

The Upper Taieri Watershed Management Project: a case study using MapChat

Project Overview:

In 1991 the Resource Management Act (RMA) was ratified in New Zealand. This Act had significant impacts on all forms of resource use, including water. Under the RMA, water permits are allocated on a first-come, first-served basis. Water supply from the Taieri River in the Province of Otago is already over-allocated, as historical gold mining access privileges in this area remain in use. Relatively little progress has been made over the past 17 years to achieve a smooth transition from mining privileges to RMA-based water consents. This has exacerbated 150 years of fragmentation and self-interest in the region surrounding water rights. There are ongoing efforts to develop an equitable strategy for this transition, including plans for sustainable infrastructure and cooperative management between water users and various stakeholders from the communities in the Taieri River catchment.

The Upper Taieri Water Resource Management Group (UTG) was formed to accomplish this task as part of a project funded by the Sustainable Farming Fund of the New Zealand Ministry of Agriculture and Forestry. The UTG comprises irrigators in each of the river's sub-catchments, as well as participants from the NZ Landcare Trust, the Department of Conservation, Otago Fish and Game, the Otago Regional Council, Central Otago District Council, and the University of Otago. The intention is to develop a multi-stakeholder catchment management group, and propose a model for a catchment-based water resource system that will be operated by a community-led management company. The UTG's objective for this model is to ensure effective future allocation of water through consolidation of mutual water access, simplification of compliance systems, and improved efficiency, flexibility, and consistency of management of water resources.

Project Design:

Design of the Upper Taieri Watershed project involves four phases. Phase 1 requires participants from the UTG and the farming community to identify on a digital map in collaboration with a researcher the land parcels that belong to their farm(s). At the same time information on each participant regarding their computing skills and Internet access is collected. The goal of this phase is to identify the types of data and analyses each participant requires to evaluate possible decision alternatives relative to their own water needs and those of the broader community. The information that is gathered during this phase guides the development of features for the MapChat tool, and to some extent the procedures in the following phases of the study.

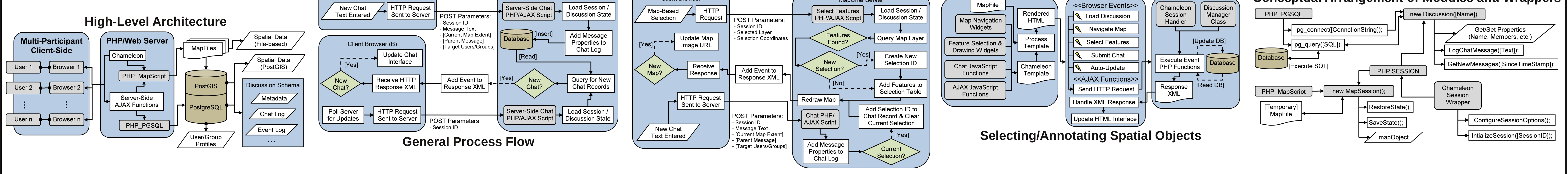
Phase 2 involves a researcher working with participants on a one-on-one basis. Participants review digital maps of their farms, and develop additional spatial information relative to water resource management at the farm unit level. In addition to documenting the current state of water resource use on their farms, participants identify (new) spatial features (water 'take' locations (points), irrigation channels (line features), field-based irrigation dispersal locations (areas or polygons)) that reflect favourable future changes to their current or new irrigation systems. During this phase, the MapChat tool is used to collect data by allowing participants to draw shapes on a digital map of their own farm. Associated text is submitted either as general comments or as annotations linked to features in the map. Following this, participants are placed in one of two groups, depending on the information provided during the Phase 1 meetings. Group A acts as a control group for subsequent data collection, where the researcher serves as moderator to guide the participants during their use of the MapChat tool. Group B is an experimental group. This group is provided with instructions to access and use MapChat via the Internet in order to compare the usefulness of the tool relative to the control group. Upon completion of this phase, each participant is asked to complete an interview to evaluate their use of the tool, and about issues related to management of water resources.

Phase 3 involves group dialogue. Initially, each participant is asked to use MapChat to review maps and summary information produced by their own and other participants' input during Phase 2. Following this, participants are asked to comment on and discuss each others' maps and, as a group, propose strategies or changes needed for the development of a community-led water resource management approach. If an insufficient number of participants agree to share information they contributed during Phase 2, then Phase 3 can proceed without reviewing previous participants' individual data. The groups identified in Phase 2 will remain intact. For Group A, discussions will be held in face-to-face meetings where the researcher is responsible for guiding and recording the discussion. For Group B, discussion is self-guided, with minimal intervention by the researcher. Group B uses the MapChat tool over the Internet to dialogue on individual strategies (i.e., shapes or text input by one person can be simultaneously viewed by other participants in the online discussion). Meetings may take place virtually or in a face-to-face setting. However, focus is placed on having the participants use MapChat over the Internet to record their discussion and ideas.

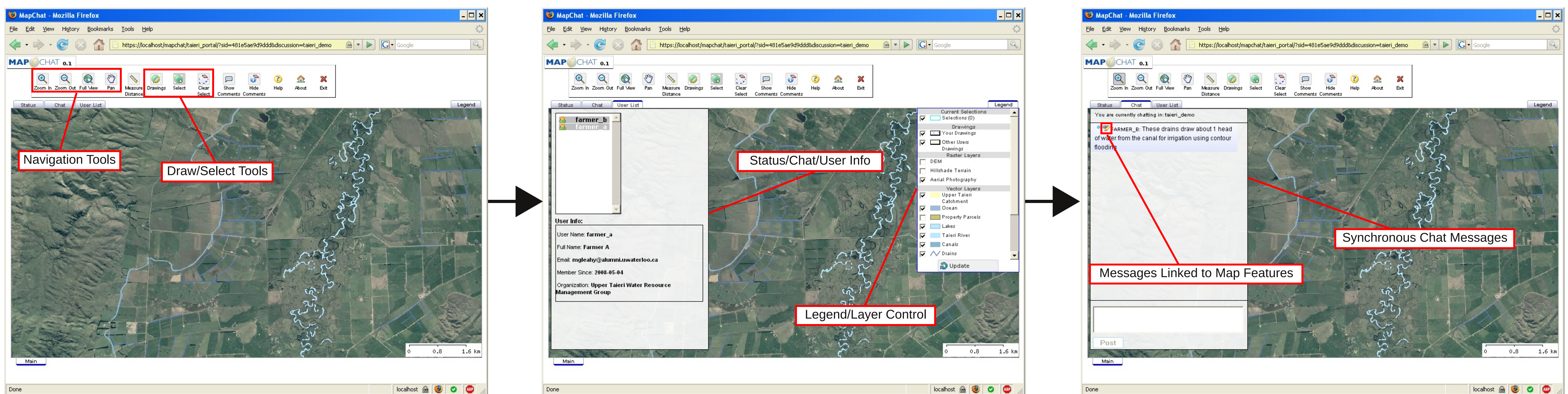
Phase 4 combines Groups A and B. All participants can review the outcomes from the previous group discussions using MapChat. This process takes the individual irrigation objectives of Phase 2, the group discussions of Phase 3, and combines them for a more embracing discussion of community-wide irrigation issues. During this stage participants may have to sacrifice some personal irrigation goals when the community-wide implications of their own and their proximate and distal neighbours' goals are considered together. Here participants can, for example, vote on strategies subject to self-directed veto points once the spatial, ecological and financial implications of the collective schemes are considered.



Software Design:



MapChat Interface:



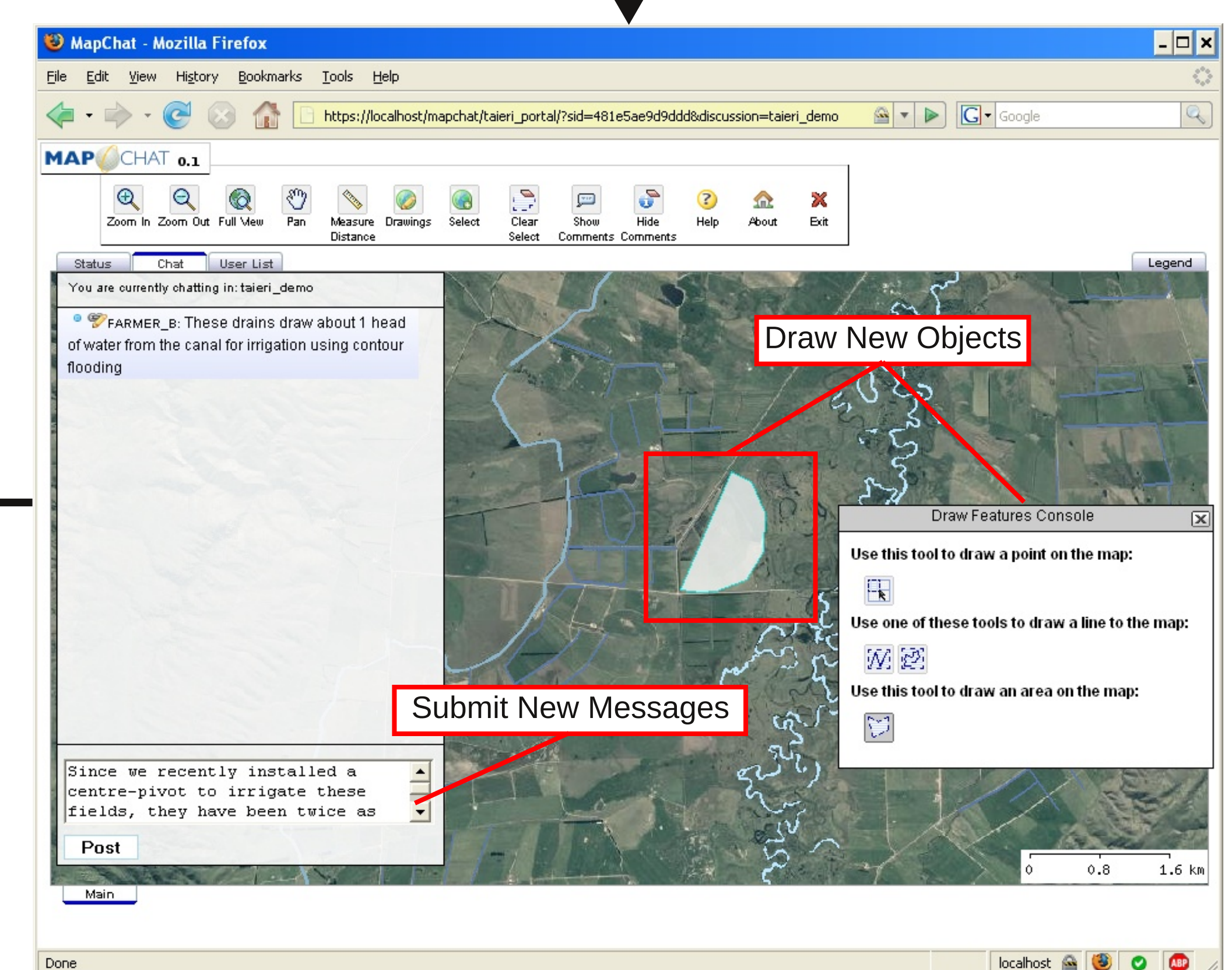
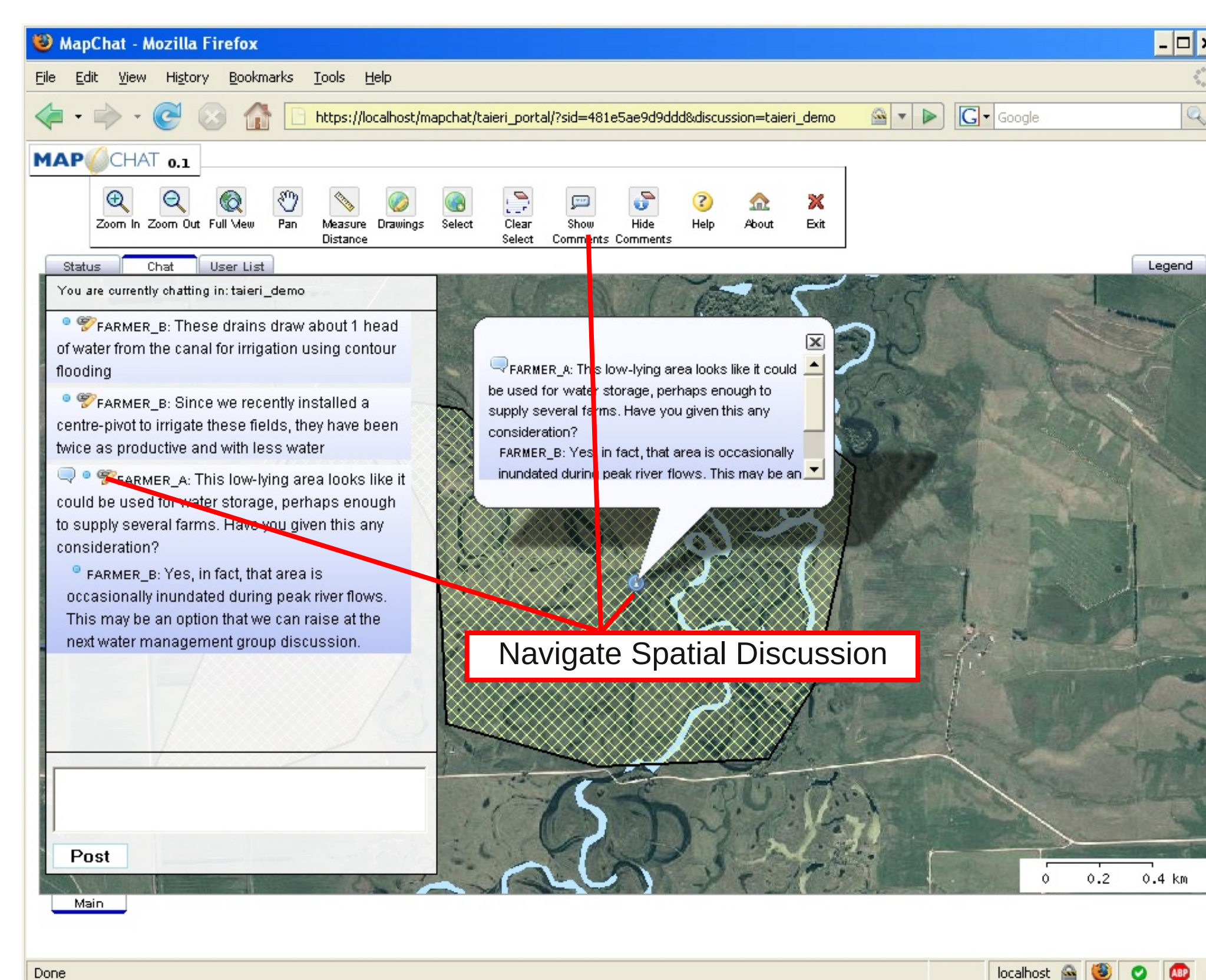
<< Geoff Crutchley

Geoff Crutchley is a farmer whose family has farmed on the Maniototo Plain several generations. He is also the chairperson of the Maniototo Irrigation Company (MIC), which has successfully developed a water management scheme for a group of water users on the Maniototo Plain. He is engaged in the UTG to share his experience, and help replicate the success of the MIC throughout the Upper Taieri community.



David McAtamney >>

David McAtamney operates a farm located in the Kyeburn sub-catchment of the Upper Taieri river. As mining rights for water takes are due to expire in 2021, farmers in this region will be seeking to establish an approach for ensuring the security of water rights through the conversion to the new RMA system. Replicating the success of the MIC, or adapting new methods for a community-led water management approach will require farmers to share their knowledge about water use on their farms.



Researchers:

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