



SOCIALIZE GPS



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Introduction:

The task at hand is to create a GPS software application for mobile devices that integrates aspects of social media and promotes use through gamification. However the primary use of the application should prioritize supporting navigation above all else.

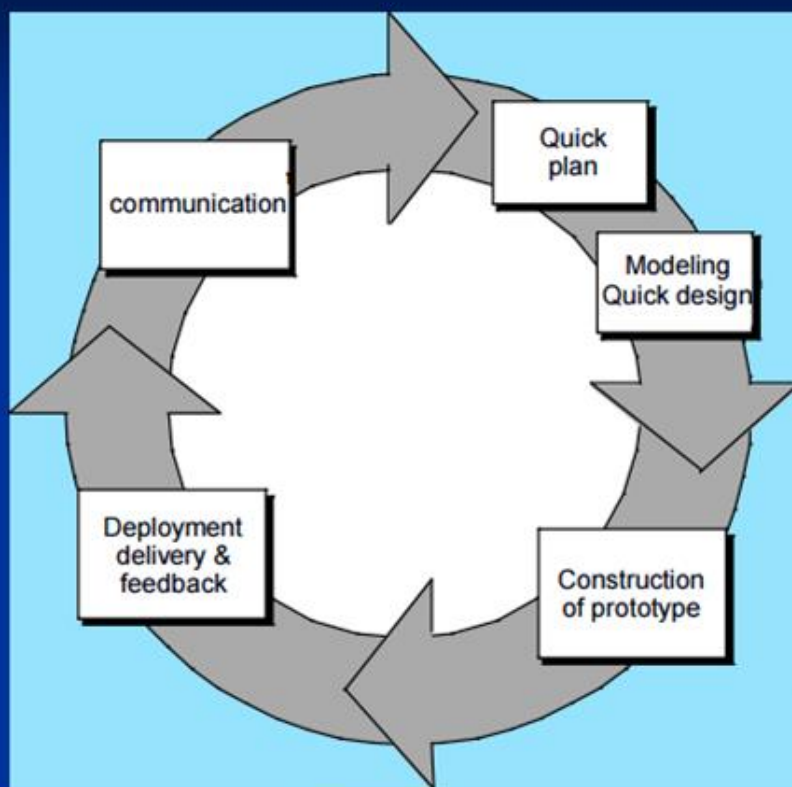
Narrative:

This software application should be supported on mobile operating systems, beginning with iOS and Android and, should funds permit, other mobile operating systems as well. There is no need for this application to be integrated with PC operating systems such as Windows. The application should have internet capabilities and must have access to the User's location in order to operate. It is to be written in JavaScript.

As stated previously, the main function is Navigation; followed by being able to view maps, find locations, adding and removing friends, leaving feedback at visited locations, challenging and adding rivals (users with similar scores in local proximity), saving frequented locations, viewing leaderboards, obtaining achievements, editing account settings, and viewing friends' locations on a map.

The system will require internet connectivity and the mobile devices using the system must have a GPS unit. This project is estimated to take between 112 and 124 man months. The budget provided is set at \$1,000,000.00.

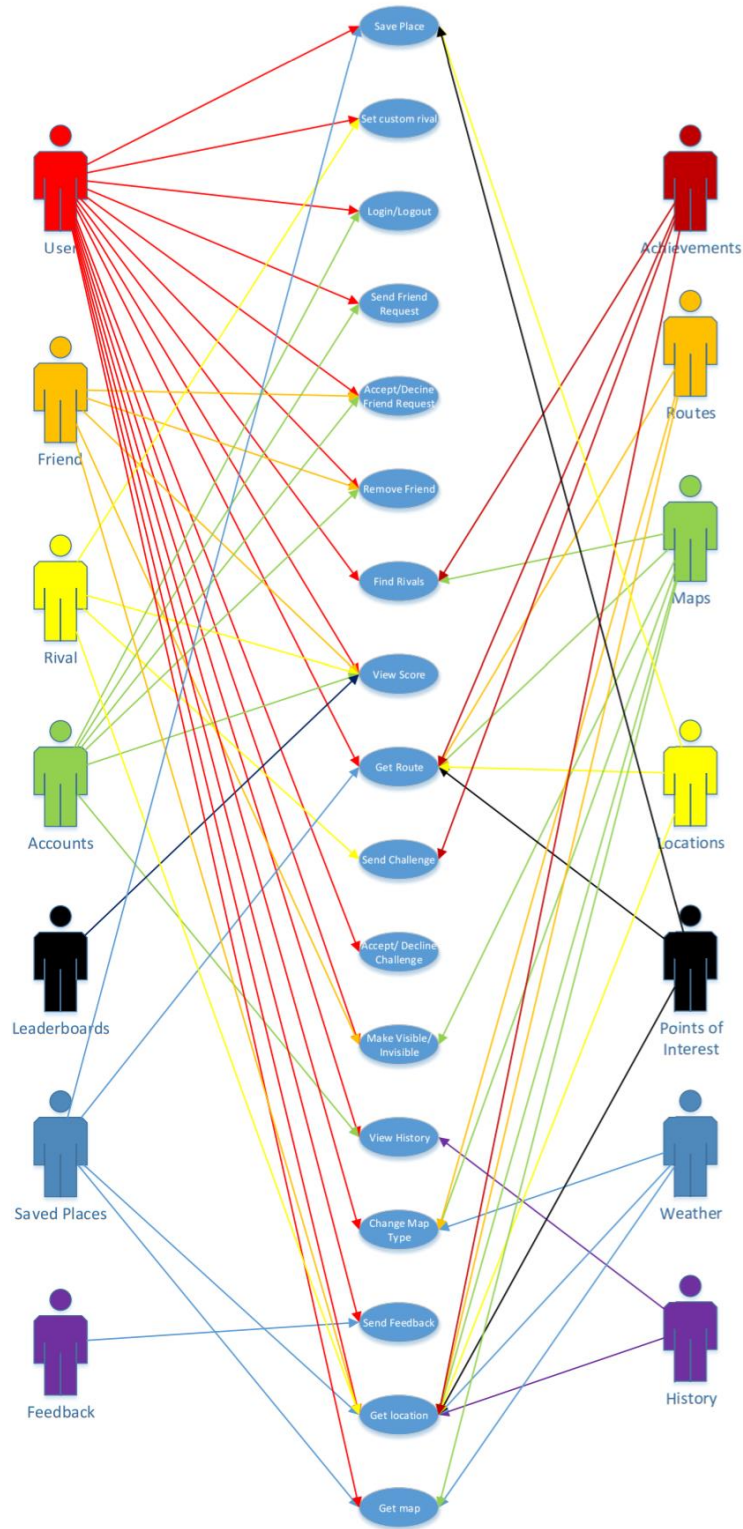
Evolutionary Process Flow: A Prototyping Model

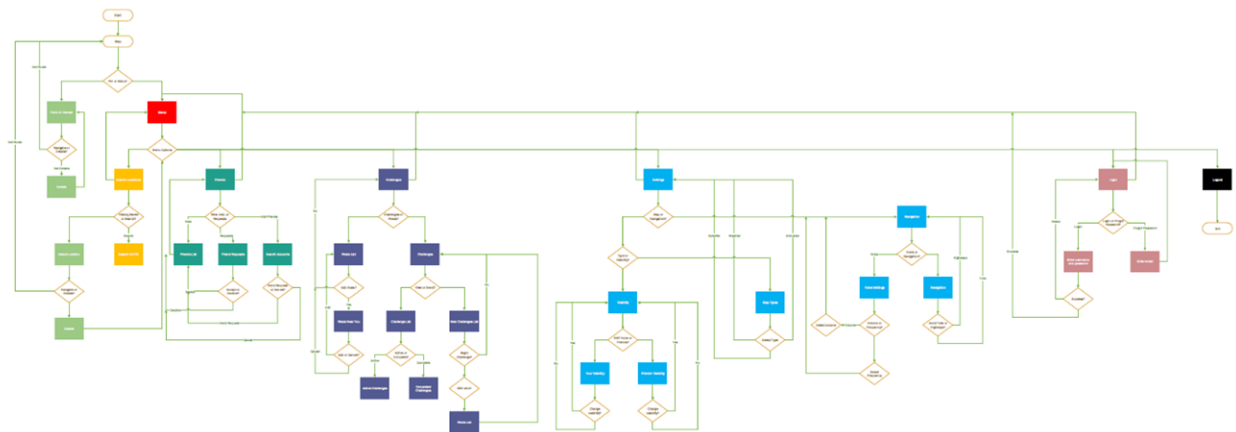


Software Engineering Prescriptive Model:

- Our software is blending social media and GPS navigation with a gaming aspect; therefore it is critical that the User is enjoying the product.
- Users will be able to provide us with important feedback on aspects of our application such as the GUI; which is critical as our application must be user friendly.
- Users will also be able to let us know what features need to be added in future updates of the application that will enhance the User's experience.

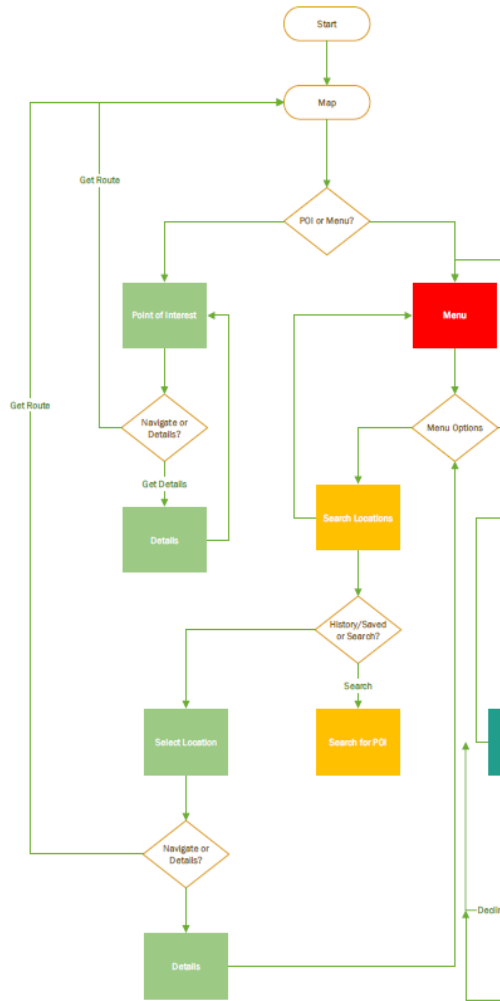
Use Case Diagram:



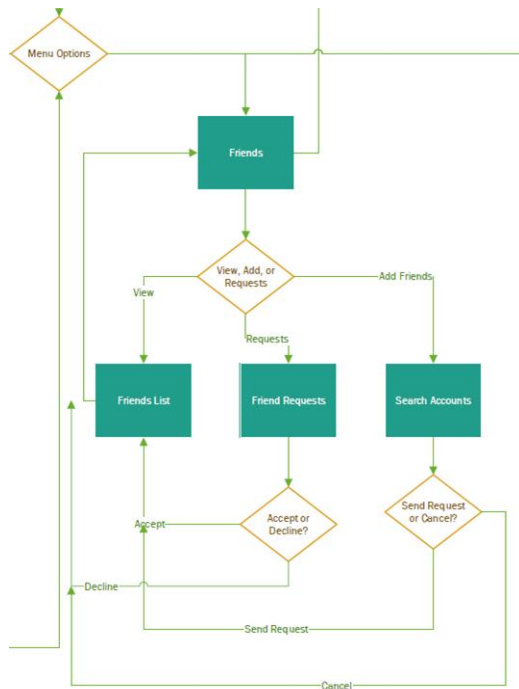


Activity Diagram:

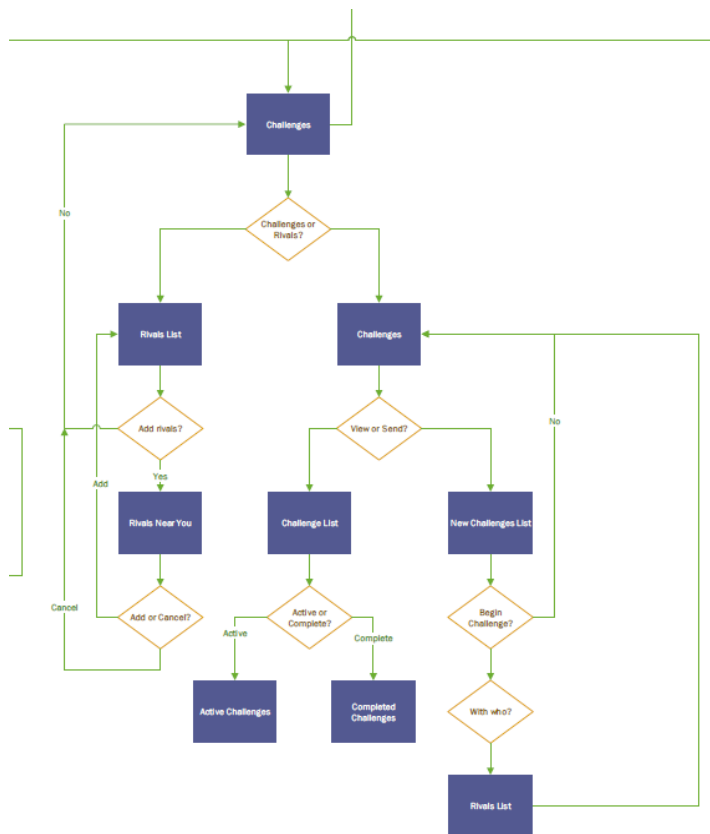
Points of interest and Menu:



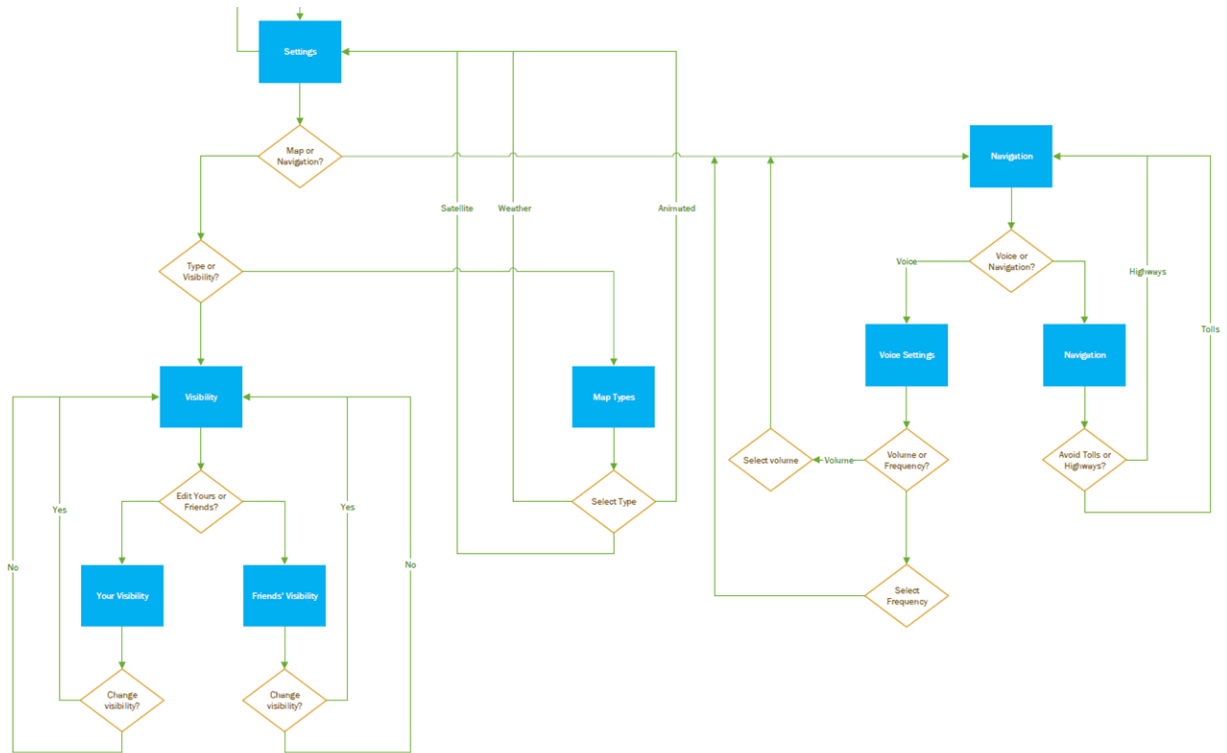
Friends:



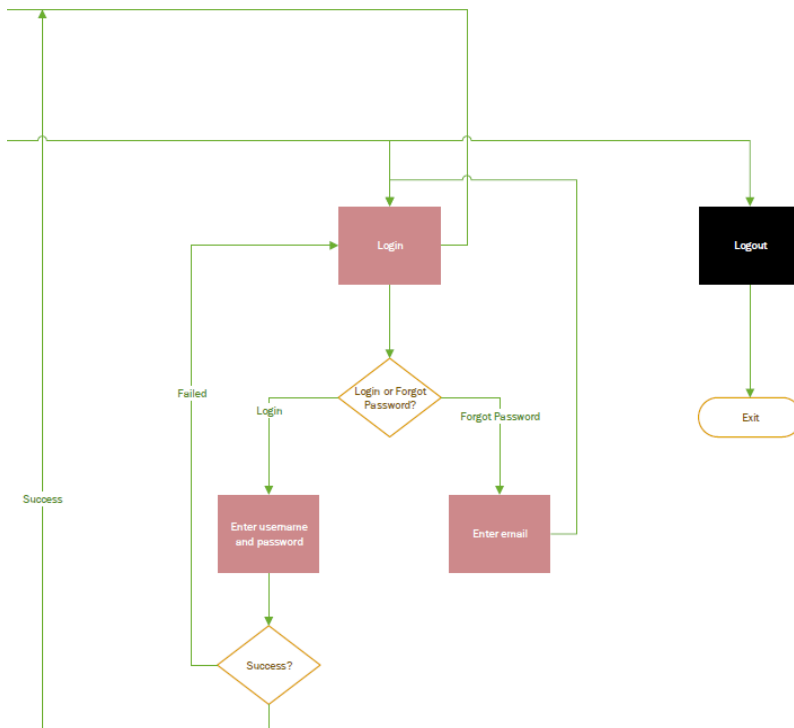
Challenges:



Settings:



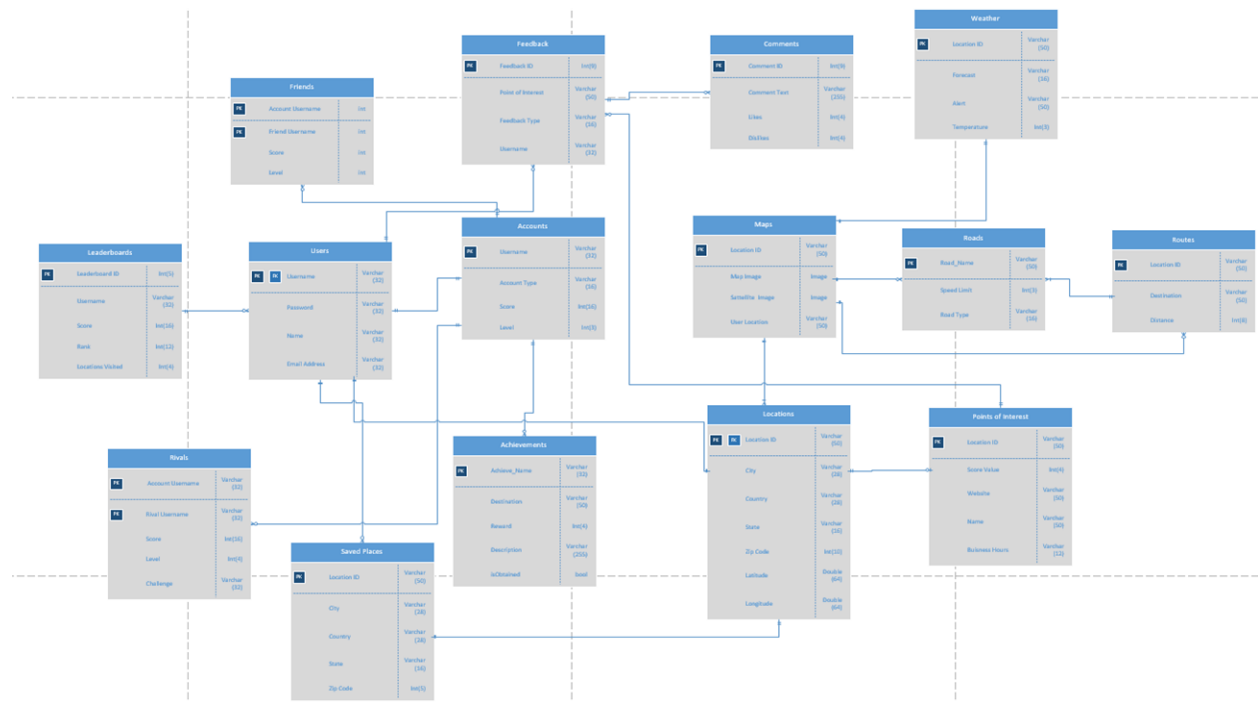
Login and Logout:



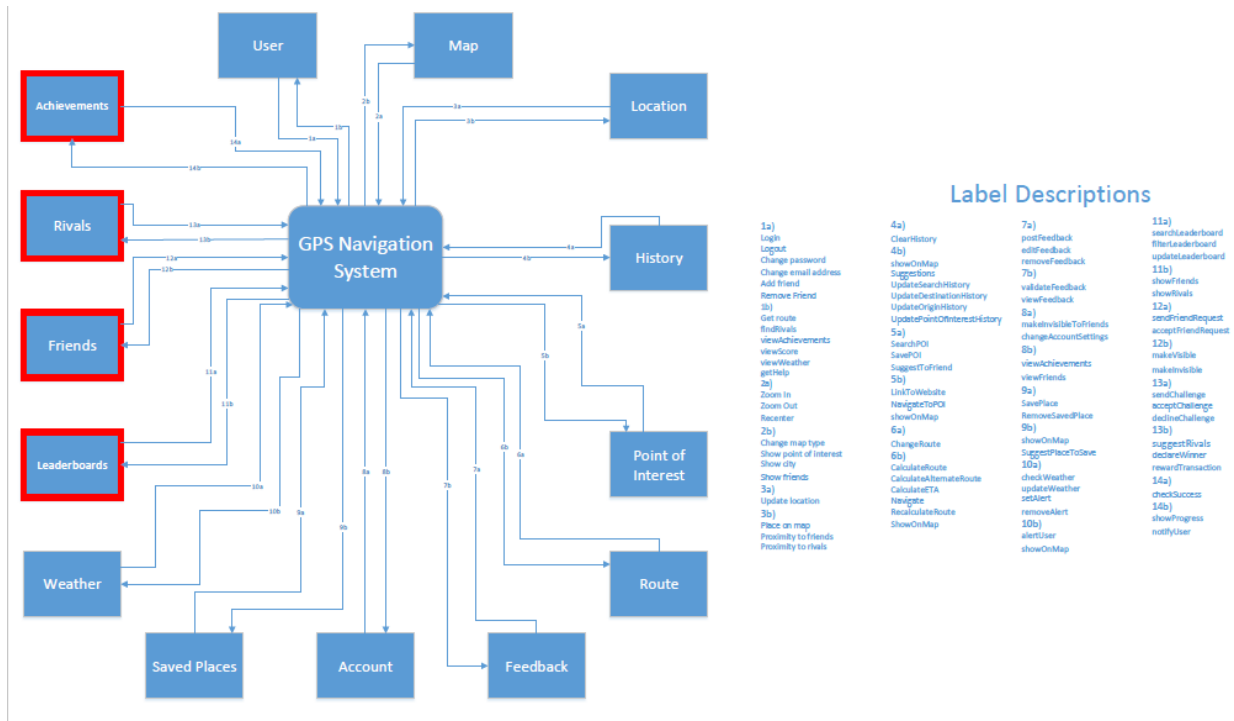
Class Object Diagram:

Users username String (32) password String (32) name String (32) email_address String (32) dateOfBirth Date dateJoined Date home Location Login Logout Change password Change email address Get route addFriend removeFriend findRivals viewAchievements viewScore viewWeather getHelp	Maps MapImage Image (2GB) SatelliteImage Image (2GB) Roads Location (2MB) PointOfInterest Location (2MB) Borders Location (2MB) Cities Location (2MB) UserLocation Location (2MB) FriendLocation Location (2MB) Zoom In Zoom Out Change map type Show point of interest Show city Show Friends Recenter	Locations Latitude Double (64) Longitude Double (64) Country String (34) State String (34) City String (34) Zip_Code int (10) Update location Place on map Proximity to friends Proximity to rivals	Feedback FeedbackType String (16) Username String (32) FeedbackTitle String (32) Comments String (300) Rating int (1) dateAdded Date postFeedback editFeedback viewFeedback removeFeedback validateFeedback	History SearchHistory String (64) DestinationHistory Location (64) OriginHistory Location (64) PointOfInterestHistory Location (64) numTimesV int(10) DatesVisited Date[] Suggestions UpdateSearchHistory UpdateDestinationHistory UpdateOriginHistory UpdatePointOfInterestHistory ClearHistory showMap	Points of Interest Name String (32) LocationType String (32) BusinessHours Date (24) RelatedPOIs Name (32) Website String (32) POI_Location Location(2MB) ScoreValue int (6) SearchPOI NavigateToPOI SavePOI LinkToWebsite SuggestToFriend showOnMap	Routes Roads String[] (1200) Exits String[] (1200) Turns String[] (1200) Lanes String[] (1200) Origin String (16) Destination String (16) EstimatedTimeOfArrival String (8) RouteOptions String (16) CalculateRoute CalculateAlternateRoute CalculateETA ChangeRoute Navigate RecalculateRoute ShowOnMap
Achievements name String (24) destination Location (2MB) reward int (9) description String (500) dateAchieved Date progress int(5) checkSuccess showProgress notifyUser	Accounts AccountType String (16) VisibleToFriends Boolean FriendsList String[] (30000) RivalsList String[] (30000) Score int (16) Level int (4) Achievements String[] (30000) dateJoined Date numTimesLoggedIn int(10) viewFriends makeInvitableToFriends viewAchievements changeAccountSettings	Saved Places Name String (16) PlaceLocation Location (2MB) SimilarPlaces Location[] (1GB) Suggestions String (300) VisitFrequency int (10) VisitDates Date[] SavePlace RemoveSavedPlace SuggestPlaceToSave showOnMap	Weather weatherLocation Location (2MB) weatherType String (32) weatherDuration Date (24) weatherSeverity int (2) alerts String (300) checkWeather updateWeather showOnMap setAlert removeAlert alertUser	Leaderboards username String (32) score int (16) level int (4) rank int (10) locationsVisited Location[] (200) searchLeaderboard filterLeaderboard updateLeaderboard showFriends showRivals	Friends username String (32) name String (32) visible Boolean friendRequest String (64) dateFriendied Date dateOfBirth Date proximity Double (20,5) sendFriendRequest acceptFriendRequest makeInvitable makeUninvitable	Rivals username String (32) challenge String (32) reward int (9) difficulty int (1) proximity Double (20,5) sendChallenge acceptChallenge declineChallenge declareWinner suggestRivals rewardTransaction

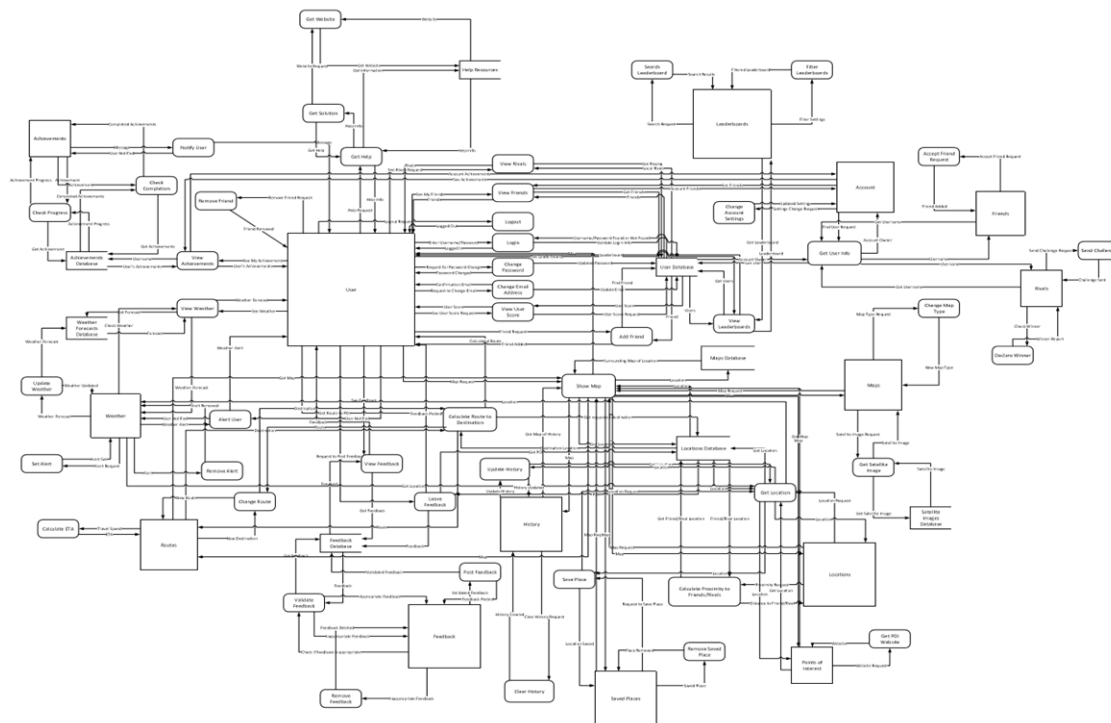
Optional Entity Relationship Diagram:



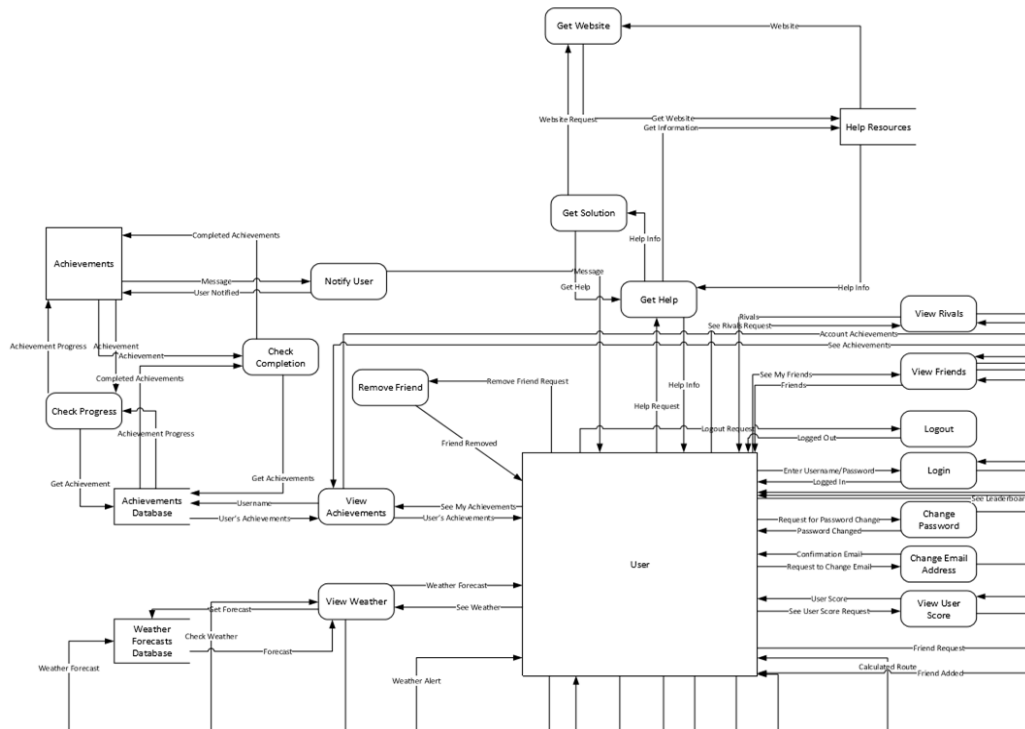
Context Data Flow Diagram:



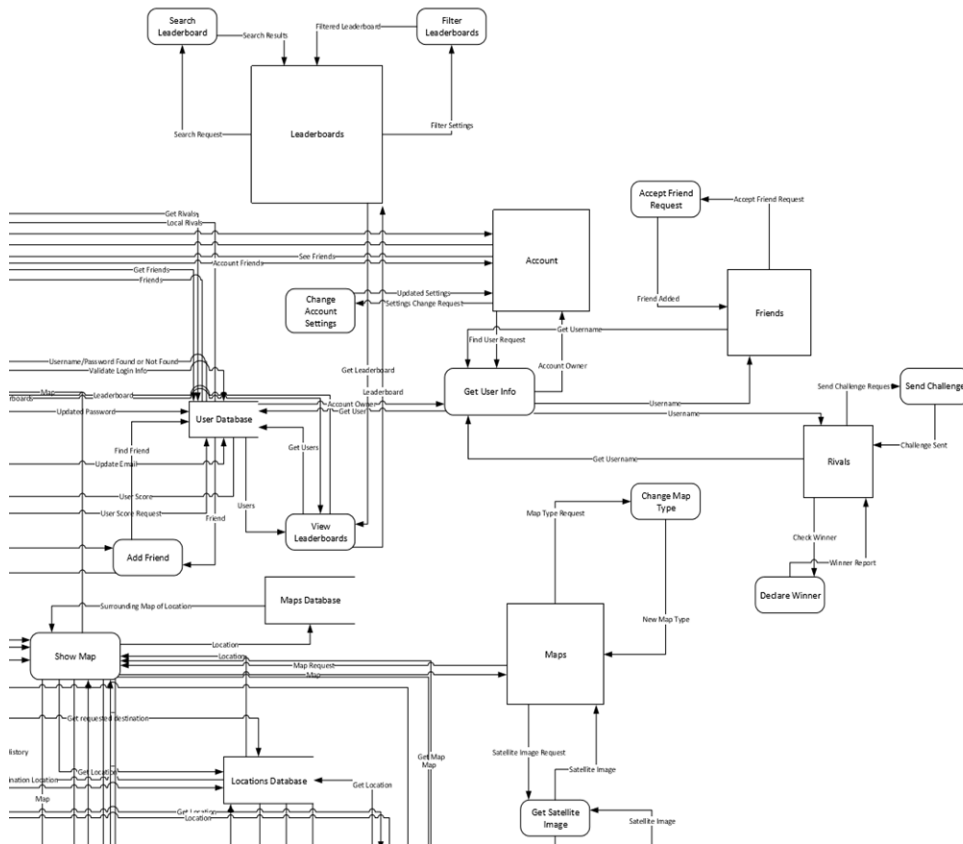
Level-0 Data Flow Diagram:



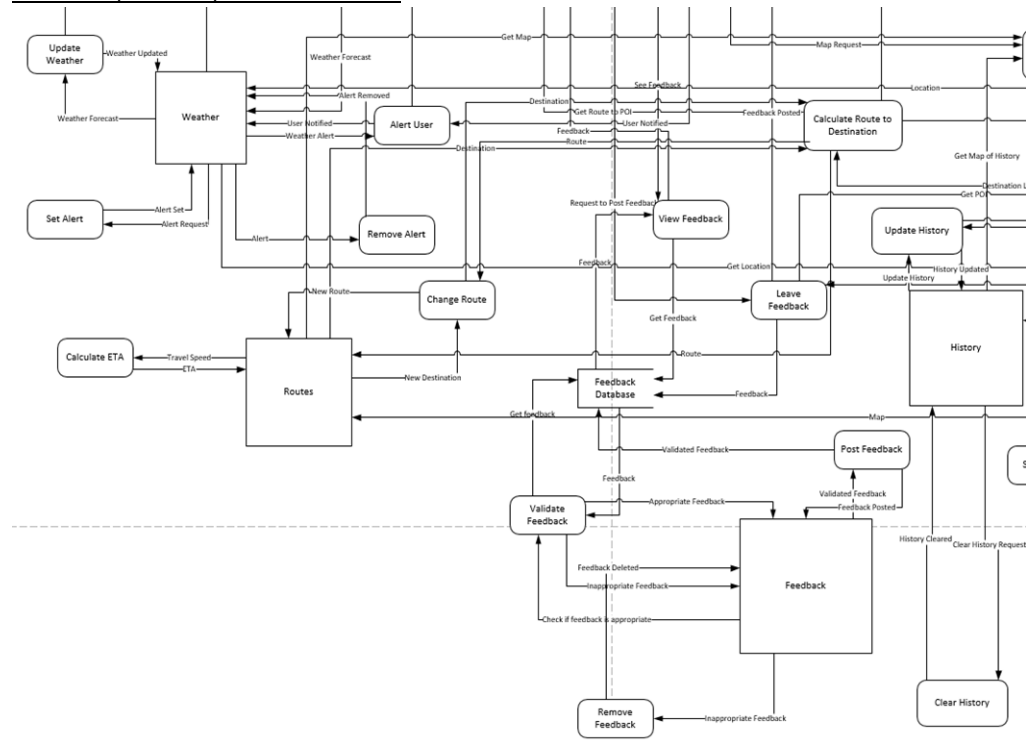
User and Achievements COs:



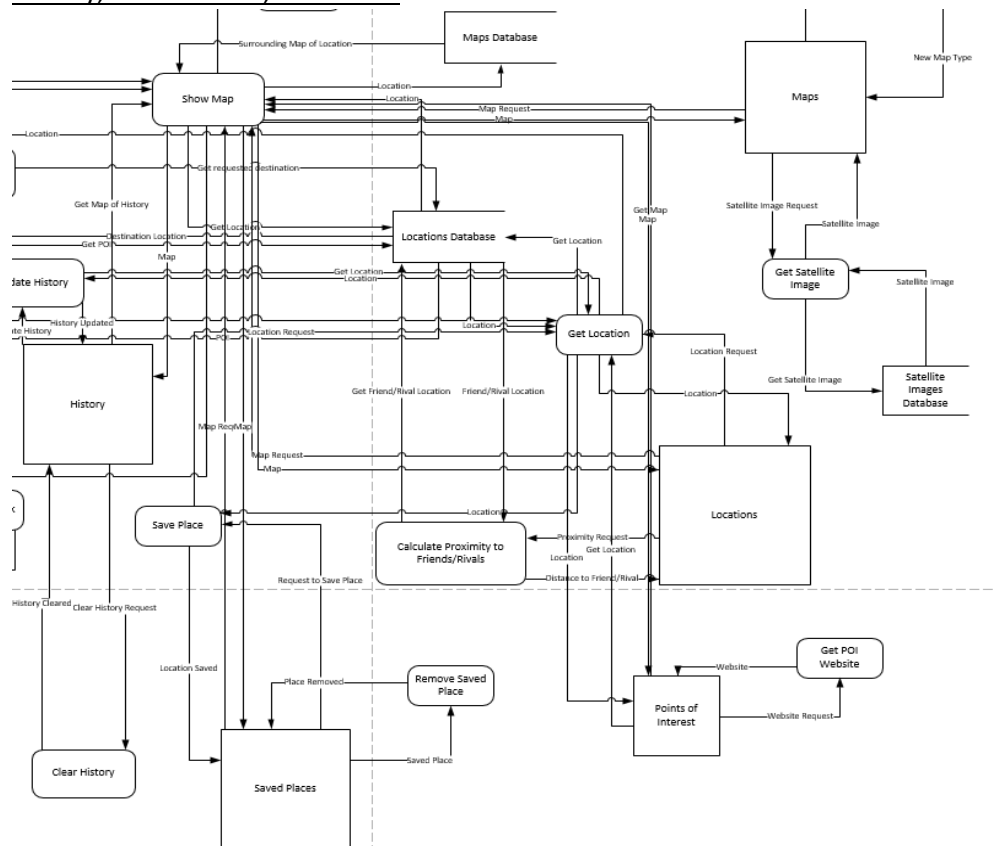
Leaderboards, Account, Maps:



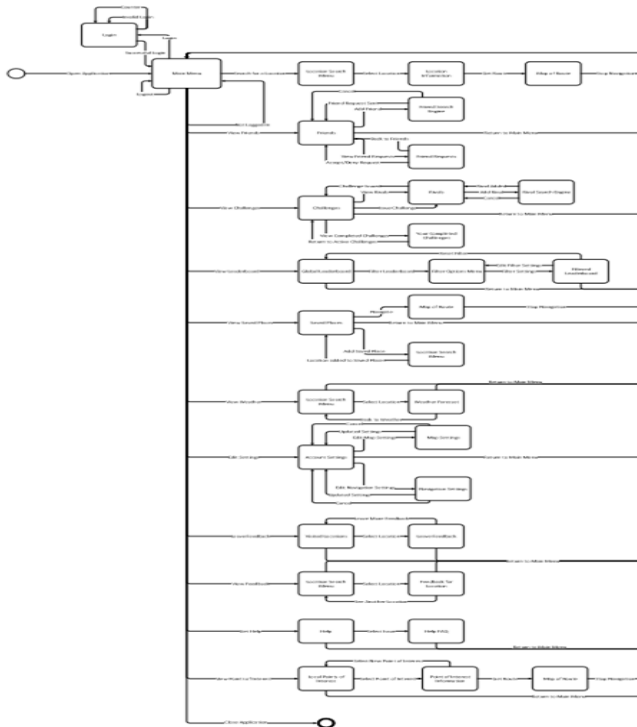
Weather, Routes, and Feedback:



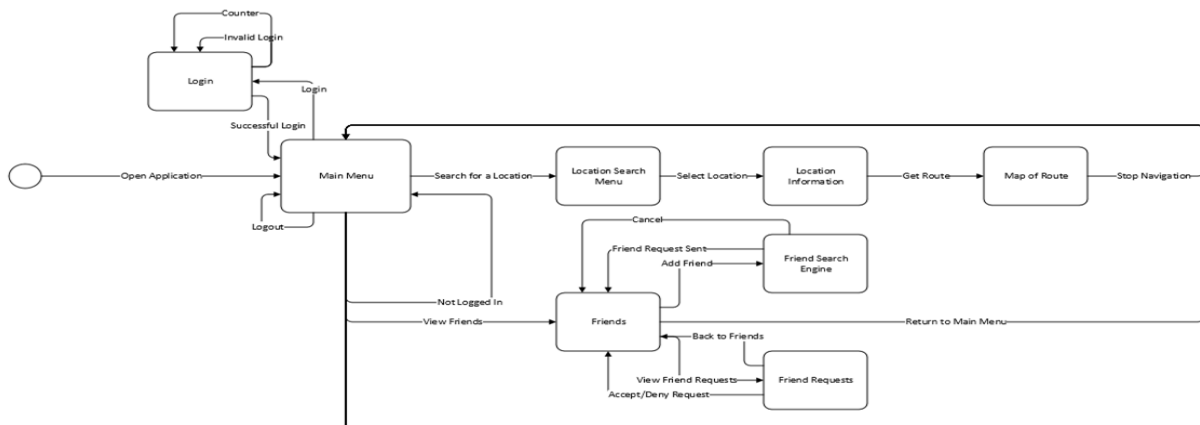
History, Saved Places, Locations:



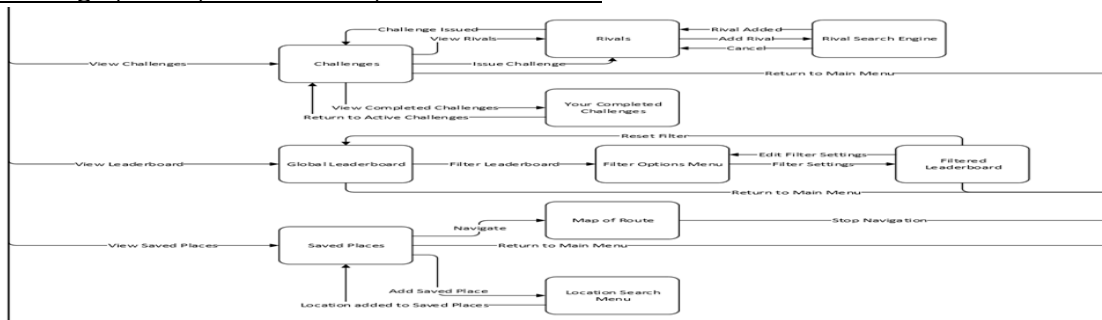
State Transition Diagram:



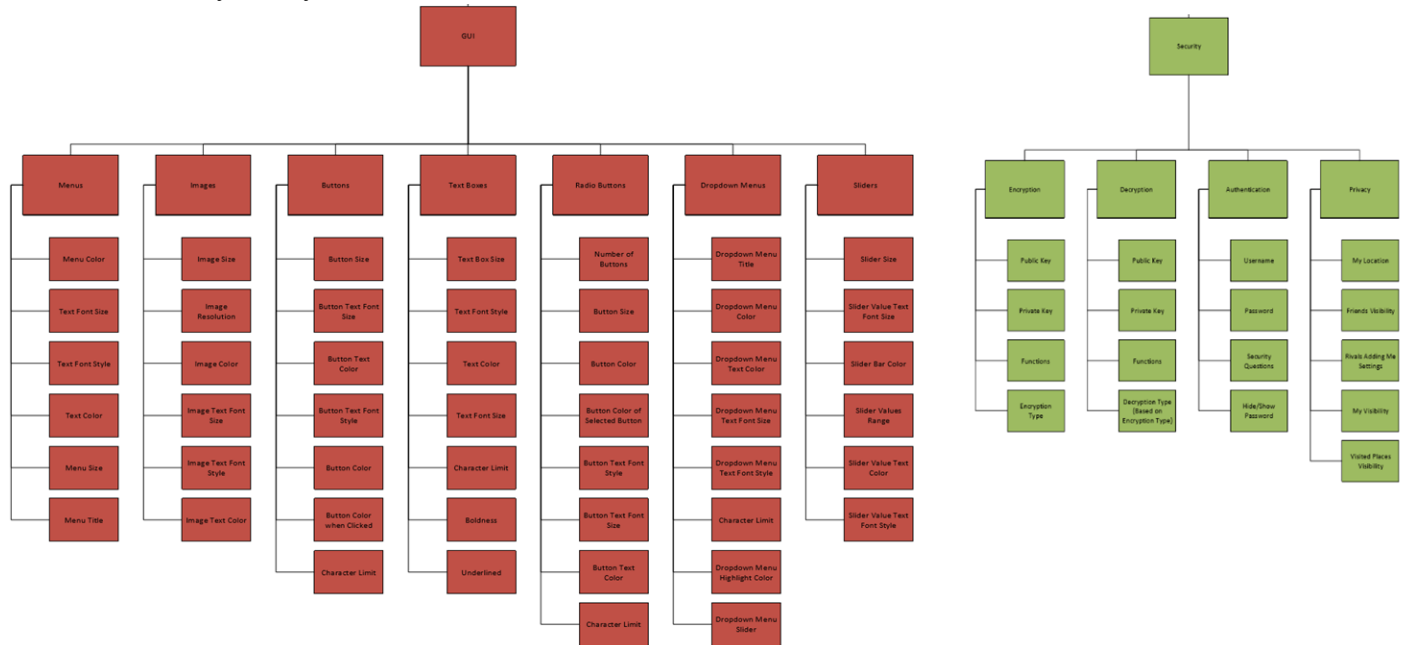
Login, Friends, and Locations:



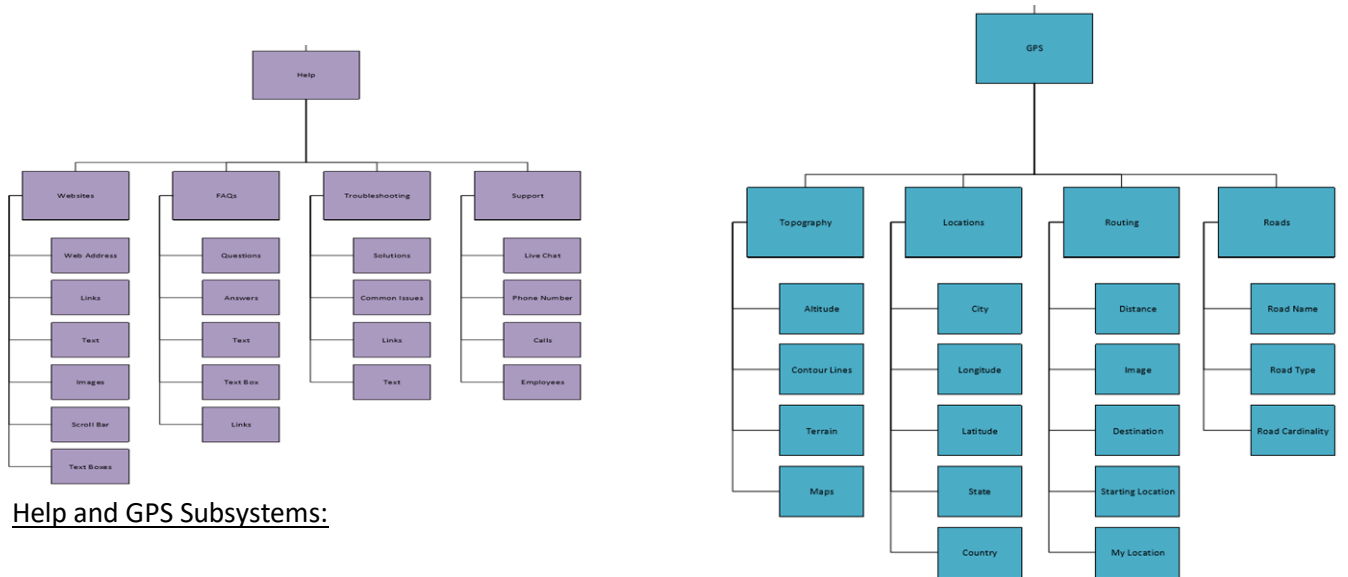
Challenges, Rivals, Leaderboards, and Saved Places:



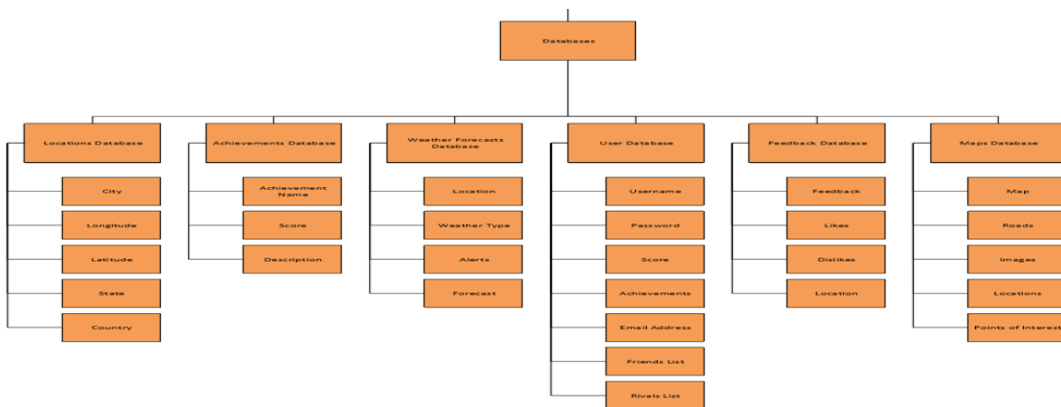
GUI and Security Subsystems:



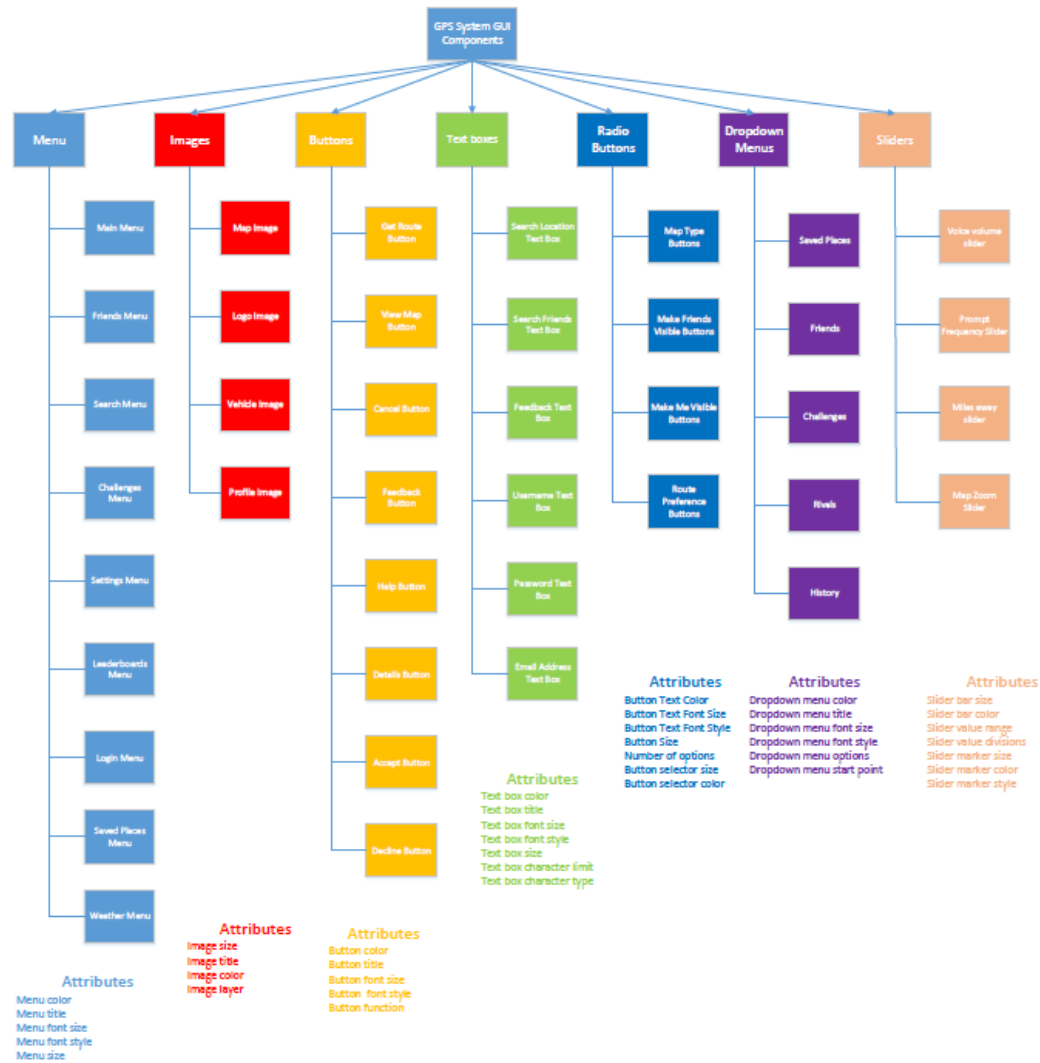
Help and GPS Subsystems:



Databases Subsystem:



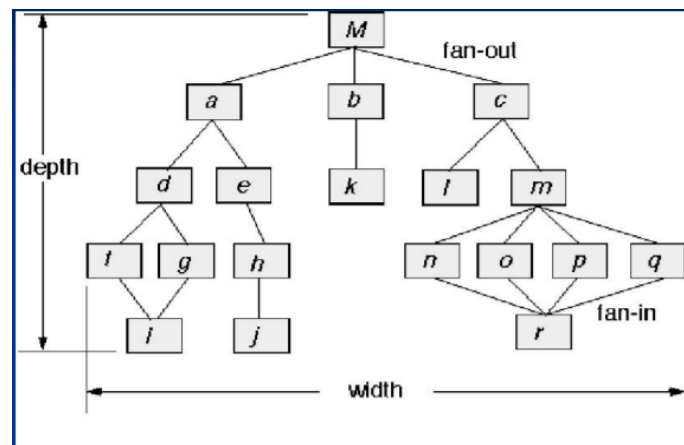
GUI Functional View:



Software Architectural Model:

Call and Return Model

- User inputs address to obtain route which is then passed into a subfunction.
- User searches for locations or friends in a data base, and that data is then handled by sub functions.



FP- Based Estimation:

Information Domain Value	Optimal	Most Likely	Pessimistic Estimation	Estimated Count	Weight	FP-Count
Number of inputs	45	60	75	60	4	240
Number of outputs	35	50	80	50	8	400
Number of inquiries	10	15	25	15	3	45
Number of files	8	12	18	12	6	72
Number of external interfaces	4	6	8	6	8	48
Total						805

Number of Function Points: 805

Average productivity: 6.5 FP/month

Burdened Labor Rate: \$8000/month

The project will take 124 man months and cost \$992,000 to produce.

LOC-Based Estimation:

Function System	Estimated LOC
User Interface	5,000
Route Calculation	35,000
Location Calculation	20,000
Database Management	10,000
Gamification	10,000
Total Estimate	70,000

Lines of code: 70,000

Average productivity: 620 LOC/month

Burdened Labor Rate: \$8000/month

The project will take 113 man months and cost \$904,000 to produce.

Conclusion:

To summarize, we need a software system with an emphasis on Navigational capabilities that intertwines aspects of today's Social Media applications while also integrating a form of gamification. We should enable the User to get from point A to point B in an enjoyable and user-friendly way that promotes adventurous activity. This project has a budget of \$1,000,000 and should be completed between 112-124 man months.