

## Application for Summer of Code 2008: Shashank Singh

### Synopsis:

The intention is to work on the idea suggested on GSOC 's website with few inputs of my own , The primary objectives that need to be fulfilled for completion of program would be; namely

- A) Marble can download and use texture tiles.
- B) Vector representation of streets and other geographic features.
- C) Extracting sample data from vmap0 and open street map data
- D) Map vector layer with specified projection on Globe.

All these ideas work toward making “Marble” a more main stream application with support for all the publicly available data , leading to better user experience.

### Project Description:

The project as stated in Gsoc's website is divided into 4 major tasks ; namely

- A) Marble can download texture , and map texture tiles .  
This feature could be added by employing existing frameworks namely *DXS* for KDE 4 and *HttpDownloadManager* for Qt 4. Mapping the downloaded texture file to their correct position would require modifying the texture to currently used projection and then usage of OpenGL constructs like ( *glBindTexture* & *glTexCoord* ), if Marble project decides to implement OpenGL too, but for current implementation that would require certain additions to class *MarbleModel* .
- B) Second part concerns with vector representation of man made features like streets , air route and water routes ; routing can be implemented using graph traversal algorithms like A\* ( as suggested in the “Idea Web page” itself) but that requires a “weighted undirected graph” for traversable paths .One solution could be creation of way points ; every intersection could be marked as a node thus creating a graph but instead of maintaining complete graph for all the features on Client Side ; we could maintain a cache on Client side of “Most frequently Used” graph (for every Quad tile)
- C) VAMP 0 and Open Street Map Data Integration would enable Marble to provide users with more zoom in regions where not enough precision data is available right now. This will make it mandatory to address some technical issues that would arise before complete integration could happen; namely
  - Increase in Network Traffic ,Could be handled in following ways
    - Compression of Data
    - Cache
    - Offline Cache
  - Parsing of data in Data Real Time without degradation in performance ,Could be handled by
    - Pre-Fetching & Parsing .

D) Creating Vector Layer data which conforms with KML specification would require implementation of following Geometry features of KML ; namely

- Point
- Polygon
- Line String
- Linear Ring
- Multi-Geometry
- Model

Vector Layers can be implemented in OpenGL by creating transparent sphere for each Vector layer, and then overlapping the different sphere with different diameters but same origin, In current implementation of Marble most of the features using projection could be implemented but for 3d Models Open GL would be better platform as it can provide the needed hardware acceleration to more complex models.

Suitable Gui additions would be made , in accordance with need of user interaction with data.

### **Project Road map:**

The whole could be divided into 3 time frames

May-June :In this duration I would be completing (A)

June-July:(B) & (C)

July-August:(D)

### **Biography:**

I am 22 years old , Computer Science & Engineering student from India . I was introduced to Linux & open source , 3 years ago by one of our prestigious senior professors . Since then I have been hooked to open source community in general; my contribution to community started with little steps like Linux installations and went on to lay path for major steps like founding Linux User Group in my university 2 years back.

The search for a good cross platform programming framework for my final year project (Altruism Xenophobia & Evolution of Cooperation in social Agents) led me to Qt (4.2) . Qt complemented my already existing skill set and that led me to use Qt in virtually every application / program I have written since.

Moreover knowledge of Qt helped me contribute to KDE community ; starting with Junior Jobs for “Amarok” and “Kturbeling” ; but Google Summer of code brought an exciting surprise for me in form of “Marble” , what got me intrigued was Marble was a pure Qt4 application as well as a KDE too ; combine with my passion for Computer Graphics , my desire to participate & contribute to Marble was doubled . Though my inexperience in visualization of Geo spatial data may be interpreted as possible hurdle but its my belief that my capability to adapt and learn would surpass any challenges / hurdles posed in course of completing this project.

My CV can be accessed from [Http://techfreaks4u.com/ShashankSingh/CV.pdf](http://techfreaks4u.com/ShashankSingh/CV.pdf)