**Chapter 2**

**METHODOLOGY**

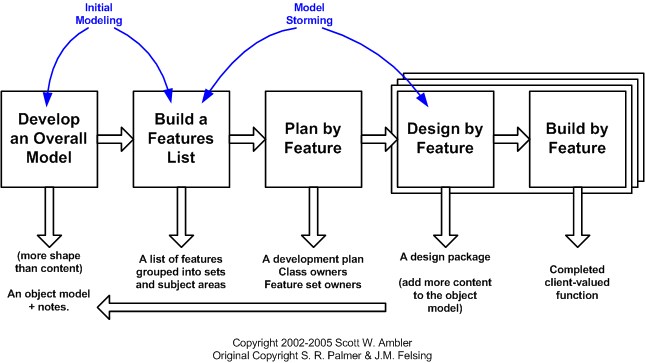
This chapter presents the web application development methodology to be used in the study together with the data gathering techniques and sources of data.

**Webs** **Application Development Methodology**

The methodology used in development of ONLINECAMPUS: Centralized school-based Web Application is Feature Driven Development.The FDD methodology is a agile methodology that is more suitable to use in developing the proposed project of the researcher. FDD is a development process that is iterative and incremental with the objective of delivering working software. Feature Driven Development mixes best practices that are all driven by what is important to the client. This means that the developers focus on the features that the client values, the functions they expect.

The researchers will use the Feature Driven Development methodology to develop the ONLINECAMPUS: Centralized school-based Web Application because it is the most suitable method to create the web application and the website will be focused on the different features that is needed to serve the users needs.

Feature Driven Development



#### 1st phase: Developing an overall model.In this first phase, FDD pushes teams to build an object model of the domain problem.The team members work together to compose a model for the proposed project. The researchers will present different models and will get reviewed by the programmers. The most suitable models will be selected and get merged to create the overall model of the web application. The researchers will then have an overall model that will be used during the whole project. The model that will be used by the researchers in developing the overall model is "use case diagram". The actors are the student, instructors, parents and student officers and the actions will be creating an account, virtual bulletin, performances and updates about the events.

#### These are the following actors and their actions: 1.The student will create an account and fill the necessary information the information provided will be stored on the cloud database. The data's requirements are students I.D. number, name, age, year level and their track.After being registered the student will now be able to access the web application's virtual bulletin board, they will be able to check and update their student profile (includes skills and talents) and monitor their task and deadlines. 2.The actor instructor will also need to create an account where they will be asked to enter their employee i.d number,name, their maximum load, preferred consultation hour. The instructors will be responsible in posting announcements and updates that will be shown in the virtual bulletin board. They also have the capability to send private messages to students with the specific skills.This will be helpful especially when there are competitions or events to those who have skills and it will be much easier for them to be invited by the admins. 3.The actor parents can access their child’s account where they will be able to monitor their child’s academic performance. 4.The actor student officers are student accounts that are given the privilege to give updates and information to the students about the college activities and skills competitions. 2nd phase: Building the feature list. The team will brainstorm and identify the features which are valuable to the client and which will be used as a guide in the development of the project while having the overall model ready, based on the knowledge got during 1st phase of developing an overall model.After which, the developers will identify all the features that is needed in the web application and list it all. List of features will be the guide of the developers in developing the web application. The researchers have now completed and reviewed the list of the web application features and ready to be used as a guide in the development of the web application.

#### The following are list of features of the web application in this phase:

#### 1.Student Profile which includes the skills and talents of the students.

2.Virtual Bulletin Board

3.Academic Performances Tracking

4.Backpack  
  
 **3rd phase: Planning by feature.** After the feature list is completed, the next step is to produce the development plan and assign ownership of features (or feature sets) as [classes](https://en.wikipedia.org/wiki/Class_(computer_science)) to [programmers](https://en.wikipedia.org/wiki/Programmer).

#### In the third phase,the researchers will review the features on the list that will be included in the project.The researchers plan in which order the features will be implemented. They will organize all the features. While planning the researchers will take into consideration the different aspects such as risks, complexity dependencies, team workload. Feature sets are then assigned to programmers.Features will also be reviewed by the programmers to be able to implement the features. The researchers will now have a concrete plan and list of the features that will be implemented in the web application. **4th phase: Designing by feature.** A design package is produced for each feature. A chief programmer selects a small group of features that are to be developed within a certain period of time. Together with the corresponding class owners, the chief programmer works out detailed use case diagram for each feature and refines the overall model.The actors and actions are written and [design inspection](https://en.wikipedia.org/wiki/Software_inspection) is held.

#### The researchers will now create the design and layout of the web application based on the list of features that will be implemented. The features will then be grouped depending on the category for easier navigation and to avoid confusion on the layout and design.The researchers validated the design and layout of the web application based on the first modelling process and the features that was listed.

These are the following deliverables in this phase:

1.Layout and design   
2.Prototype  
**5th phase: Building by feature.** After a successful design inspection for each activity to produce a feature is planned, the class owners develop code for their classes. After [unit testing](https://en.wikipedia.org/wiki/Unit_test) and successful [code inspection](https://en.wikipedia.org/wiki/Code_review), the completed feature is promoted to the main build.  
 The researchers will now start to build the web application one feature at a time. after building all the features they will now implement items that are necessary to be able to support the design. They will organize the layout so that it will be understandable and be able to allow the users to use the website easily. The researchers will conduct a unit test and inspect the web app to ensure that it does not have errors and bug in the code.

These are the deliverables in this phase:

1.Working web application

2.Web Application test report

#### **Scope and Delimitation**

The main focus of this project is the development of a school-based web application for the University of the Cordilleras students in the College of Information Technology and Computer Sciences. The project is expected to easy and fast to access by the users.

The web application system will be able to retrieve data and information from the administrators and arrange them, to be presented to the users of the web app. It is capable in notifying users in certain situation. The web application can decline on the things that are posted by students which are not school related. It has a domain name that the users will use to get connected to the web app. The application can be used in any desktop or mobile that has browsers installed and has access to the internet.

The web application is limited to the use of the University of the Cordilleras in the College of Information Technology and Computer Sciences Students and Faculty. The web application will not yet be accessible by other colleges except for the college of ITCS. The contents of the web application will be controlled and monitored by the school to ensure that everything is school related.

**Data Gathering Techniques**

The following data gathering techniques were used by the researchers to gather all the needed information. The techniques includes the following:

Interview. The researchers asked about the feasibility of the proposed project and ask what would be the possible features that could be added and be improve. The researchers conducted one-on-one conversation with students, faculty and parents who can help us understand what the web application needs. The respondents that were interviewed by the researchers were key partners mainly the University of the Cordilleras teachers and students.  
 Online questionnaires and survey. The researchers used this method because responses can be analyzed with quantitative methods by assigning numerical values to scales. Results are generally easier to analyze and pre-test/post-test can be compared and analyzed.It is also faster since the online questionnaire can be tallied as soon as respondents are done answering.

Documents and record. The researchers used this method to review researches that were made that could help in building the web application. to also understand the primary reasons students sometimes fail to pass assignments, miss school events and other reasons that make them work poorly in their academics. This consists of examining data in the form of databases, meeting minutes, reports and attendance logs. This is also an inexpensive way to gather information.

**Source of Data**

Interview. In order to create a feasible system, all necessary datas will be gathered through series of interviews from students, faculty, and parents. Suggestions and recommendations from students and school administrators will be considered by the researcher. All gathered information are used in developing the proposed web application.

Online questionnaire and surveys. The researchers gathered additional data and information through online survey. Online surveys is sent to the users in order to get feedbacks. Answer from the participants helped the researchers to improve their web application.

**Software Development Tools**

The researchers used the following tools in developing and designing the web application OnlineCampus:

Hypertext Preprocessor (Php). Php is a server-side scripting language designed for web development.It is a programming language that allows web developers to create dynamic content that interacts with databases. PHP is basically used for developing web based software applications.

MySQL. MySQL is an Open Source Relational SQL Database Management System. MySQL is one of the best Related Database Management System (RDBMS) being used for developing various web-based software applications. It is a database system used in PHP.

Adobe Photoshop. Adobe Photoshop is used by the developers as a tool to create high-quality images to use in the web application.

CSS. CSS is used to create visually appealing and easier navigation in the web application. It also allows us to load the webpage easier and faster and uses less bandwidth.

JavaScript.Javascript is a programming language with first-class functions. It is well-known as the scripting language for Web Pages.

HTML (HyperText Markup Language). HTML is the most basic building block of the Web. It defines the meaning and structure of web content. It is used in creating and designing the web application. Other technologies besides HTML are generally used to describe a web page's appearance using CSS or functionality using JavaScript.