Pangaea

Jonathan Batscha
Eben Bitonte
Faruk Parhat
Guillermo Vargas

Uniting the world through language

Motivation

Pangaea aims to teach new languages to users through interaction with native speakers. In particular the application is designed to match people of different tongues so that they can exchange knowledge about their respective languages. Pangaea will connect matched users via chat client, through which they will be able to engage in conversation in a language known by at least one user.

Individual Attention

This style of learning will provide one on one attention, and will expose users to the elements of language that are most relevant to contemporary communication.

Casual Learning Environment

The casual nature of a chat client conversation should allow users to learn enough of the language to communicate effectively with native speakers, without focusing on the technical details associated with learning a new language.
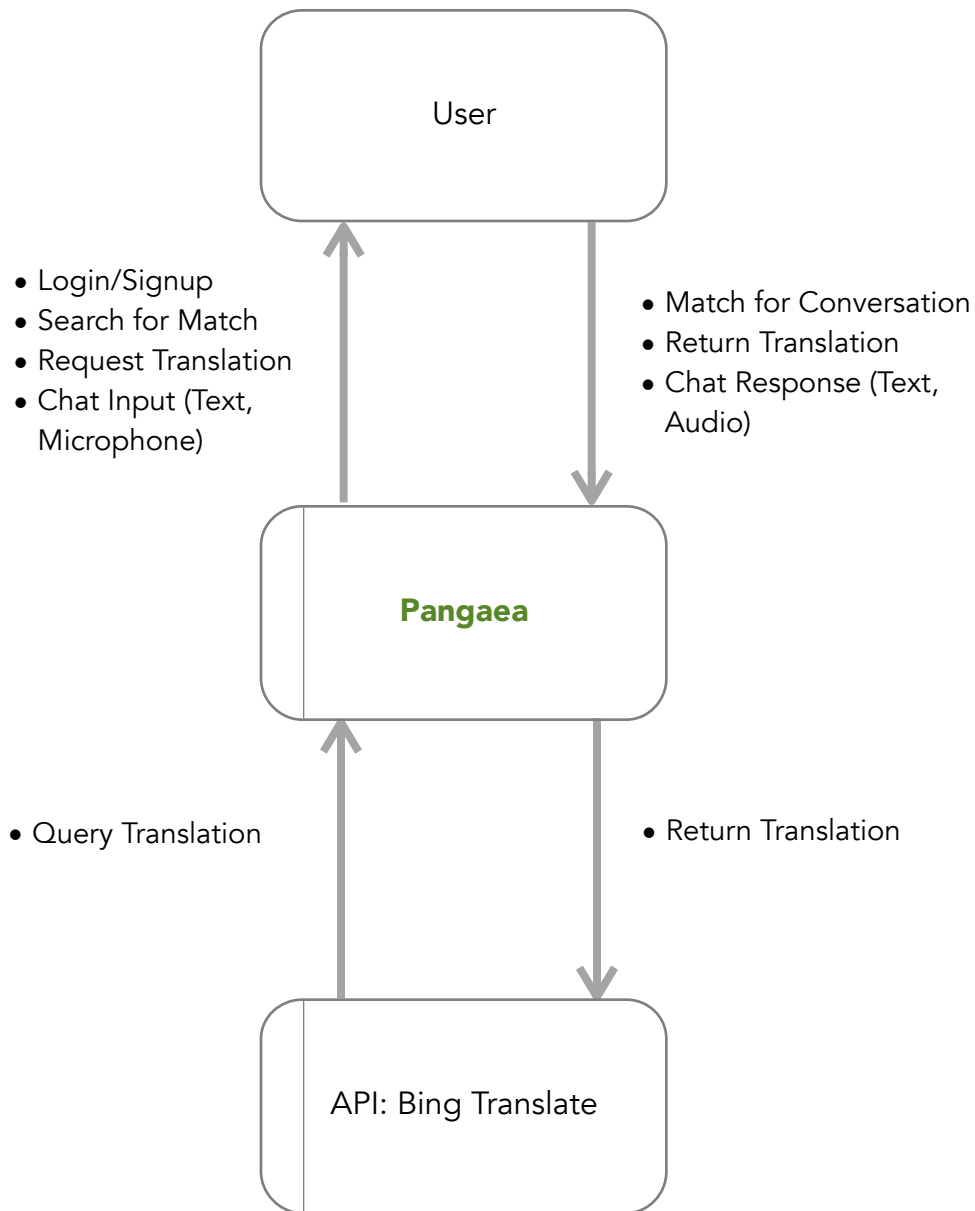
Contemporary Language

It is common for people to only want to learn the parts of a language necessary to communicate in everyday conversation. Pangaea aims to offer this by providing a medium for users to engage in a casual dialogue with users who understand the language as it is used today.

Languages today are taught through grammar drills and vocabulary memorization. Such strategies entail tedious work and rote learning. This is effective if the learner's end goal is to read or write literature, or needs to learn all of the subtleties of the new language, however this is often not the case. Pangaea intends to teach users only the parts of language that are necessary to comfortably visit a region that exclusively speaks that language. This will be accomplished through a common chat with another user, a medium that is more relaxed than a common textbook or even a classroom.

Context Diagram

```
                        ┌──────────────────┐
                        │                  │
                        │       User       │
                        │                  │
                        └──────────────────┘
                           ▲            │
                           │            ▼
```

• Login/Signup
• Search for Match
• Request Translation
• Chat Input (Text, Microphone)

• Match for Conversation
• Return Translation
• Chat Response (Text, Audio)

```
                        ┌──────────────────┐
                        │                  │
                        │     Pangaea      │
                        │                  │
                        └──────────────────┘
                           ▲            │
                           │            ▼
```

• Query Translation

• Return Translation

```
                        ┌──────────────────┐
                        │                  │
                        │ API: Bing Translate │
                        │                  │
                        └──────────────────┘
```

Concepts

A Citizen

A **citizen** is a user of Pangaea. Each **citizen** has a list of languages (read: **proficiencies**) with which they are comfortable using fluently, or natively. A citizen also has a username and a password. A citizen also chooses a language that they want to learn, or a **study**, which they will choose to begin an exchange with. Two citizens will then be matched up according to their proficiencies and studies in order to create both an **exchange** and an **alliance**.

An Alliance

An **alliance** is created when two citizens are matched up according to their **proficiencies** and **studies**. The purpose of this **alliance** is to build a mutual beneficial exchange between the two citizens, providing a platform for each of them to use their skills to help someone else, while also receiving help from the other citizen on learning their study. An **alliance** lasts as long as each user wants, while the **exchange** lasts only as long the current chat is in session.

An Exchange

An **exchange** is the current chat that is in session. A purpose of Pangaea is to provide the platform for immersion into learning a language with another human being, and for this reason only supports one chat being open at a time - the **exchange**. An **exchange** can be ended at any time, and can also be re-established by using the **alliance** that has been created.
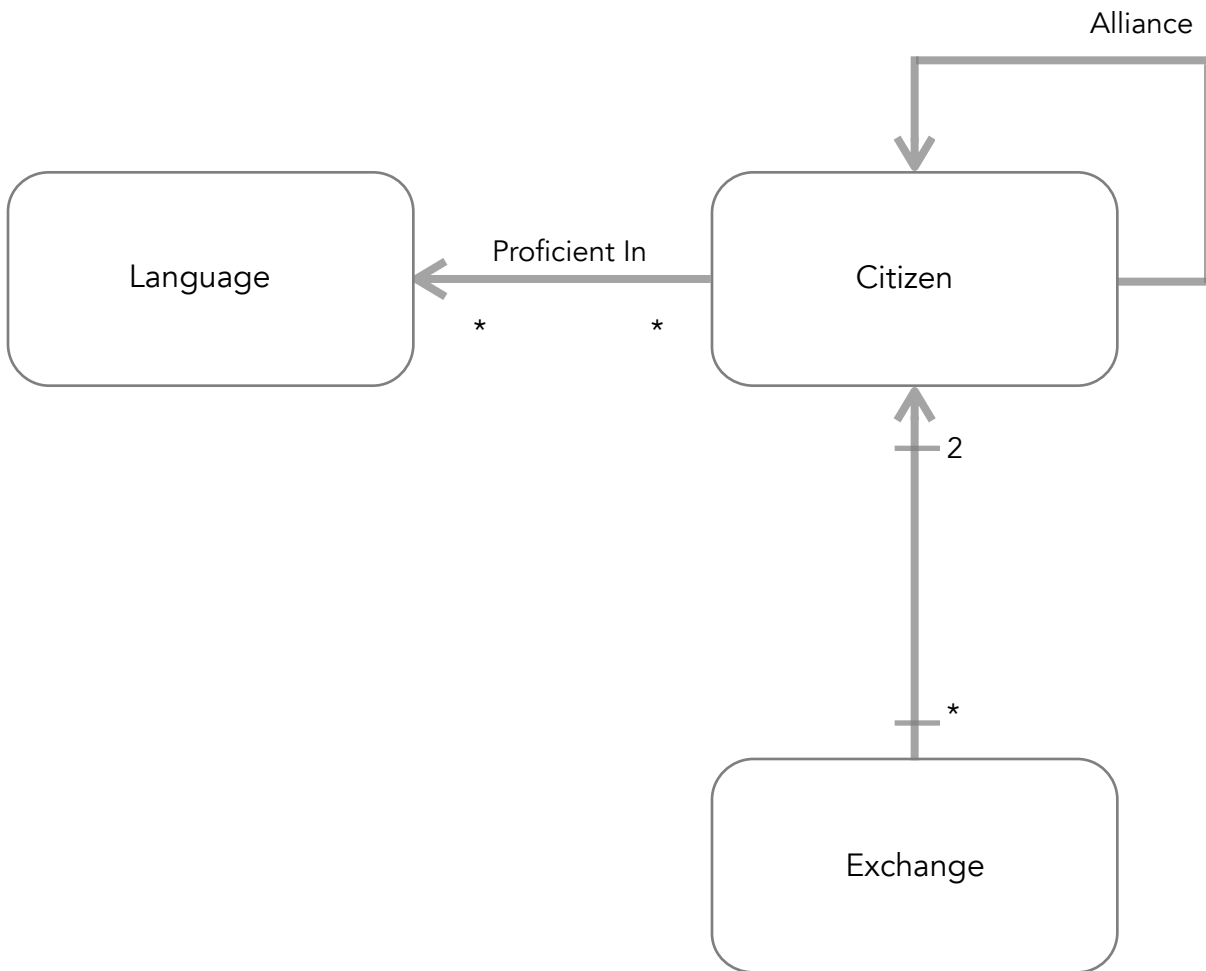
A Proficiency

A **proficiency** is a language in which a **citizen** is fluent. The proficiency list can contain any number of languages, but it is required for the users to pass a small quiz in order to add a language to their list.

A Study

A **study** is the language that a citizen is hoping to learn or use during the next exchange. A **citizen** chooses a language as his or her study before requesting a chat and therefore establishing an **exchange**, allowing for the ability to choose a different study before any exchange. This allows for the flexibility to change what language is currently being learned every time a user starts a new session.

Data Model

Our data model is rather simple. Each user is referred to as a 'Citizen' and can have any number of 'Alliances' with other citizens. They are also proficient in any number of languages. Then each chat will be referred to as an 'Exchange' and each exchange involves 2 citizens. Each citizen however can have any number of exchanges with other citizens. Lastly, every exchange is immutable after the fact, so exchanges cannot be modified once it is created in the database after the real time chat.

Security

Our main security concerns are in safeguarding the privacy of our users' information, along with preventing malicious users from attacking our site and otherwise diminishing the language-learning experience of our valued users. We plan to safeguard our users' information by requiring secure passwords, as well as bolstering this security by making our code immune to common attacks such as those that fall under "injection hacks" and "cross-site scripting". A more complicated decision is in how we deal with spammers and other malicious users who negatively impact the experience of other users. We have thought of a few approaches to mitigate this concern. One method to prevent repeat-offenders from negatively affecting others is by allowing users to report a malicious user. Perhaps a more involved way to handle this is by including a rating system, whereby users get rated on their quality of conversation; we can use this information to give users higher ratings greater preference in getting matched to chat with another user, whether or not they are the ones requesting a chat. Another idea we had in preventing users from claiming that they know a language that they don't is via a "test-captcha", in which we present the user with many similar sentences, and the user must select the one that is grammatically correct, though if we can successfully screen for malicious users in other ways, such a test may be an unnecessary burden on our intended users. The thinking behind this is if we do go ahead with a rating system, that rating system will already account for whether or not a given user knew a language that they listed as a proficiency.

Wireframes

Home Screen (not logged in)

Welcome message

Sign Up

Login

email

email

password

password

submit

submit