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Fall 2017

## GSU Event Portal

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## ABSTRACT

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The GSU Events website will solve a major problem with the current student portal - GSU student boredom. The current GSU Student portal is lacking entertainment, and the GSU Events website will fill that gap. The entertainment piece is currently not available on the GSU Student Portal, and this feature will hopefully be added to the GSU Student Portal in the near future. It will be a way for students to communicate and advertise music, theater, conferences, and entertainment in the surrounding area. It could also be used and advertised for new students to explore the area and get to know their new environment. The GSU Events website will be an excellent addition to the existing GSU Student Portal, and will be used by all GSU students. The GSU Events feature will be ready for release December 4th, 2017.

9/9/17 Abstract approved by Professor Chen.

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## ***1 Project Description***

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The GSU Events feature will provide a mechanism for GSU students to not only promote and/or sell tickets to events, but also give them an avenue to utilize the entertainment and social events the area has to offer. The GSU Events feature will be mobile friendly and will be available to use via PC, phone, and tablet. This feature will be based on four different roles – Viewer, Student, Organizer, and Administrator.

### **Viewer Role**

The Viewer Role is the default role and does not need to authenticate.

- Viewers can search and view events without authentication.
- Search functionality will include name and type of event.
- Viewers can open the Home, About Us, and Contact us pages.

### **Student Role**

The following describes the functionality of the Student Role.

- Requires authentication before Student can register for event.
- Allow ability to create a new account with a remember me cookie.
- If an event requires payment, the student can enter their payment information.
- Allow Students to edit their account information after created and change their password.

### **Organizer Role**

The Organizer Role will receive all the functionality of the Student Role with the following additions.

- Organizers can create and edit events including amount of tickets, if the event is paid, and type of event.
- Organizers can view registrations for a specific event, including payments

### **Administrator Role**

The Administrator Role will receive all the functionality of the Student and Organizer Roles with the following additions.

- Administrators can create, modify, and delete accounts.
- Administrators can add and remove roles for user accounts.

All of these roles implies a sound database structure in the background. The tables have been designed to facilitate the natural flow of the website. The front end website and back end database have been connected via the code and SQL data connections.

The front - end website was developed in .Net, and the back end database was built in MySQL. The code used to connect the front and back ends and navigate the website was C#.

## ***1.1 Competitive Information***

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When compared to other ticket vendors, such as Eventbrite, Stubhub, and Ticketmaster, the GSU Events portal will offer competitive rates, and will be affordable for students. Some events offered at GSU will be free of cost. This will be one of the market advantages that will be offered by the GSU Event Portal. The current GSU portal has no offerings for entertainment, so this feature should be welcomed and embraced by many students. Potential students may also use the GSU Events portal to see what the area has to offer and help in the decision to come to GSU.

## ***1.2 Relationship to Other Applications/Projects***

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The GSU Events feature will be related to the current GSU Student portal. More research is needed to determine if this feature will be available to current students only and will require authenticated access, or if it will be open to the public. Additional research is also necessary to determine where the GSU Events feature will be added into the current GSU Student Portal. Discussions with the current website developers and administrators will need to happen to determine how the collaboration between the new GSU Events feature and the current GSU Student Portal will communicate.

### ***1.3 Assumptions and Dependencies***

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- If the GSU Events feature is added to the current GSU Student Portal, the current web development and administration team will take over the code and make changes as necessary including branding for GSU.
- The GSU administration team will take over the security, and user maintenance of the GSU Events feature.
- The GSU Events feature will be available on the current GSU web servers.
- The GSU Events feature will become the property of GSU.
- The GSU Events feature is dependent on internet access and a device able to connect to the internet.
- Additional changes will be necessary to connect the GSU Events feature to the GSU Student portal back end.

### ***1.4 Future Enhancements***

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Future enhancements will include the integration between the current GSU Student Portal and the new GSU Events feature. More discussion and collaboration will need to happen with the GSU Student Portal web administrators and developers to determine how the two websites will be combined in the future. A new project plan for combining the two features will need to be created and implemented after the completion of the GSU Events feature.

### ***1.5 Definitions and Acronyms***

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- GSU – Governors State University
- HTML – Hypertext markup language
- C# - ASP.Net (C Sharp)

## ***2 Project Technical Description***

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The navigation bar developed in the master page will serve as the backbone of the website. All pages are attached to the master page and take advantage of the master page's security. All users may view the Home page, Contact Us page, and About Us pages. A student or viewer may not register for an event without first creating an account or authenticating with the server. After registration, the student role is automatically assigned to the new user which allows them to register for an event. If a user would like to be an organizer and create events, they must notify the admins via the Contact Page and request the additional access. If the access is granted, the Administrator will assign the Organizer role for the specific account. Only Organizers can create and edit their own events. Organizers can also see who registered for their specific events.

Administrators have full rights of the complete website. They can do everything the viewer, student and organizer can do along with edit and delete capabilities for user accounts, roles, and assigning and removing roles for users.

The Home page, shown in Figure 1 below, will list all events and include a sort feature which viewers can search by name and type. This will provide a bored GSU student easy access to events at GSU and near GSU.

## Are You A Bored GSU Student?



Type
  Name

	Title	Address	City	State	Date Time	Free / Paid	Price	Organizer	Tix Avail	Tix Left	Type	EventID
<a href="#">Select</a>	GSU Volleyball	1 University Parkway	University Park	IL	1/22/2017 12:00:00 PM	Paid	5	tcpc2@gmail.com	100		GSU	1009
<a href="#">Select</a>	International Seminar	1 University Parkway	University Park	IL	12/15/2017 4:30:00 PM	Free	0	tcpc@sbcglobal.net	30		GSU	1003
<a href="#">Select</a>	Ozzy Comes to GSU	1 University Parkway	University Park	IL	12/16/2017 7:00:00 PM	Paid	125	tcpc@sbcglobal.net	25	25	concert	1
<a href="#">Select</a>	Meet The Teachers	1 University Parkway	University Park	IL	12/22/2017 5:00:00 PM	Free	0	tcpc@sbcglobal.net	40	40	GSU	2
<a href="#">Select</a>	Junie B Stars at GSU	1 University Parkway	University Park	IL	12/23/2017 12:30:00 PM	Paid	12	tcpc@sbcglobal.net	100		GSU	1008
<a href="#">Next</a> <a href="#">Last</a>												

Figure 1

When the student is ready to register for an event, they will navigate to the Register for Event page, shown in Figure 2 below. If the student does not have an account, they will be prompted to create an account at this time. The Register for Event page will allow the student to select the event they want to register for, and fill in the rest of the details specific to the event like credit card if it is not a free event, name, and number of tickets. Most of the information is pre-populated for the student including transaction ID, organizer, event name, and price. The cost is auto-populated for the student depending on the number of tickets entered and the price for the event. After the student commits the record, it is added to the transaction table and is added to the list of events the current user is registered for.

## Register For Event

Type
  Name

Title	Address	City	Date Time	Free/Paid	Price	Tix Avail	Tix Left	Event ID	Type	Organizer	
Bears vs Patriots	25 Soldier Field Dr	Chicago	12/29/2017 7:00:00 PM	Paid	250	20	20	3	sports	tcpc1@gmail.com	<a href="#">Select</a>
Chicago Blackhawks vs Blue Jays	25 W Madison St	Chicago	1/5/2018 2:00:00 PM	Paid	75	20	20	4	sports	tcpc1@gmail.com	<a href="#">Select</a>
GSU Volleyball	1 University Parkway	University Park	1/22/2017 12:00:00 PM	Paid	5	100		1009	GSU	tcpc2@gmail.com	<a href="#">Select</a>

1 2 3

### Enter Event Details

Event ID	4
Title	Chicago Blackhawks vs Blue Jays
Organizer ID	tcpc1@gmail.com
Price	75
Viewer ID	tcpc@sbcglobal.net
Name	<input type="text"/>
Number of Tickets	<input type="text"/>
Cost	
Credit Card	<input type="text"/>
<a href="#">Insert</a> <a href="#">Cancel</a>	

### My Registered Events

ID	# of Tix	Price	Name	Credit Card	Title	
1	1	75	Inga Paulerson	123321123	Ozzy Comes to GSU	<a href="#">Delete</a>
3	3	0	Inga Paulerson		Meet The Teachers	<a href="#">Delete</a>
4	2	75	Inga Paulerson	777666777	Chicago Blackhawks vs Blue Jays	<a href="#">Delete</a>
8	2	125	Inga Paulerson	876678876	Ozzy Comes to GSU	<a href="#">Delete</a>
1010	2	0	Inga Paulerson		International Seminar	<a href="#">Delete</a>

1 2

Figure 2

The Create Events page, shown in Figure 3 below, is only available for users with the Organizer role. It lists the events the current user created, and when a specific event is selected, the edit capabilities become available and the list of users registered for the specific event are listed. An Organizer can also create new events on this page.

## Create/View Events

Title	Address	City	State	Zip	Date/Time	Free/Paid	Price	Organized By	Type	Event ID	
International Seminar	1 University Parkway	University Park	IL	60484	12/15/2017 4:30:00 PM	Free	0	tcpc@sbcglobal.net	GSU	1003	<a href="#">Select</a>
Ozzy Comes to GSU	1 University Parkway	University Park	IL	60484	12/16/2017 7:00:00 PM	Paid	125	tcpc@sbcglobal.net	concert	1	<a href="#">Select</a>
Meet The Teachers	1 University Parkway	University Park	IL	60484	12/22/2017 5:00:00 PM	Free	0	tcpc@sbcglobal.net	GSU	2	<a href="#">Select</a>
Junie B Stars at GSU	1 University Parkway	University Park	IL	60488	12/23/2017 12:30:00 PM	Paid	12	tcpc@sbcglobal.net	GSU	1008	<a href="#">Select</a>

Title	Meet The Teachers
Address	1 University Parkway
City	University Park
State	IL
Zip	60484
Date/Time	12/22/2017 5:00:00 PM
Free/Paid	Free
Price	0
Organized By	tcpc@sbcglobal.net
Tix Avail	40
Type	GSU
EventID	2
<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">New</a>	

### People Registered For This Event

Name	Num Tix	Credit Card	Title	Cost
Inga Paulerson	3		Meet The Teachers	0

Figure 3

The Admin page, shown in Figure 4 below, is only available for Administrators, and allows only the Administrators to modify and delete existing users along with add and remove roles for users.

## Maintain users and roles

(Only users associated with the Admin role can access this page)

### Users

User Name	Email	Roles	
tcp1@gmail.com	tcp1@gmail.com	Organizer	Select
tcp@sbglobal.net	tcp@sbglobal.net	Admin	Select
tcp3@gmail.com	tcp3@gmail.com	Admin	Select
tcp7@gmail.com	tcp7@gmail.com	Viewer	Select
tcp5340948@gmail.com	tcp5340948@gmail.com	Organizer	Select
tcp2@gmail.com	tcp2@gmail.com	Admin	Select
tcp4@gmail.com	tcp4@gmail.com	Viewer	Select

Email	
<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">New</a>	

### Roles

Role Name	
Admin	Select
Organizer	Select
Viewer	Select

Role Name	
<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">New</a>	

### Add Roles to User

Select a user:

Add one or more roles:

Figure 4

The Contact Us page, shown in Figure 5 below, is used for users who would like to create Events, and request the Organizer role. This page can also be used for other questions pertaining to the website including login problems or problems navigating the site. This page sends an email to the Administrators of the GSU Events website.

## Contact Us

Name

Email

Comments

Status

**Support:** [gsusprojectgroup6@gmail.com](mailto:gsusprojectgroup6@gmail.com)

Figure 5

The About Us page, shown in Figure 6 below, lists a general synopsis about the creators of the GSU Events website.

## About Us



Latrice Maxey - B.S. Governors State University 2014

My name is LaTrice Maxey, and I am so eager to be graduating and obtaining my Masters of Science Degree from Governor's State University. I am the proud mother of one son, Dercell 27, and the grandmother of one beautiful Granddaughter Khalia 7. I am currently employed with the City of Chicago, Office of Emergency Management Communications (911), where I am Police Dispatcher. I love to shop, attend church, spend time with family and friends, play video and board games, and just relax.



Paula Cadieux - B.S. DeVry University 1996

My name is Paula Cadieux, and I am so excited to graduate and finally be done with my Masters of Science Degree from Governors State University. I am married, have two great girls Jade 14, and Megan 8, and I promised a dog after graduation. I am currently employed at KSKJ Life in Joliet which is a fraternal insurance company. We are currently in the middle of a major software conversion at KSKJ Life. My hobbies are camping with my family, crafting, and sewing clothes.

Figure 6

.Net will be used for the front - end development and middleware to connect to the MySQL database. Microsoft SQL Server Management Studio 17 will be used to build the MySQL database and tables. The code will be written in C#. The website framework is shown in Figure 7 below.

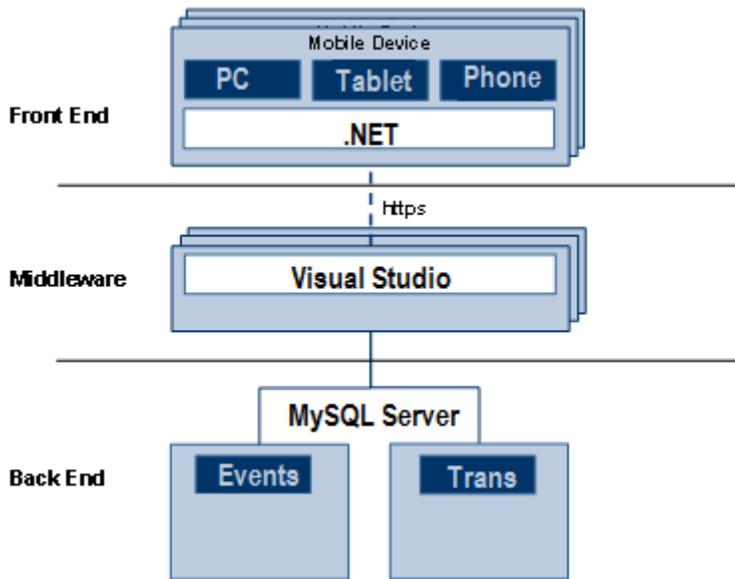


Figure 7

## 2.1 Application Architecture

The application will be broken down into the back and front end, where the back end is the database, and the front end is the website user interface shown in Figure 8 below.

+

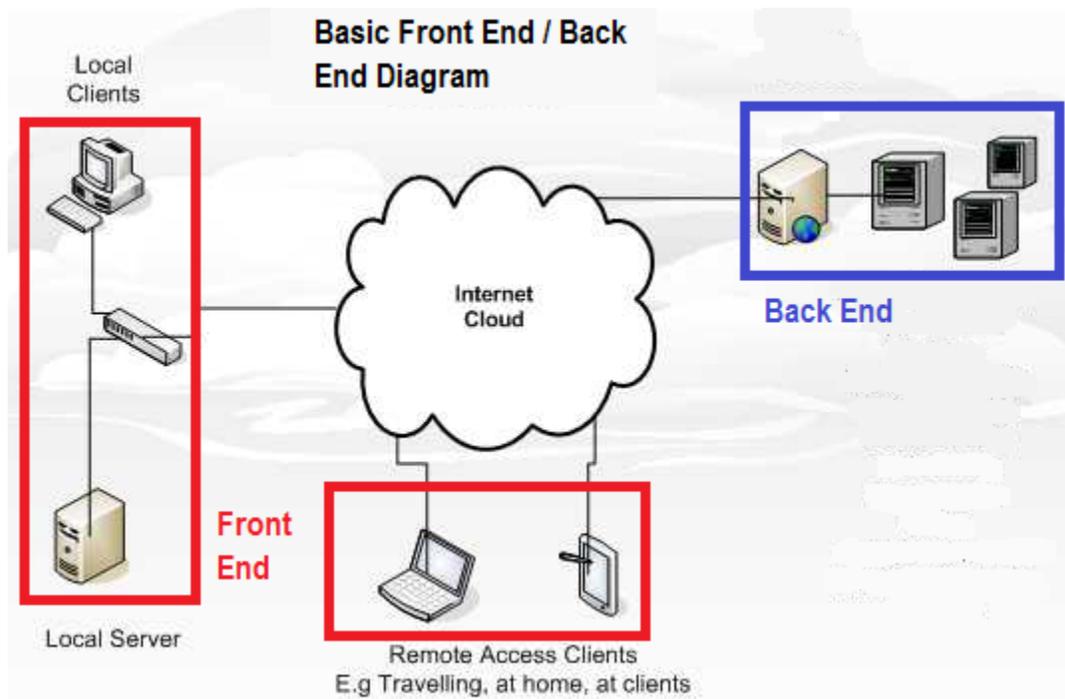


Figure 8

The current architecture is on a stand alone laptop, with the front end built in .Net, and the backend built in MySQL server with Microsoft SQL Server Management Studio 17. If the GSU Events feature is added to the current GSU Student Portal, the front

end will probably continue to be developed in .Net, but the back end will probably be whatever the current GSU Student Portal uses for record storage.

## ***2.2 Application Information flows***

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The following flowchart, shown Figure 9 below, depicts the flow of information for the GSU Events feature.

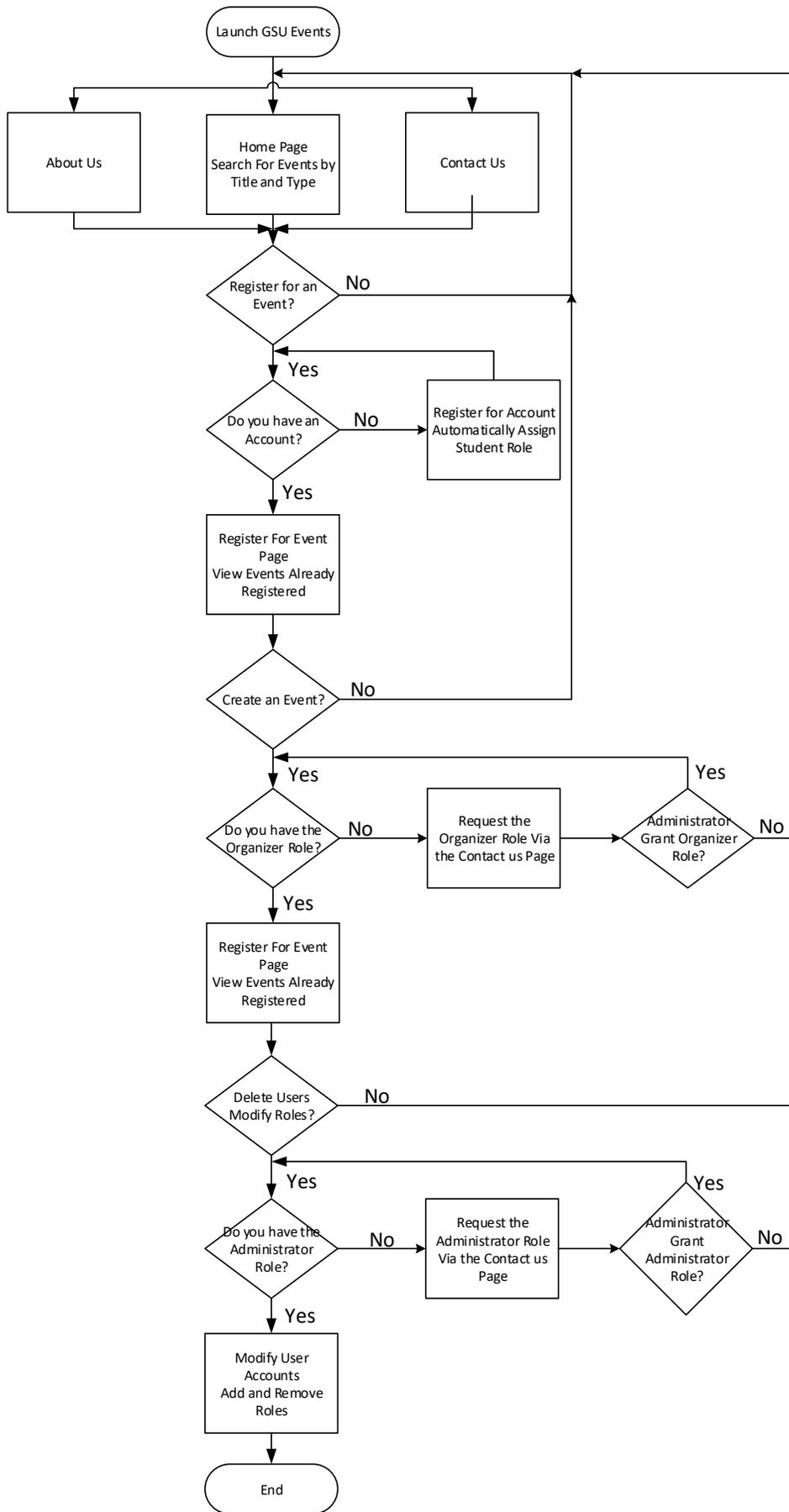


Figure 9

### 2.3 Interactions with other Projects (if Any)

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The GSU Events feature will need several development phases to be ready for the GSU Student Portal. These projects will need to be identified and scheduled before the GSU Student Portal and the GSU Events feature can be combined.

### 2.4 Interactions with other Applications

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The GSU Events feature, if accepted, will be added to the current GSU Student portal. More research and development is needed to integrate the two different systems.

### 2.5 Capabilities

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The GSU Events feature will provide the following capabilities.

- The GSU Events feature will provide complete website security and include roles for Students, Organizers, and Administrators
- The front - end user can use any type of electronic – phone, tablet, laptop, etc.
- Viewers may view and search for events before creating an account.
- A Viewer must create an account before registering for an event.
- A Viewer can change their password at any time without Administrator intervention.
- The Administrator controls who can be assigned the Organizer role.
- Only Organizers and Administrators can create Events.
- Organizers can edit only the events they created and view the people who registered for those particular events.
- The Administrator controls all levels of access for the GSU Events portal.
- The database is configured to be safe from concurrent writes or commits via the concurrency setting in the SQL Data Source.

### 2.6 Risk Assessment and Management

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Data security and integrity is always at risk; therefore, encryption techniques and recursive review of database commits will help preserve the data. Also, a fallback of the database is maintained, in possible physical disasters, or an online threat where data loss could be imminent.

#### Identifying Risks

The key deliverables of this project are the Event Portal Website along with several tables of the event portal databases. The project will include a development of an application that will allow for current and future events to be displayed. The portal will give users the option to buy ticket(s) for that event that is displayed. Also, the web application will allow for membership records to be created, event records to be created, and transaction records to be created.

#### Quality Risks

Software and code reviewed must be performed on web and application software

No	Rank	Description	Category	Trigger Risk	Owner	Probability	Impact
1	1	Website	Server	Website Security	Administrator	Medium	High
2	2	Web Page	Website	Web Page Interaction	Administrator	Medium	High
3	3	Database	Database	Database Interaction	Administrator	Medium	High
4	4	Application	Application	Application Error	Administrator	Low	Medium

#### Managing Risks

There will be several procedures in place to manage risk in the GSU Event Portal project. Managing risk of the project will be outlined in the following sections:

The website server will be monitored 24/7 for security breaches and the database will be backed up every night with an audit

trail created after all updates. Web Page or Website errors will be reviewed by the administrator/employee. Web application programs will be reviewed by the computer programmer, and error messages are triggers.

The GSU Events feature will provide the following capabilities.

- The GSU Events feature will provide complete website security and include roles for Students, Organizers, and Administrators
- The front - end user can use any type of electronic – phone, tablet, laptop, etc.

#### **Identify Plans**

- Administrators/employees will conduct code reviews on all written software.
- Administrators/employees will review database design, modification procedure, and operations.
- Administrators/employees will review the website coding and procedures.

#### **Quality Management Plan**

The GSU Event Portal project deliverables are the event website, the membership data entry screens, and the event data entry screen. The Event Database will consist of membership data tables, membership address data, event data table, event address table, and a transaction table.

Event/Registration Entry Screen – The Event data screen and registration entry screen will be developed to ensure that the appropriate data is entered with some assurance of accuracy. All fields will be required except for the address field of the event address table and the registration address table.

The Program testing and code review will be done in the 11th week of the project. The result will be submitted to the programmer for debugging and correction. System testing will be performed by the Quality team in the 12 th week of the project.

#### **Quality Assurance**

The last phase of the project will be to evaluate the results and to plan for future enhancements to the website. In the Evaluation and Maintenance phase will consist of the continuous evaluation of the project status, any minor programming errors will be corrected as needed to make sure it still meets the end user needs. System evaluation should be implemented on a quarterly basis or as needed.

#### **Quality Control**

The quality control will be reviewed by the administrator/employees. If errors are detected, they will be reported to the programmer. All Written documentation will be reviewed by the administrator/employees for each segment of the project, so any corrections or clarity will be made to meet the standards.

### ***3 Project Requirements***

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The main requirements for the GSU Events feature are defined below.

**Security** – Visitors can search for events from the Home page. Visitors can also open the About and Contact pages without authentication. When a Visitor decides to register for an event, they must create an account or authenticate. After authentication, the Visitor receives the Student role and can register for already created events and view the events they have already registered for. Students can also delete the events they previously registered for.

Students can request the Organizer role via the Contact page. If the Administrator assigns the Organizer role to a specific user, the Organizer can create new Events or modify and delete existing Events. Organizers can also see the students that have registered for their specific events. Organizers also inherit all the rights from the Student role meaning they can perform all the actions a Student can.

Administrators can perform all the actions of the Student and Organizer roles along with user maintenance. Administrators can delete users, add roles, and add and remove roles from user accounts.

**Functionality** – The home page lists all Events by Event Date, and Events can be searched by Title and type i.e. sports, GSU, concert.

The About page lists personal information about the creators.

The Contact page is a way for users to contact the Administrators via email. Students can also request the Organizer role via the Contact page.

The Register For Event page is a way for Students, Organizers, and Administrators to save their spot for a particular event. Any of these three types of users may not launch this page without authentication. Viewers may not launch this page. Once the event is selected, the following fields will be automatically entered: Event ID, Event Title, Organized By, Price, and Cost.

### ***3.1 Identification of Requirements***

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- 1.1 About Us page – a brief description and picture for both Latrice and Paula. This page will be viewable by all users including non-authenticated users.
- 1.2 Contact Us page – a page with Name, Email Address, and Comments, and a Send Button. The Send Button will collect the Name, Email Address, and Comments the user entered, and send an email to [gsusprojectgroup6@gmail.com](mailto:gsusprojectgroup6@gmail.com). This page will be viewable by all users including non-authenticated users.
- 1.3 Home page – include a scrolling graphic with 3 different pictures. Also include an enterable search field and radio button for title and type.
- 1.4 Register For Events page – A user must be authenticated and registered before actually registering for an event. When a student registers with the site, they are automatically assigned the Stkudent role and can register for events.
- 1.5 Create Events - this page is only available for users with the Organizer role. The Organizer role can be requested from the Contact Us page which is available to all users. This page will allow the person who created the event to see the people who registered for their particular events when they are selected. This page will also allow the Organizer to add new events, modify, and delete existing events.
- 1.6 The Admin page is only available to users with the Administrator role. Only existing Administrators may assign a user the Administrator role. The Admin page's functionality includes user maintenance including create, edit, and delete users. Role maintenance, including create, edit and delete roles. The Admin page also allows the Administrator to assign and remove roles from users.
- 1.7 Login page – ability for registered user to authenticate.
- 1.8 Register page – allows new users to create their username and password which will be used to authenticate.
- 1.9 MySQL server backend – The data will be stored in a newly created MySQL back end. The tables will include Event and Transactions. The identity framework included with Visual Studio will handle the storage of users, roles, and authentication information.

### ***3.2 Operations, Administration, Maintenance and Provisioning (OAM&P) - Latrice***

---

If the GSU Events project is added to the current GSU Student Portal, the current GSU Administration staff will also support the GSU Events Portal. More research is needed, but the best practice would be to also store the database in the same server as the current GSU Student Portal. The easiest would be to keep them consistent so they are easier to maintain. The same data backup, fault recovery, and routine maintenance process used for the GSU Student Portal should also be implemented for the GSU Events Portal.

### ***3.3 Security and Fraud Prevention***

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In the Phase II of the GSU Events Portal, SSL should be added to the user authentication. I think the current security layer of the identity framework will prevent fraud. If the credit card number will be stored, additional network security will need to be implemented. More research is needed to determine the best practice for the network security. Penetration testing will need to be conducted to pinpoint areas of vulnerability and to make sure the system cannot be compromised.

### ***3.4 Release and Transition Plan***

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More research is necessary to determine the best rollout plan for the GSU Events Portal and the integration with the current GSU Student Portal. Additional development will be necessary before the two systems can be released together.

## ***4 Project Design Description***

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The GSU Event Portal will be designed to display current and future events that will allow users to purchase tickets for the events that will be displayed on the website, where they will have privilege of browsing events and able to purchase tickets as well.

### **Visitors/Students**

There will be two types of users who will be incorporating the design of the website. The Visitor and Student. The Student will be one that will be allowed to browse events and purchase tickets. A guest user who wants to become a registered user will have to register through the website and submit the required information, such as, email address and password. Events will be created through an event creation screen that will be access after a user receives the Organizer Role. An Administrator user can make changes to user accounts and role maintenance.

### **The Website Design**

The website has been designed to allow Visitors to only browse events, after the initial screen sets up, the user will be given the option to either register or log in. If the user indicates that they want to register on the website, then the registration screen appears and will allow the user to enter their registration information. Once the registration information has been completed, a new account data record will be created. Therefore, when event information is added there will be a new record created in the event data table.

### **The Data Tables**

The Admin and all user information will be saved in the identity framework account table. The event information will be stored in the event table, and the transaction will contain the ticket purchase information.

## ***5 Internal/External Interface Impacts and Specification***

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The Internal interface consists of the internal screen which is initiated by the user-sign on. This sign on screen allows for the modification of user records, and also allows the website administrator to add, change, or delete records of each of the datasets of the GSU Event portal. The dataset consists of the event, transaction, and several user and authentication tables.

The External interface will consist of membership registration screen, the event input screen and the transaction processing screen. The membership screen will require the email address and password. The data that will be entered will populate the user account table via identity framework. The student role will automatically be assigned to the newly registered user. The event input screen will have the event date and time, ticket cost, event address, city, state, and zip code. Event number will be generated whenever a new record is added. The data entered will populate the event table. The transaction input screen automatically pre - populates the data from the event. The user will have the ability to add their name, credit card number, and number of tickets. The transaction event number is automatically populated.

The initial interface of the event portal will display images that will represent different types of event that a user can purchase tickets for. A user can browse through events from the event data table and search for events to purchase tickets to attend. All the events are submitted to the portal by registered Organizers. Only Organizers can input events to be display on the event portal.

## ***6 Design Units Impacts***

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The GSU Events portal is divided into different design units by user role. The users with the Visitor role can see the Home, Contact Us, and About Us pages. The users with the Student role can see everything the Visitors can see along with the Register For Event page. The users with the Organizer role can see everything the Visitor and Students can see along with the

Create Event page. The users with the Administrator role have ultimate rights and can do anything within the GSU Events Portal.

## **6.1 Functional Areas GSU Events**

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It is easiest to separate the functional areas by role. Each role has its own distinct capabilities. The capabilities of each role are defined below.

Visitor Role – Visitors can see the Home, Contact Us, and About Us pages.

Student Role – Home, Contact Us, About Us, Register For Event pages.

Organizer Role - Home, Contact Us, About Us, Register For Event, Create Event pages.

Administrator Role - Home, Contact Us, About Us, Register For Event, Create Event pages.

### **6.1.1 Impacts**

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The functional areas that are focused on are the Registration, Event, and Transaction process. Each functional area is dependent on each other. The registration data information is linked to the user account, the event data information is linked to the transaction data information. All the links have a major impact on one another.

### **6.1.2 Requirements**

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The event portal project was written using ASP.Net and HTML, which requires the ability to be supported by several devices, for example, mobile smartphone, desktop/laptop, and tablet. The website required a security component to protect the sensitive data that is collected. Validation component is required to implement the visitor to sign up, the registration input record screen, the event record input screen, and the transaction processing screen.

The website will have a security component to guard against hacking to prevent linking to the server to hold personal data. Also, registration data and the transaction information that will include credit card, number of tickets, and personal information must be protected against outside forces and viruses.

The registration input screen will require several types of validations. It requires the user to email and password. Some of the validations that are required is valid email address and a password that meets several criteria. The Event input screen will require a valid start date and time, address, city, state, and zip code.

The Transaction input screen will require a valid credit card number. The transaction table record will be populated for the other table fields in the database. The Transaction event number and event cost will be automatically populated.

## **7 Acknowledgements**

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No Acknowledgements at this time.

## **8 References**

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## **9 Appendices**

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No Appendices are necessary at this time.