Requirements Specification

PROJECT OBJECTIVES:
- Show the distribution of Computer Lab Ring members around the world using Google Maps API
- Provide a secure mechanism for two members to exchange (with mutual consent) contact details when visiting the same location of living within a specified distance
- Securely protect personal data – control defaulting to database administrator

NOTES
- 'Secure channel' is defined as SSL (https)
- A 'friend' of a user is defined as another registered Ring member who has agree to swap contact details with the user

LOGIN / AUTHORIZATION

MANDATORY:
1. Login details passed over a secure channel
2. Username and single password based system
3. Sufficient interface to allow checks of user's login status at any point in application

PREFERABLE:
1. Login session time-out
2. Administrator-configurable password complexity requirements
3. Login module can appear can appear embedded in other pages instead of being a page in its own right

For the basic level, it is sufficient that fundamental basic expectations hold, that a user's details are not trivially exposed, and that the other parts of the project are able to verify the right to perform an action. Other features often seen would contribute to increased security, such as a session time-out to reduce the damage done by a member failing to log out, or enforcing strong passwords, but serve to improve the security of an existing system, as specified by the mandatory points.

DETAIL EXCHANGE

MANDATORY:
1. Users of interest can be found using various search methods in the system, including proximity on the map.
2. Secure handshake protocol (between users A and B)
    a. A initiates an exchange request, attaching a message to B
    b. B is notified and can accept or reject the request
    c. A may cancel the request if B has not yet responded

d. If B accepts the request, both are added as each others friends, and can from now on see the full profiles.

e. At a later time, either of the users may terminate the friendship, after which both can only see each others' public profiles.

This approach was chosen because it models best the way people exchange business cards in real life, with the extra feature that the information always stays up to date. If an user wishes to give out more personal information to someone than to all friends among Ring members, it is most likely that this exchange is done in person or by other channels anyway.

The initiator of the friend request can add any extra details and information to the other user in the attached message. This allows the initiator to explain the reasons for the request, as otherwise the receiver might not know anything about the requester or why the initiator wants to contact them.

Removal of access to private information is still possible for privacy reasons. The other party may have copied the information, but does no longer receive updates to it.

See also: the Profile section for a description of the data.

PROFILE
MANDATORY:
1. Details:
   a. Surname - Required
   b. Forenames - Required
   c. Title - Required
   d. College
   e. Graduation Year
   f. Home address in XAL format (eXtensible Address Language – the standard adopted by the Google Maps API for encoding addresses worldwide)
      i. Country of residence – Required
      ii. Nearest city/town ('postal' town?) - Required
      iii. Extra details optional
   g. Geocodes computed from home address
      i. One for city and country
      ii. One utilising as much detail as user has entered
   h. Telephone (mobile)
   i. Telephone (home)
   j. Telephone (work)
   k. E-mail – Required
   l. Interests
2. UI to view user's own details
   a. Including map centred on home address
3. UI to edit user's own details

PREFERABLE:
1. User has ability to select which of each of the details are available on the public and/or private profiles (opt-in to public profile)

There are two main levels of information for each user: public (visible to all registered Ring members), and private (visible to friends of this user).

Public profile includes (preferably: at least) the name and location with city-wide precision of an user. The private profile includes any information the user wishes to pass to others during a detail exchange. A valid email address is required to send notifications to the user, but this is part of the private data.

There is also a third level: location with city-wide precision without any identifiable data about the user. This is used for drawing a world map of Ring users, visible to any visitor to the webpage. It is not considered private as the identities and exact addresses of all members are hidden.

For performance reasons, the addresses are translated to Geocodes at all required privacy levels when they are entered, and cached in the profile.

EVENTS

MANDATORY:
1. Create event UI
    a. User specifies:
        i. Location
            1. XAL
            2. Geocode
        ii. Start date
        iii. End date
        iv. Event description
    b. Verification of location via 'Maps' module
2. View 'my events'
    a. Tagged map centred on event
3. Delete visit UI

PREFERABLE:
1. Edit visits UI
2. When viewing 'my events', a "What's New" section listing or otherwise marking tags that are now in the event radius that the event creator has not seen before (since last log in?)

An Event is a published note by a user that they will be somewhere over some period of time. Events are not linked by location or description to each other. Any user visiting the same real event (e.g. a conference) will add a new marker onto the map.

This model is preferred over having single-marker events that users subscribe to because it gives an immediate overview of the number of visitors and their type (friends or not) on the map. Also, it is likely that every user will have slightly different attendance dates and disclose their location during the visit with different precision.

Events are fully public. Any visits entered into the system are considered to be public notices for other registered Ring members, not private travel plans. The visits have to be public to non-friend users to make it possible to find users to

exchange details with (for example to meet new Ring members at a conference). The user is of course not required to enter a precise address, but at least the city.

Initially, "editing" is achieved by the user simply deleting the incorrect event, and adding a new one. This is deemed to be of little inconvenience, due to how little information is contained in an event, though, being able to properly edit is a desired feature.

MAPS
MANDATORY:
1. Map centred on location
   a. Home location
   b. Visit location
   c. Shows tags (representing public profiles) for locations within a defined radius of map centre (for visit or home address view)
2. Click a tag to bring up the public profile associated with it.
3. Colour and shape coding for tags
   a. Home addresses – Triangle
      i. 'My address – Colour 1
      ii. Friend's address – Colour 2
      iii. Unknown address – Colour 3
   b. Events – Circle
      i. 'My event' – Colour 1
      ii. Friend 's event – Colour 2
      iii. Unknown event – Colour 3
      iv. For a future event, blend the tag with Colour 4

PREFERABLE:
1. Map filter (for address/event types shown)
2. User changeable radius

Several elements of basic map functionality are required. The ability to be able to instantly easily differentiate between event types on the map is essential, with events that have already occurred not appearing on the map at all, since they are deemed irrelevant, people want to know if others are or will be around, knowing who was, is of little benefit, and risks contributing to map clutter. Some form of filter would be a desirable additional feature, for the user to be able to restrict the map view to only showing those tags with one or more properties of choice, however the need for this is reduced by having clear visual differences among tag-types. Also, having the ability for the user to specify a certain "radius of interest" would be a beneficial additional feature. This would allow a user to more specifically declare and/or define a maximum distance that they would be willing to travel (particularly, say, for someone being on a conference with no means of transport available to them beyond walking), which could then be used for notification (if user A declares themselves as attending an event within B's radius of interest, B is notified) or supplementary information for detail exchange (if A sees that B will be at a nearby place, they can get an idea of how far B is prepared to travel).

However, this feature exists in a rudimentary form as an intrinsic property of the map view.

PUBLIC PROFILE SEARCH
MANDATORY:
1. Text search can be run on any information that is visible to the user starting the search
2. As a proximity search based on a user's event or home address, results displayed on a map
3. List of all registered Ring members (null search)

Although the most interesting search method is the map, there should still be a way to look up users by other properties than location. This is useful for example after visits to conferences for users who did not exchange personal details during the event, and markers have since disappeared.

FRIENDS DIRECTORY
MANDATORY:
1. List of user's friends
   a. Click a link to see their profiles (same UI as viewing own private profile but without ability to edit)
2. 'My friends map'
3. Remove friend
   a. Removes user from the other party's friends list, and the friend from the users list. Both users can now only see each other's public profiles.
   b. The removed party is not notified of the removal, but the restrictions apply instantly.

Since as described above, detail exchange creates a symmetric "friends" relationship between the two members, the ability of a member to list all of their friends, and remove people from that list, is vital for reasons of privacy. The automatic mutual silent removal mechanism is one used by many social networking sites, and has thus shown itself to be effective and suitable in such situations.

WEB PAGE LAYOUT
MANDATORY:
Public Homepage:
   a. Map showing world-wide distribution of Ring members (akin to www.clustrmaps.com)
      i. Uses obfuscated addresses
      ii. No profile detail associated
   b. Link to login page (or embedded module)

Private Homepage:
1. Tagged map centred on home address

2. Links to:
   a. Create/(Edit)/View 'My Visits'
   b. Edit/View 'My Profile'
   c. View 'Friends' directory
   d. View 'All Ring members' directory
   e. Search
   f. Log out

AUTHENTICATION / **REGISTRATION** – Possible module
POSSIBLE:
1. User specifies sufficient details (below) for Ring to identify him/her, utilising a web interface over a secure channel
   a. Full name
   b. Title
   c. College
   d. Graduation year
   e. E-mail address
2. Details passed to Ring for authentication purposes over a secure channel. Answer is returned asynchronously.
3. E-mail confirmation of 'application pending' to user after details submitted to Ring
4. E-mail notification of Ring's answer. In case of positive answer, use a 'click this link to confirm' system to confirm the e-mail address.
5. Confirmation web-page to finish the process

It is currently assumed that usernames & passwords will be distributed to users by other means by the Ring.