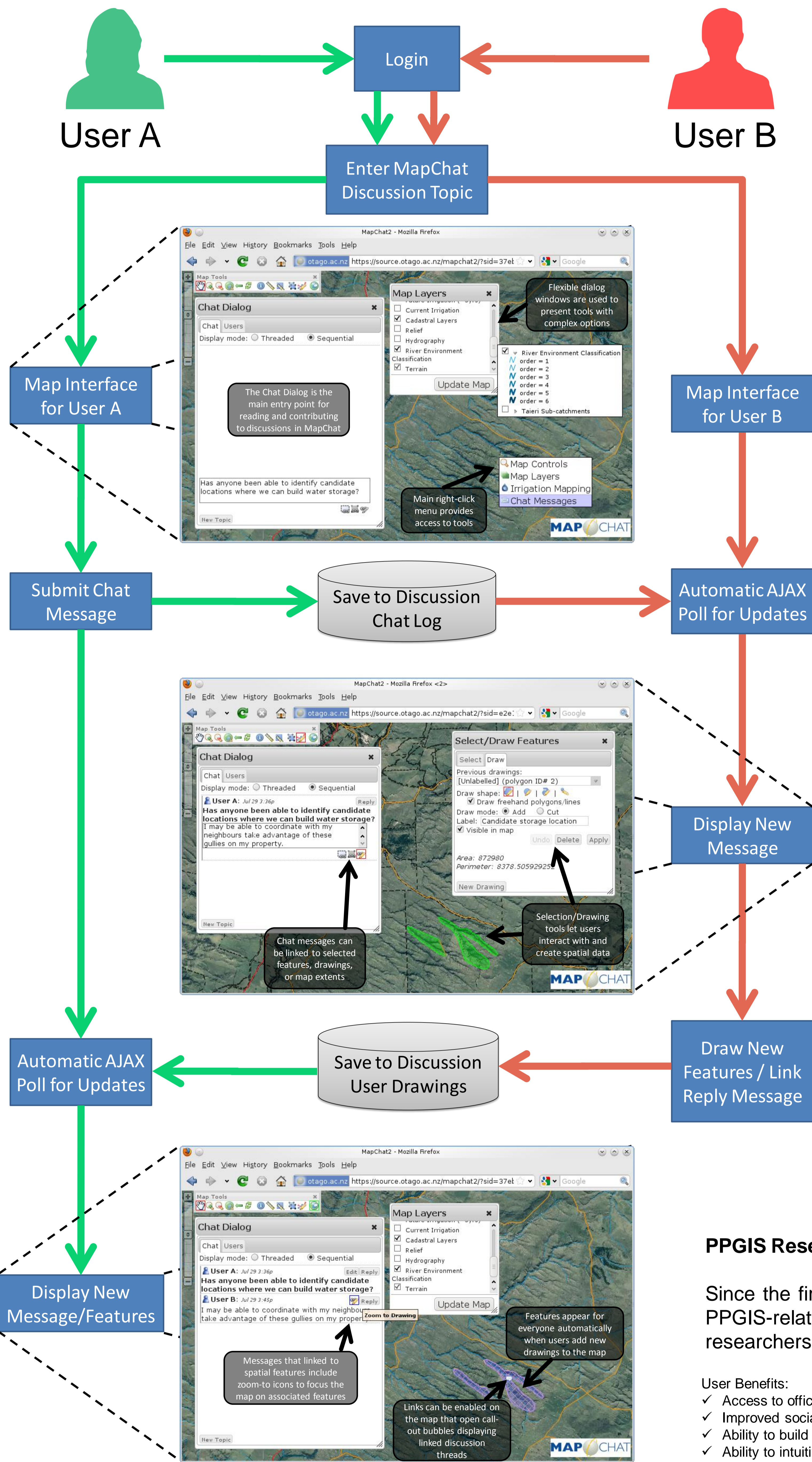




Web-based Collaboration Using Open Source Geospatial Software Components

The concept:

MapChat is a free and open source software (FOSS) application that implements the concept of 'map-chatting', which is an extension of geo-tagging, or annotating spatial features on a web map by explicitly integrating the spatial dimension into dialogue between multiple users. It is ideal as a tool for public participation GIS (PPGIS), where potentially many stakeholders can contribute to building local knowledge repositories in public deliberation and decision process that involve spatial issues.

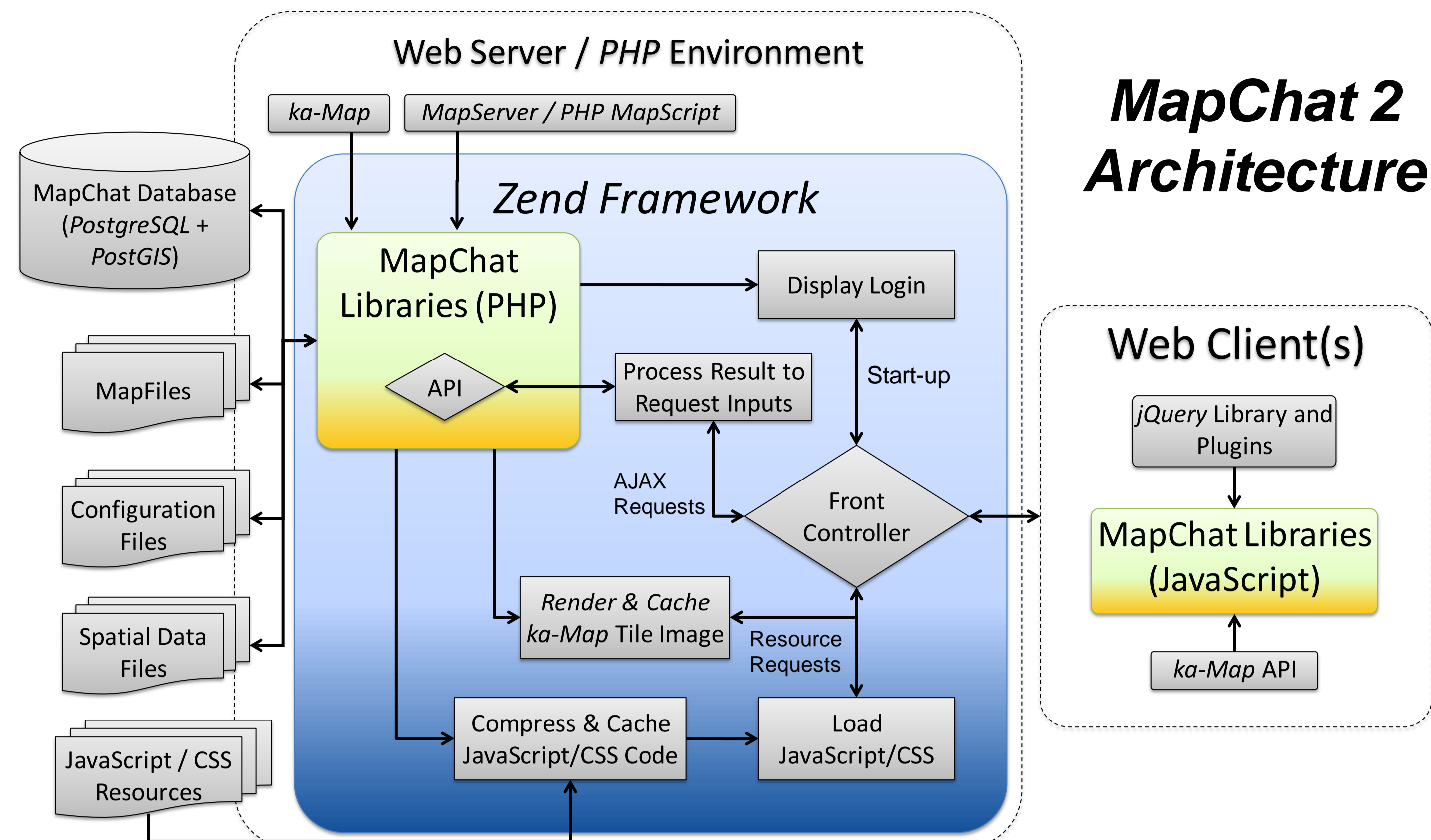


Real-time chat and map synchronization:

The AJAX-oriented architecture of MapChat 2 is particularly well-suited for maintaining real-time synchronization between multiple users. Each user's browser regularly polls server-side API functions, which return specific data that are used to update elements in the Web browser interface. Similar approaches can be observed in many popular online services that keep information on a Web page up-to-date in real-time (e.g., Facebook, Twitter, etc). For MapChat, this is used to keep chat messages as well as map data synchronized between multiple users.

MapChat Data Analysis/Research Potential:

The data collected by MapChat 2 during user discussions provides the opportunity for detailed data analysis by decision makers and researchers. This may include spatial statistical analyses of user drawings relative to associated comments. Event logging can also be used to reconstruct the interactions of participants with each other's map annotations and comments.



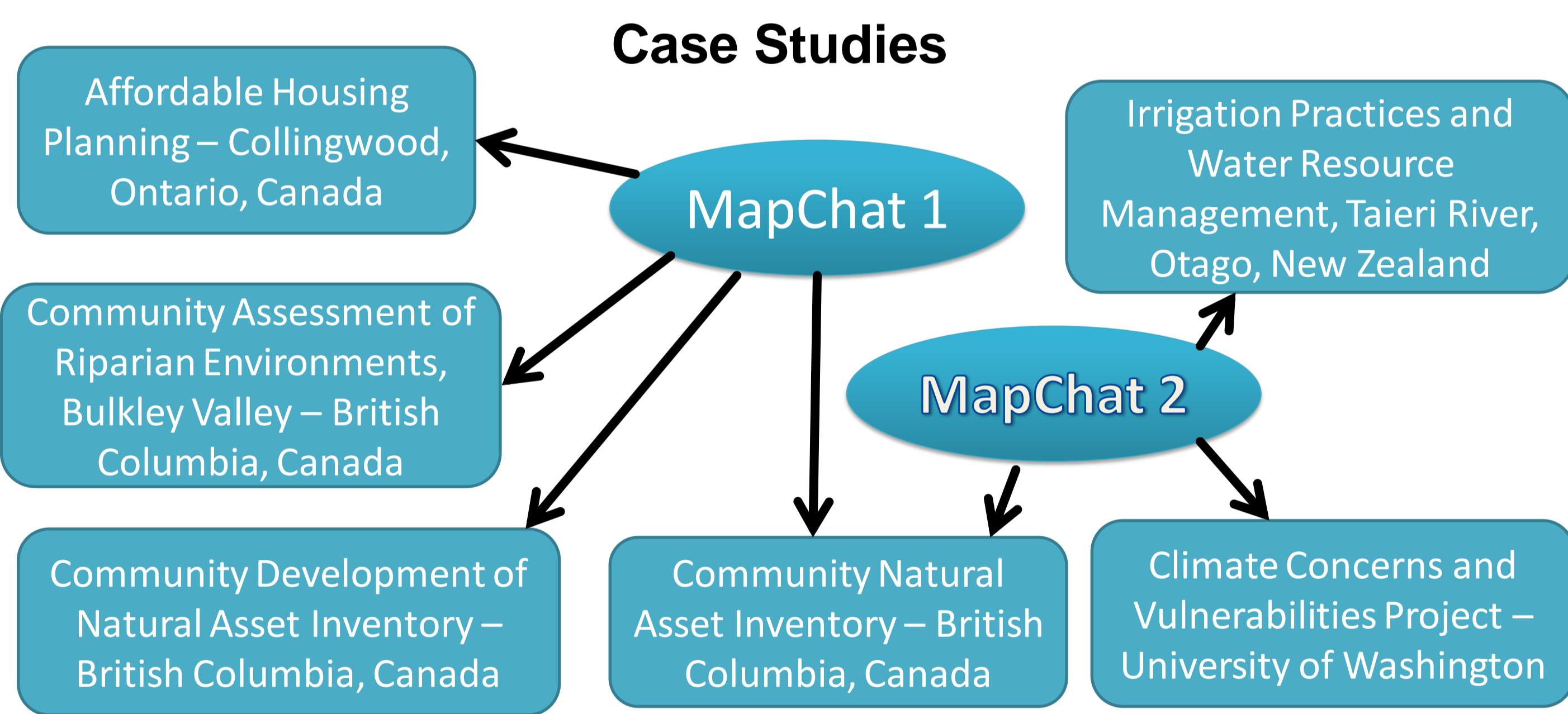
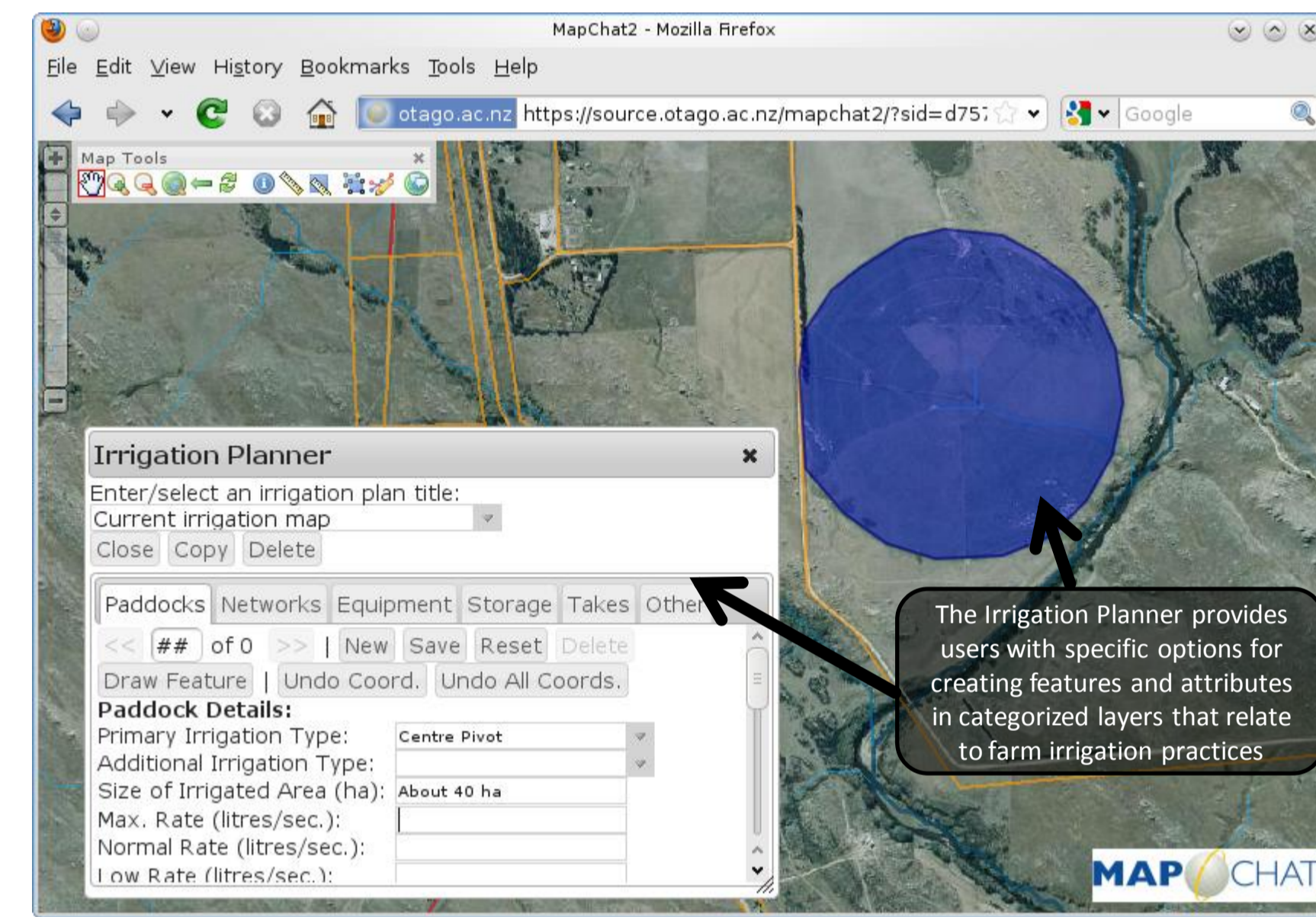
MapChat 2 Architecture

The design of MapChat 2 leverages existing FOSS tools, frameworks and APIs. These are adapted and extended in a set of customized libraries in PHP and JavaScript that are designed to achieve functions needed for MapChat, while leaving room for extending the application's functionality. Geospatial functionality is enabled by MapServer (using PHP MapScript) for rendering map images, and PostGIS storing and processing geospatial data.

Flexibility & Extensibility:

One of the key objectives with the MapChat 2 design is to ensure flexibility and extensibility for multiple use cases. The design enables customized tools to be incorporated within the application as plugins or modules, without the need to modify the main application's code.

In preparation for a case study using MapChat version 2 in a rural communities in New Zealand, a specialized module (right) was quickly developed to enable participating farmers to create maps containing features depicting their farm irrigation systems. These depictions were used as the focus of discussion in subsequent group interactions online using the MapChat application.



PPGIS Research:

Since the first version of MapChat was created, the software has been used in at least six different PPGIS-related projects that have produced outcomes that benefits both its users and PPGIS researchers. Currently, preliminary work with the United States Forest Service is under discussion.

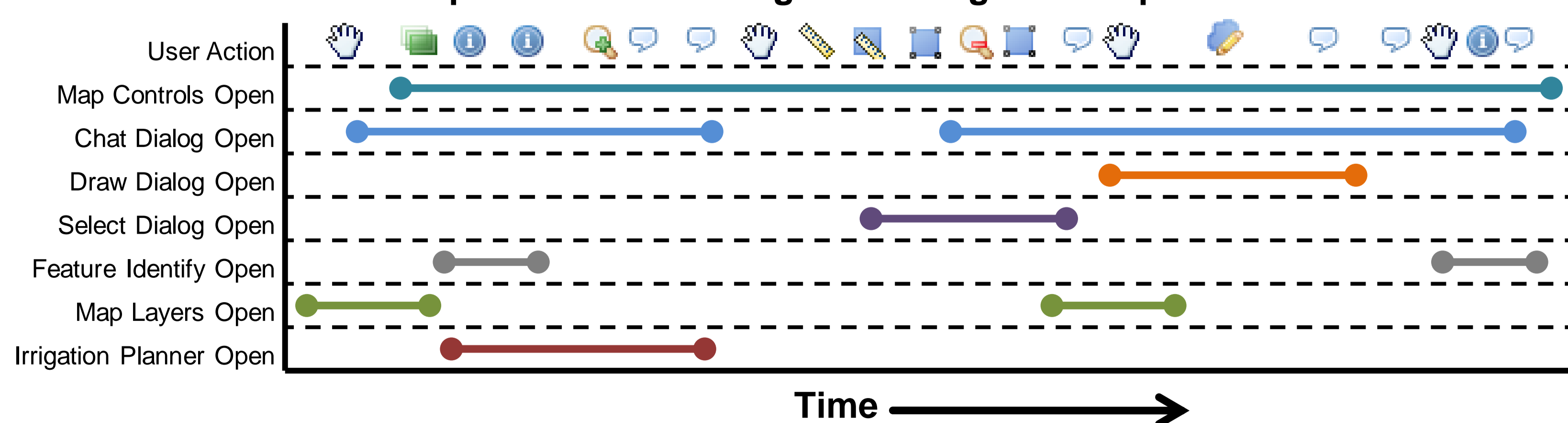
User Benefits:

- ✓ Access to official spatial datasets
- ✓ Improved social interaction and relations between participants
- ✓ Ability to build new spatial data where official data are lacking
- ✓ Ability to intuitively articulate and visualize spatial problems
- ✓ Ability to participate in both online or face-to-face settings

Research Benefits:

- ✓ Creation of user-generated content (including discussion thread, and volunteered geographic information)
- ✓ Detailed data logged during users' participation allowing reconstruction of discussion/events
- ✓ Ability to include potentially many participants in ongoing studies
- ✓ Opportunity to study the impacts of technology use on public participation and spatial planning

Example Timeline of Usage for a Single Participant



FOSS4G 2010 - Barcelona, Spain – September 6-9, 2010

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