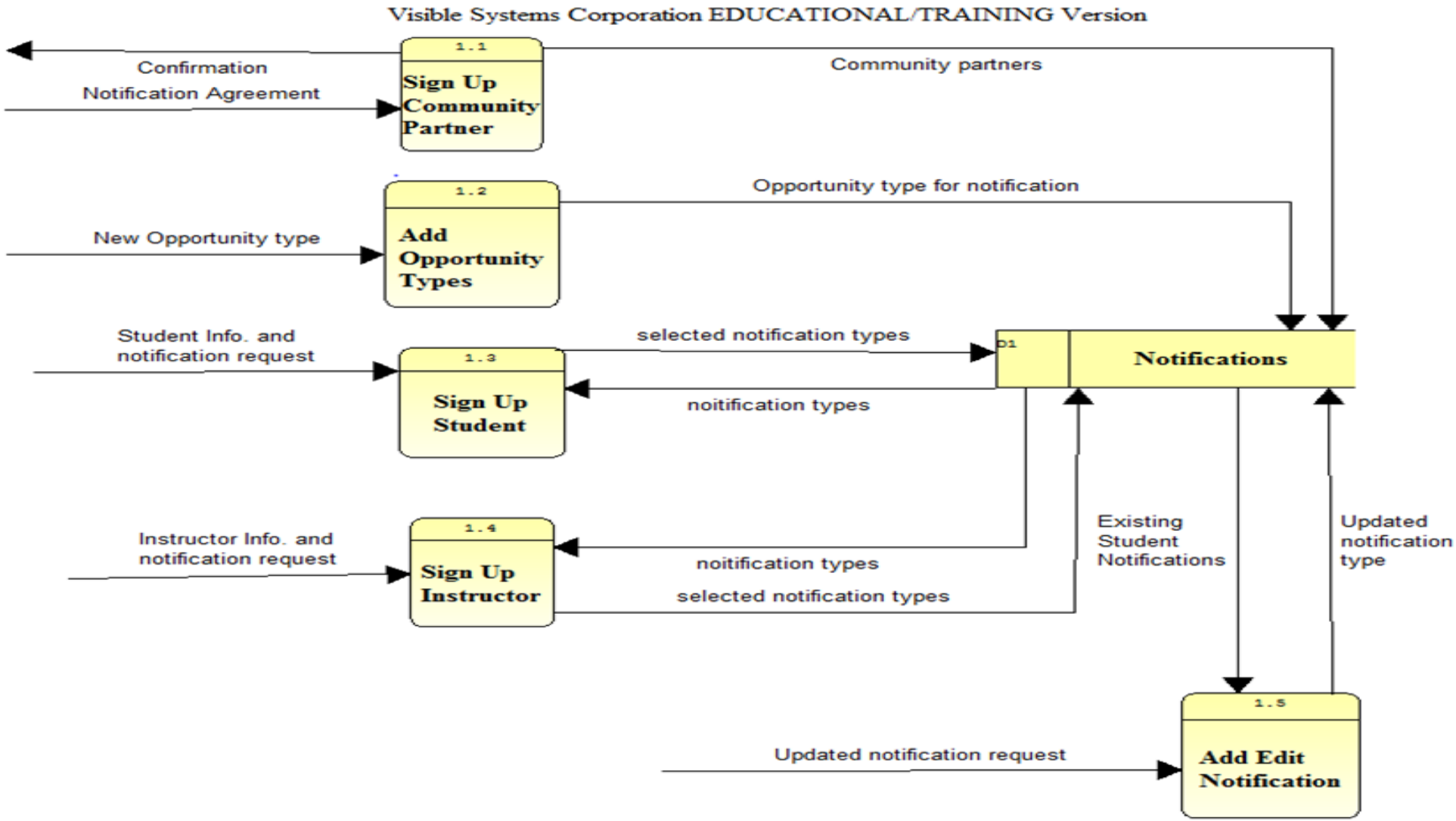
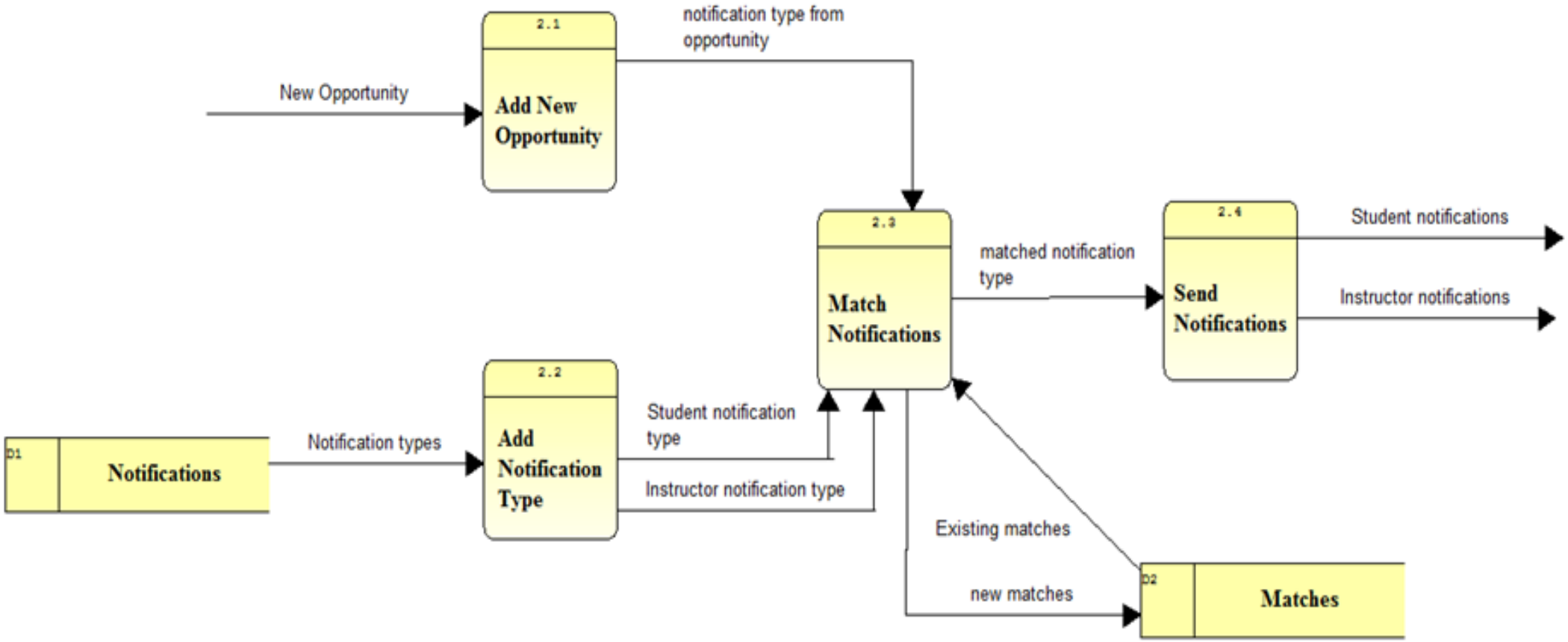
Level-0 Data Flow Diagram



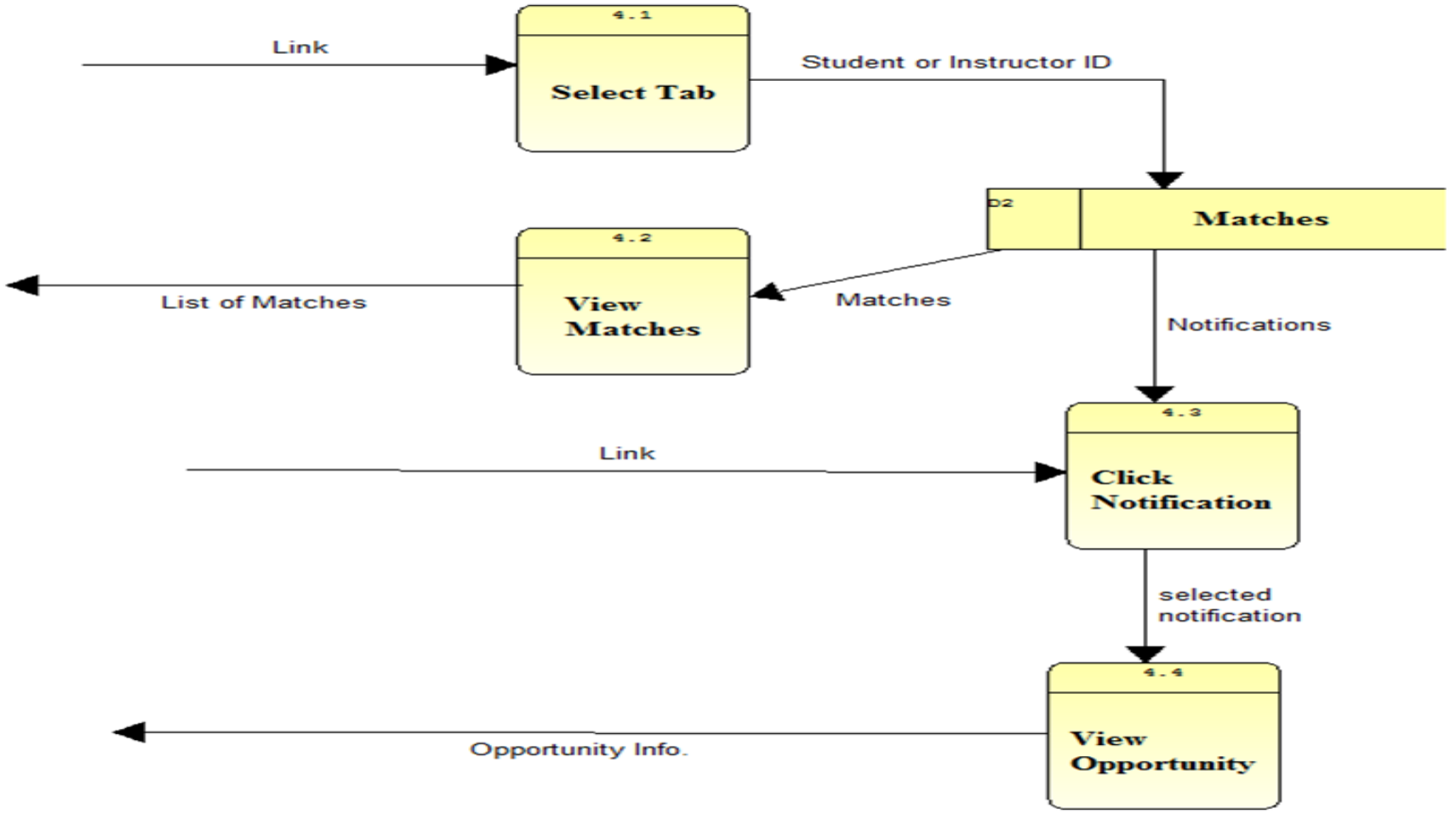
Level-1 Data Flow Diagram: Sign up for Notification



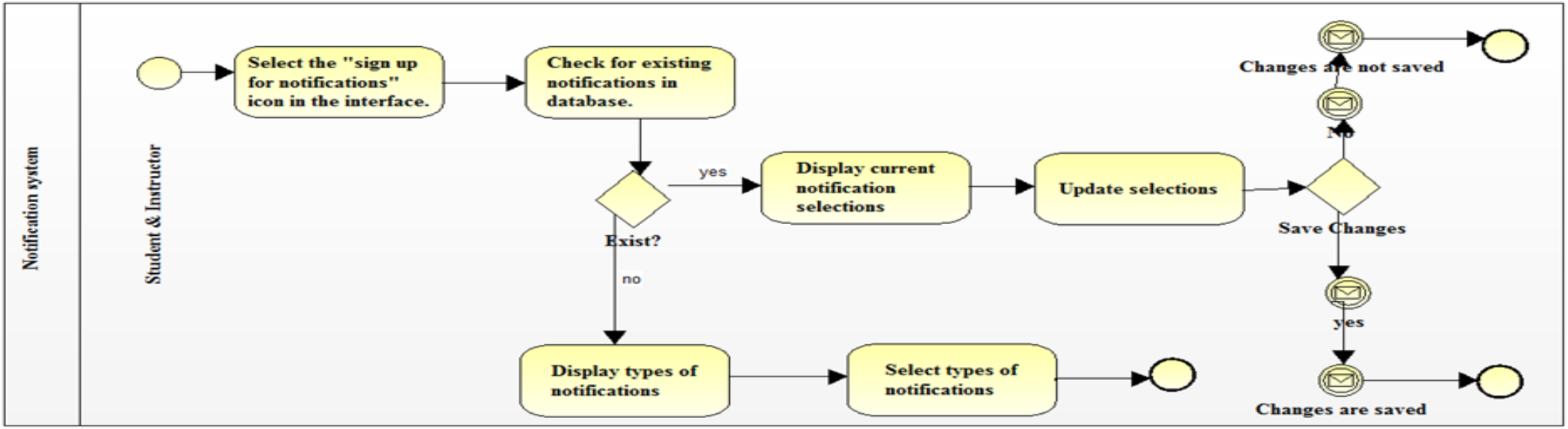
Level-1 Data Flow Diagram: Create Notification



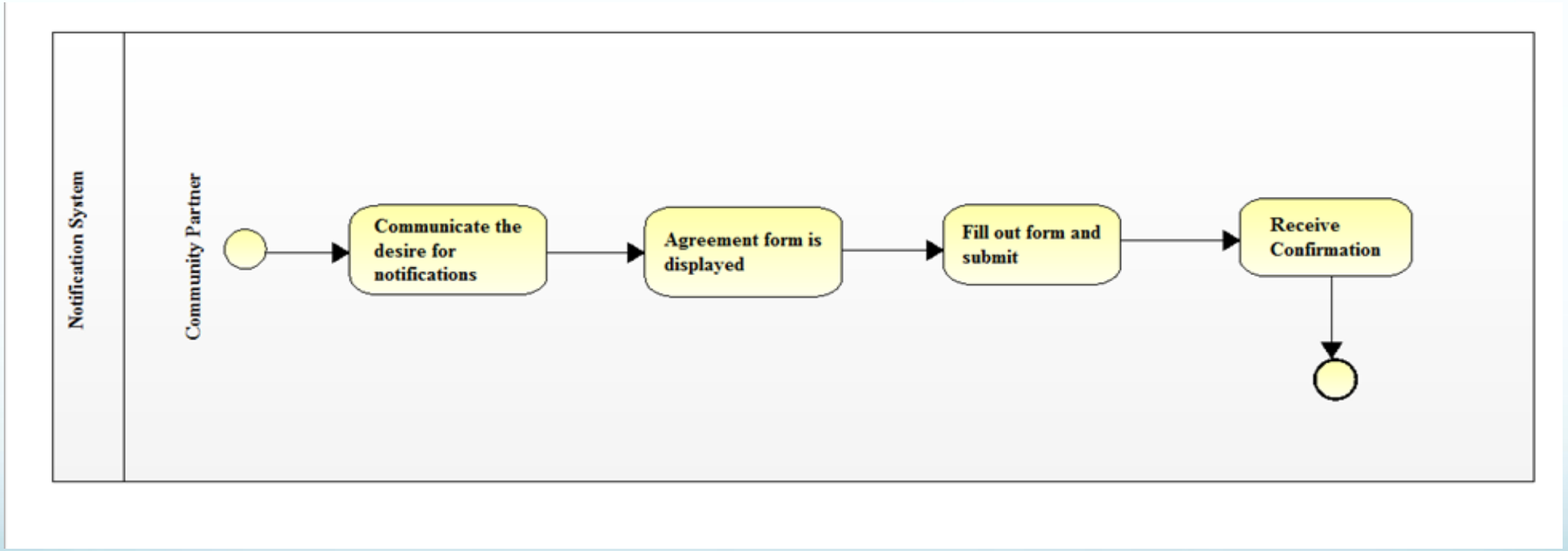
Level-1 Data Flow Diagram: View Matches



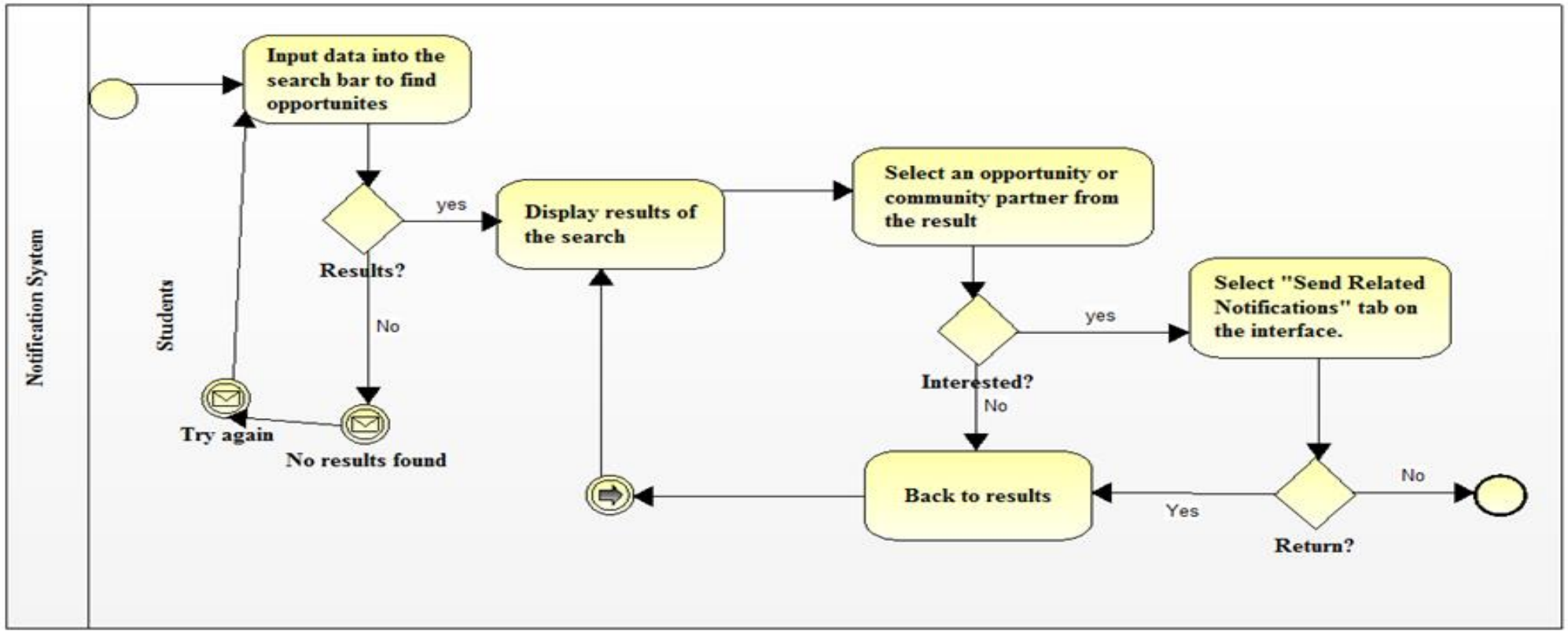
BPM Diagram for Use case Sign up for Notification (Student & Instructor)



BPM Diagram for Use case Sign up for Notification (Community Partner)



BPM Diagram for Use case Search Community Partner



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