APPLICATION FOR 2003 LARRY L. SAUTTER AWARD
FOR INNOVATION AND ENTREPRENEURSHIP IN
INFORMATION TECHNOLOGY

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PROJECT: MyPhone
PREPARED BY: Janet Bennett
Acting Manager, Application & Project Services
IET – Communications Resources
jlbennett@ucdavis.edu
(530) 754-7133

SECTION I. PROJECT SUMMARY

The MyPhone project offered much-needed services to the student constituency at UC Davis. It drastically simplified student billing and sign-up by automating manual processes and making student telecommunications services available online. A new billing process was also implemented in our telecommunications system (Pinnacle) that significantly reduced the billing time and eliminated repetitive data entry.

The project was implemented in three phases:

- Phase I provided web-based student phone sign-up for Student Housing students and automatically assigned mandatory authorization codes to each student.
- Phase II provided detailed online phone billing, allowing students the ability to immediately view their phone bills and review their prior phone bills.
- Phase III provided web-based student phone sign-up for The Colleges and Primero Grove students and also implemented a daily feed to the telephone switch to automate line activation.

SECTION II. PROJECT DESCRIPTION

PROJECT TEAM:
Doug Williams, Sponsor
Lisa Chance, Project Manager
Safa Hussain, Architect and Lead Developer
Constance Fuller, Developer
Lisa Johnston, Web Designer
Lori Morgan, Quality Assurance
Michele Reynolds, User Project Manager
Major Stakeholders: Donna Carrasco, Michele Reynolds, Lori Morgan
PROJECT OBJECTIVES:

1. Provide online phone sign-up for on-campus students.
2. Shorten the length of the billing process.
3. Eliminate unnecessary manual data entry of department information for each student and reduce the number of errors.
4. Provide detailed phone bills online for all on-campus students, which will reduce the monthly bill printing costs in terms of printing, time, and postage.
5. Provide an e-mail notification of viewing phone bills on-line for all on-campus students.
6. Immediate line activation at time of student web sign-up.
7. Give students of The Colleges and Primero Grove the option to provide phone numbers to the Apartment Managers.

In addition to the above objectives, additional requirements were discovered as part of the research and discovery process. These are stated below.

Student Sign-up Process: Students who check into the Residence Hall have assigned phone numbers. Until the students sign-up for phone service, these phone numbers are activated for local calls during the month of September. We developed an online service for students that enabled them to sign-up for the phone service.

The online service was designed to satisfy the following requirements:

1. In the past, students had to wait until their phone numbers were activated at the switch, which took four to five days. The time the student has to wait represents lost revenue and an inconvenience to the students. The phone number is now activated immediately.

2. Student Housing picks up the service charge for the first month. The application was designed to charge students for their activation and monthly service fees starting October 1st. Students who sign-up after that period are charged starting the next day of sign-up.

3. Student information was loaded into previous online applications using spreadsheets supplied by Student Housing. This information can be outdated, and the information is now dynamically generated by direct authorization to the database from Student Housing. This is particularly important since students often change rooms in the beginning of the quarter.

   Dynamic authorizations are granted to the Student Housing information through an account setup in order to access their database.

4. Each student receives his/her own bill.

5. Each room has a primary account holder. That student is responsible for collecting and paying all telephone charges including collect calls, monthly service charges, and activation charges. The only exceptions are toll charges, which are billed separately for each student.

6. The application sends e-mail confirmation to the student after sign-up.
7. Student information is dynamically processed in the background by the application with minimal intervention by the student.

8. The application was developed modularly such that future services can be added.

9. The interface is self-servicing with helpful information available to answer students’ questions about their services, how to use MyPhone, etc.

10. The system automates administrative tasks as much as possible.

**Authorization Codes Required:** Starting Fall 2001, all students are required to use PBNs. This requirement was implemented such that:

1. This service is free to students.

2. The application provides the students with their assigned authorization code dynamically when they sign-up for the service.

3. The application provides three types of reports: Call Waiting, Voice Mail, and Authorization Code. Each report contains the following information:
   - Subscriber ID
   - Student ID
   - Last Name, First Name
   - Phone Number
   - Dorm Address
   - Timestamp

   In addition to the information above, the Authorization Code report contains authorization codes for each student, the Call Waiting report contains only the records for students who ordered call-waiting service, and the Voice Mail report contains only the records for students who ordered voice-mail service.

4. The application provides the administrator with order confirmation that can be printed to be included in each student file. The order confirmation includes the following information: student name and address, campus phone number, subscriber ID, and services ordered.

**Online Bills:** All students with proper account information can log in and view/print their bills. The viewing of the bill includes the following features:

1. Ability to view a summary of the current bill, or any bill that Pinnacle maintains in its history.

2. Ability to view a detailed copy of the current bill, or any bill that Pinnacle maintains in its history.

**MyUCDavis Integration:** The MyPhone interface is available through the MyUCDavis web portal.

**Phone Activation:** As soon as students sign up for phone services, these services are immediately activated in the phone switch.
**Requirements Assumption:** The application was developed with the following requirements assumptions:

1. Users of the service are students who reside on campus who have Kerberos accounts or can obtain them online at [http://ComputingAccounts.ucdavis.edu](http://ComputingAccounts.ucdavis.edu). The only exception to this role is authorized administrators identified by NSC who will use the application to print the set of reports mentioned earlier.

   This provided us the ability to profile the student based on their Kerberos ID, thus leading to minimal information required to be collected from the student to sign-up for the service. In addition, this provides students with single sign-on service to all applications at UC Davis that use distributed authentication services. These applications include MyUCDavis, direct deposit, SISWEB, etc.

2. Phone numbers assigned to those students are within the following ranges:
   
   5307540100 - 5307542099  
   5307542300 - 5307543999

   All numbers within this range will have a cable path established in Pinnacle.

3. The application creates a batch file containing all authorization codes that need to be uploaded into the switch. Application development handled the creation of the batch file to be loaded into the SL 100 switch.

4. NSC, in coordination with the switch engineer, handles the process of uploading the batch file, created daily by the sign-up service, into the switch.

5. The application is available 24 x 7, except for regularly scheduled downtime on Sunday mornings between 3:00 a.m. and 5:00 a.m..

**PROJECT URLs:**

The production instance of MyPhone resides at [http://myphone.ucdavis.edu](http://myphone.ucdavis.edu) however only students are able to utilize this site. Instead, please visit [http://myphone.ucdavis.edu/myphoneDemo](http://myphone.ucdavis.edu/myphoneDemo) to interact with the portal. Below are highlights of the interface.

Initial screen:
Click the center icon to go through a demonstration of the student sign-up feature.
Click the “View Bills” link on the left navigation panel and select a date to view a sample online bill.

Please click other links on the top and side navigation bars to view their functionality.

SECTION III. TECHNOLOGY

The following technology was used in all phases of the MyPhone implementation.

**ColdFusion Application Server:** The ColdFusion application server was used to create the portal service, render dynamic web content, and integrate with distributed systems such as the Pinnacle telemanagement system, the Student Housing system, and the campus Metadirectory.

**Expect Perl:** Expect Perl was used to write scripts that interacted with the PBX switch. This enabled automated activation of voice services on the switch.

**Oracle Relational Database:** Oracle database instances were used to retain billing information and user profiles.
PL/SQL: PL/SQL was used to automate the billing information on our Pinnacle telemanagement system.

SQL/Plus: SQL/Plus was used to capture dynamic information with respect to a user profile and his/her billing information. The application server uses this information to render dynamic web pages to the clients.

Distributed Authentication Services: This is a UC Davis centrally managed service for authenticating affiliates such as student staff and faculty. It enables user profiling when used in conjunction with the campus Metadirectory. This service also allowed for single sign-on when used from the MyUCDavis campus portal.

MyUCDavis Campus Portal: Integration with the campus portal is used for quick discovery of the services available to students.

SECTION IV. TIMEFRAME

Phase I of the MyPhone project began in February of 2001 and was completed in August 2001, in time for fall student sign-up.

Phase II of the MyPhone project began September 2001 and was completed in April 2002. Paper bills were sent out for the remainder of that school year and the phone bills for the incoming fall students were completely online and no paper bills were sent.

Phase III of the MyPhone project began in May 2002 and was completed in August of 2002, in time for fall student sign-up. All on-campus students are now able to sign up online.

SECTION V. OBJECTIVE CUSTOMER SATISFACTION DATA

Activation of student telephone service has literally gone from taking up to five days to taking about five minutes. This allows students to have immediate telephone service upon moving on campus.

Student sign-up went from being a static web page containing no background information to being completely dynamic and automatically populating the student’s name, ID, address, email address, phone number, and phone location.

Students can now sign up for service at any time of the day or night. They can log onto the MyPhone web site at their convenience.

Students’ phone bills are now separated by subscriber. Previously, students who shared rooms would have to sort through their phone bills to determine who had incurred each long distance phone charge. Because MyPhone is able to automatically assign authorization codes, this is no longer a problem.

Having the student bills strictly online has saved us $2000 per month in printing and mailing costs.

Turnaround time from the moment the bills are generated to when the students receive them has gone from taking seven to twelve days calendar days to being instantaneous. The moment the bills are generated, the students can see them online.
Our staff no longer needs to manually enter service order information; it is all automated. This has not only improved efficiency but also ensured data integrity.

Our staff no longer has to print and coordinate the delivery of service brochures – the information is accessible via MyPhone.

The delivery of telephone service to our students has become somewhat of a seamless operation for both our staff and our customers. The staff no longer spends days of countless hours of overtime, nor experiences the numerous telephone calls from students asking when their service will be available. In fact, there is no manual intervention required of our staff in order for students to set up their phone service or access their phone bills.

The time to generate the student bills, from start to finish, went from taking 8 hours to taking 30 minutes.