2017 Te Rere Kāhui

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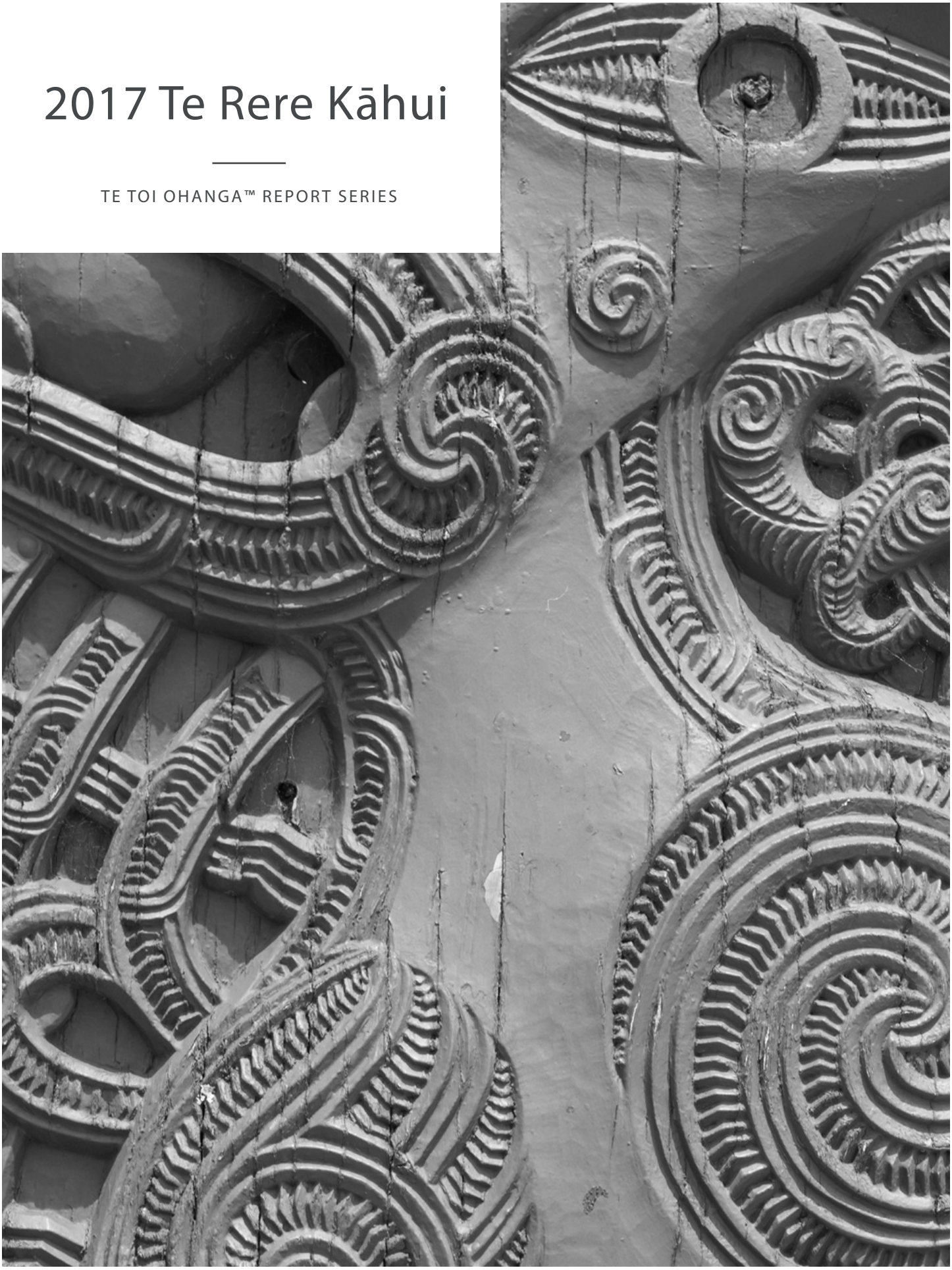

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1. Introduction

This report contains results and analysis of a pilot survey named Te Rere Kāhui that was conducted 2016–2017 and aimed to better understand the current Māori membership database, creation, development and enduse experiences of 13 participating rōpū tikanga Māori[1] . The Māori name 'Te Rere Kāhui' can be translated into English as 'flying together'. This pilot project is thus a first step towards a national scale project that aims to actively involve rōpū tikanga Māori in a collaborative dialogue aimed at:

(i) understanding the current and future membership database data, information and knowledge needs of rōpū tikanga Māori,

(ii) developing data standards to create the optimal membership database for rōpū tikanga Māori,

(iii) exploring how best practices, policies and protocols can be collectively created by Te Rere Kāhui participants for building membership databases.

(iv) working with rōpū tikanga Māori to ensure that data for and about Māori is used in collaborative ways that create value for Māori communities.

Te Rere Kāhui has the potential to become a 'game changer', a way to support rōpū tikanga Māori to harness opportunities created by rapidly emerging disruptive technologies that will potentially have far reaching benefits that support Māori cultural survival and wellbeing. The need for such a project follows from a number of other well-known facts and observations.

First, the creation, development, maintenance and use of Māori membership database information is an incomplete, but important means of achieving aspirational goals set by the members of rōpū tikanga Māori. While this point is often acknowledged, many rōpū tikanga Māori do not perceive themselves as having benefited (much) from the collection and use of Māori membership database information. Satisfying various legislative demands is often viewed as the rationale for creating a Māori membership database. Furthermore, rather than seeing the creation and use of a Māori membership database as an opportunity to create broad and far reaching benefits, there is still a tendency to view membership database information with the existence of 'risk' that is linked to the use of Māori (membership database) data being used for cultural profiling.

Second, Māori participants in data collecting activities (including membership databases) are often denied access to the data they have provided, or it is collected and/or used in ways that do not meet their needs. Of greater concern is the fact that the collection, storage and use of Māori data often occurs in a way that does not give adequate expression to kaupapa tuku iho and tikanga me ōna tūpuna.

Third, in the past, Māori (relevant) data that was created by Government agencies remained buried in respective state sector silos. With the gradual implementation of the New Zealand Government's 'open data' policy there is opportunities for rōpū tikanga Māori to use Government data to: (i) support their development aspirations and (ii) be involved in effective collaboration around the future co-production of data by Government, commercial and Māori entities. This recent change in Government policy highlights the urgent need for creative activities like Te Rere Kāhui that make it possible for rōpū tikanga Māori to give effective expression to kotahitanga through national dialogue and collaborative activities.

[1]Māori business entities, Trusts, whānau, hapū and iwi

Fourth, in the time of our tūpuna, Māori behaviour was guided by the daily expression of kawa, kaupapa and tikanga. These cultural values, treasures and behaviours played a central role in our cultural identity as Māori and a very real challenge for rōpū tikanga Māori today is to reclaim this cultural identity and then seek to understand just how it can can be reframed in a modern day economic context. The rapid emergence of disruptive technologies have added yet another layer of complication to what is already a challenging 'reframing' problem.

This pilot project is based on close collaboration with 13 rōpū tikanga Māori and aims to ensure that their Māori data is used in collaborative projects that create value for Māori communities. As a first step towards achieving these aspirations and remedying the problems outlined above, we have co-designed a project that seeks to collectively explore the value of 4 potential remedies:

(i) Te Rere Kāhui pilot wānanga aimed at better understanding current data standards and opportunities for information sharing and creative activity collaboration,

(ii) An online Te Rere Kāhui pilot survey based on 70 questions derived from a review of current data management standards literature,

(iii) Analysis and synthesis of Te Rere Kāhui pilot survey results and the creation of this report as a form of written feedback to project participants,

(iv) The use of Te Rere Kāhui pilot wānanga and survey findings to guide the creation of version 1 of a toolkit designed for use by rōpū tikanga Māori to create or update membership databases in a way that (i) aligns with legislative requirements and emerging data standards and (ii) embeds future database creation processes in the collective creative potential and learning of Māori member communities.

1.2 Project scope

The Te Rere Kāhui project is a way that rōpū tikanga Māori can actively support the creation of collaborative thinking on best practice policies and protocols that guide the collection, storage, sharing and use of Māori information, now and into the future. This Te Rere Kāhui survey report is an output of the very first Te Rere Kāhui pilot survey has been funded by Te Puni Kokiri and undertaken by 24-7 Consultancy Limited and iPansophy Limited. This Te Rere Kāhui pilot survey report and accompanying toolkit are published by iPansophy Digital Publishing as written contributions to the Te Toi Ohanga monograph series. In total, this Te Rere Kāhui (pilot) project focuses on 3 core activities that are elaborated below.

1. Introduction

1.2.1 Wānanga

How rōpū tikanga Māori go about capturing, entering, accessing, sharing, and analysing raw data directly affects how this information can be used to realise their strategic aspirations. For this reason this pilot Te Rere Kāhui project started with management-oriented wānanga that aim to address this 'design' question in very practical terms. These wānanga provided an opportunity to introduce the Te Rere Kāhui pilot survey and collectively explore the following questions:

- *What does 'good' data look like?*
- *What is the 'best' way to capture data?*
- *Practically speaking, how do we reduce manual data entry error?*
- *Practically speaking, how do we expand our current information sharing activities?*
- *What are the best options for visualising data to support our planning needs?*
- *What does a membership communication plan look like and why is it important?*
- *What legislation should we consider in creating and using a membership database?*
- *How do we 'lock' certain types of information to ensure member privacy?*
- *Online survey introduced and sent to participants to get a relative health and status check on their current membership database.*

1.2.2 Te Rere Kāhui pilot online survey

An online survey was developed to help grow our collective understanding about current practice and adoption of best practice standards. This also provided an opportunity for each participating rōpū tikanga Māori to receive a relative health and status check on their current data systems.

1.2.3 Toolkit

The creation of a written toolkit designed to guide and resource rōpū tikanga Māori so that they can create or update membership databases in a way that (i) aligns with legislative requirements and emerging data standards and (ii) embeds future database creation processes in the collective creative potential and learning of Māori member communities.

2. Te Rere Kāhui pilot survey method

The Te Rere Kāhui pilot survey (Appendix A) report represents the experiences and learnings of 13 participating rōpū tikanga Māori. These learnings were brought together partly through a management workshop and partly as a result of an online survey. The method used in creating this survey and deploying it is illustrated below and based on an empirical adaption of kaupapa Māori methodology in which (i) our participating rōpū tikanga Māori were actively involved in the design of this creative activity, (ii) have identified the benefits that they wanted obtain from participation and (iii) have given their permission for the anonymous use of survey and workshop findings in the Te Rere Kāhui pilot survey report and toolkit. Engagement processes followed the expression of kaupapa and tikanga as guided by the various kaitiaki of our participating rōpū tikanga Māori. This creative activity is also a contribution towards to the mātauranga Māori, technology and western science innovation and collaboration goals of the current Vision Mātauranga policy.

The flow diagram below provides a visual overview of key steps in this creative activity process.

1. Initial engagement with rōpū tikanga Māori

Initial engagement with rōpū tikanga Māori, wānanga and agreement on the need for and possible scope of this creative activity. An indication from Te Puni Kokiri of their willingness to fund a pilot study of limited extent.

2. Background reading

This project was based on a reading of publications and reports that provide a broad perspective on the opportunities, risks and emerging best practice trends associated with rapid changes in our national and international data environments. As a resource for our participating rōpū tikanga Māori, these readings have been included as a bibliography to this report.

3. Survey design and creation

Emerging issues identified in a reading of current literature were used to design the Te Rere Kāhui survey and to identify questions that could be used as dialogue starters during wānanga.

4. Invitation to participate

Kanohi ki te kanohi invitations were made to participants followed by the emailing of registration and briefing information.

5. The Rere Kāhui online survey

Before starting the workshops, we asked each organisation to fill out an online survey so that we were able to get a good idea of where each organisation sits in terms of current best practice standards.

6. Wānanga

Rōpū tikanga Māori engaged in a wānanga (about a 3-4 hour session) dialogue and presentations based on questions identified in step 3 above.

7. The Rere Kāhui survey report

Completion of this Te Rere Kāhui pilot survey report and delivery to rōpū tikanga Māori participants and TPK. Publishing of this Te Rere Kāhui pilot survey report and toolkit on the Te Toi Ohanga website.

3. Te Rere Kāhui pilot survey results

This report section provides an outline of results that have emerged from the piloting of Te Rere Kāhui. While only a pilot study of limited extent, these results clearly show what could be achieved in terms of 'benefits to participating rōpū tikanga Māori ' from the National-scale deployment of this survey. In this current report, insights are clearly limited by a small (pilot) sample size (i.e. 13 rōpū tikanga Māori). The more rōpū tikanga Māori we can engage in the Te Rere Kahui survey and workshops, the richer and more informative the results will be. To explain this point, it is helpful to provide elaboration on just what it is that we are seeking to achieve in deploying this survey. These goals are outlined and explained below:

First, for any Māori organisation, the creation, development and maintenance of a membership database takes time and involves substantial cost. As a first priority, this survey provides an opportunity for participating entities to think about the creation and use of a membership database in creating a 'value proposition'. There are many different ways in which a membership database can be created and developed. No one approach is necessarily right or wrong. However, different approaches require differing levels of investment and ultimately determine what the membership database can be used for in the future. Thus, the results of an enduser survey of this kind will help all participants to better understand just what the full range of opportunities and costs are. This information can then be used to create a 'value' or 'business' proposition for membership database creation, development, maintenance, and use that will assist in minimising costs and maximising benefits towards those goals that are of importance to participating rōpū tikanga Māori.

Second, the best way to realise collective benefits from a survey of this kind is to encourage all rōpū tikanga Māori to participate as survey respondents. This is important because it will make it possible to more clearly define the 'landscape' of practices and protocols that are currently used in membership database creation, development, maintenance and use. All survey respondents will benefit from seeing this landscape more clearly because it will make more evident the full range of options that can be used to create 'value' propositions that assist in minimising costs and maximising benefits towards the goals of importance to respondent rōpū tikanga Māori .

Third, the design of this survey has been guided by a review of current New Zealand best practice and policy literature across a range of relevant topic areas (e.g. data sovereignty, Maori data sovereignty, relevant legislation, big data, cyber security, adding value, Government open data, etc). In some cases we were able to create survey questions based on what is currently known about emerging best practice in the New Zealand data environment. However, in other situations this contextual information is either incomplete or non-existent. This is why we have used the answer option called 'other (please specify)' for some questions. In situations where we know very little or nothing about current practice we have asked open-ended questions. The answers provided to these types of questions (i.e. open-ended and other) help us to more effectively define current practice and this is also an important, 'collective' knowledge contribution.

Fourth, while the goal of creating a Māori membership database might be shared by all respondents to this survey, it is likely that the pathways that are followed towards the achievement of this goal will differ greatly. Not only will individual database development pathways differ, it is also likely that not all pathways will yield the outputs and outcomes desired by the initiating rōpū tikanga Māori. Another reason for initiating Te Rere Kahui is to try and document, characterise and learn from the wealth of practice experience that exists in trying to build Māori membership databases by following different pathways.

We hope to be able to use this information to create generalised 'pathway' models that help us to see more clearly what works, what has not worked and where there are potential risks or opportunities to watch out for. Best practice information of this kind has the potential to add substantial value to existing membership database creation, development and maintenance/use activities.

Fifth, there are 2 different ways in which we seek to support participating rōpū tikanga Māori. First, by aiming for a future 'National' deployment of Te Rere Kāhui, we are seeking to offer survey respondents an opportunity to compare what they are doing with emerging best practice. The ability to position best practice is only possible through collective sharing in a trusted survey framework of this kind. Second, the survey format is comprehensive and quite apart from collective, comparative insights, it will provide participating rōpū tikanga Māori an opportunity to identify current knowledge and capacity gaps, threats and areas where improvements in current practice are preferred and/or critically important.

Despite the fact that this pilot creative activity is limited in terms of sample size, there are really interesting insights that have begun to emerge that will already add considerable value to participating survey respondents and other rōpū tikanga Māori who are interesting in learning more about this important area.

Organisation of Te Rere Kāhui pilot survey results

3.1 Organisation of Te Rere Kāhui pilot survey results

In providing a written commentary on the pilot survey results that are documented in this report, we have organised results information in the order of survey questions. It is unlikely that we will continue to use this approach in the future. As future iterations of the Te Rere Kahui survey are completed, it seems more likely that written narrative on the survey results will orient around emerging issues and strategic priorities of the time. This pilot report is very much a first step.

As noted above, the Te Rere Kahui survey has the potential to transfer benefits to survey respondents because it affords an opportunity for survey respondents to think about what they are doing in relation to the priorities, practices and policies of other rōpū tikanga Māori. To make analysis and synthesis of this kind possible, survey respondents need to be comfortable with sharing their survey results. As part of the Te Rere Kahui survey process we have obtained permission from each of the survey respondents to use their survey results in a way that protects the anonymity of each participating organisation. In particular, this means that the following results do not include, for example, questions relating to personal information such as contact details or the names of technical staff. A collaborative approach of this kind aims to create a space for comparison and sharing, while protecting the identity of survey respondents and sensitive information that is only of relevance to their organisation.

Survey representation

Question 5 *In answering the questions in this online survey, please tick which of the following applies.*

(a) I am seeking to represent my own views
(b) I am seeking to represent the views of a Māori business entity
(c) I am seeking to represent the views of my whānau
(d) I am seeking to represent the views of my hapū
(e) I am seeking to represent the views of my iwi

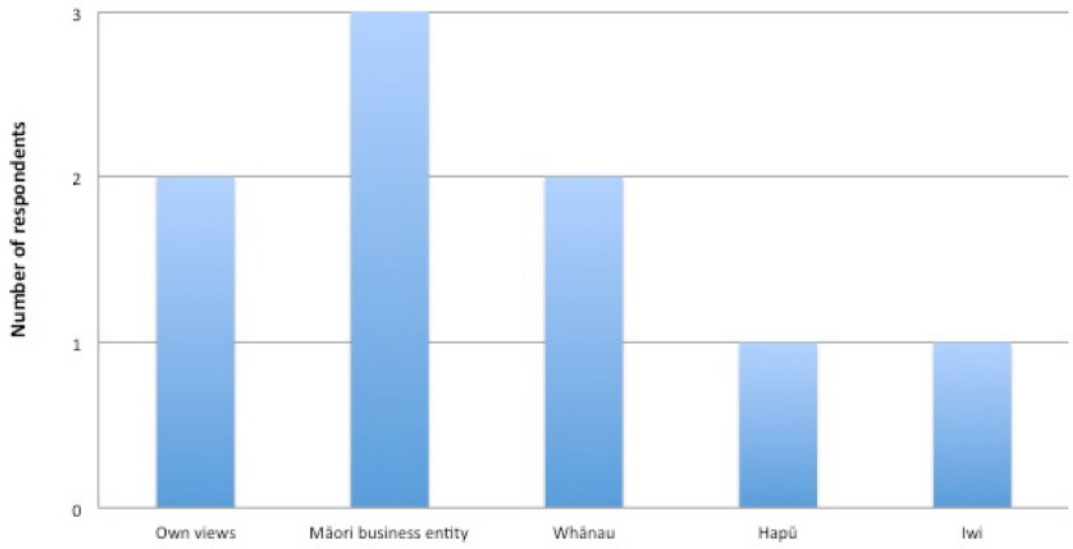

Figure 1 *A bar graph showing which rōpū tikanga Māori are being represented by our 13 Te Rere Kahui survey respondents*

In the past, the design and creation of rōpū tikanga Māori membership databases have mainly been created to officially represent and/or meet the reporting requirements of New Zealand Government legislation including:

The Maori Purposes Act 1939
The Māori Trust Boards Act 1955.
The Treaty of Waitangi Act 1975
The Crown Forest Assets Act 1989
The Runanga Iwi Act 1990 (1990 No 125)
The Te Ture Whenua Māori Act 1993 (Māori Land Act 1993).
The Māori Fisheries Act 2004
The Marine and Coastal area act 2011.

Survey representation

This situation has and will continue to change with the rapid onset of disruptive digital technologies. This emerging future will likely see the more commonplace use of membership database-type-tools by rōpū tikanga Māori as they seek to give more complete expression to kaupapa tuku iho in a contemporary context. Thus, in the future, it is likely that the membership databases of rōpū tikanga Māori will aggregate up and draw real-time data and information from spatially smaller membership databases created and maintained by rōpū tikanga Māori. Figure 1 indicates that in terms of representing the views of these various interest groups in membership database design, creation and development, this Te Rere Kāhui pilot survey is already starting to draw on a diverse cross-section of interest and preferences (Figure 1).

Development rationale

Question 7 *Please indicate which of the following applies. I have been involved in creating and/or maintaining a Māori membership database for.*

(a) Statutory requirements,
(b) Internal whānau/hapū/iwi reasons,
(c) For issuing grants and payments,
(d) To support the measurement of wellbeing across differing realms
(e) As an expression of kaitiakitanga or other kaupapa tuku iho

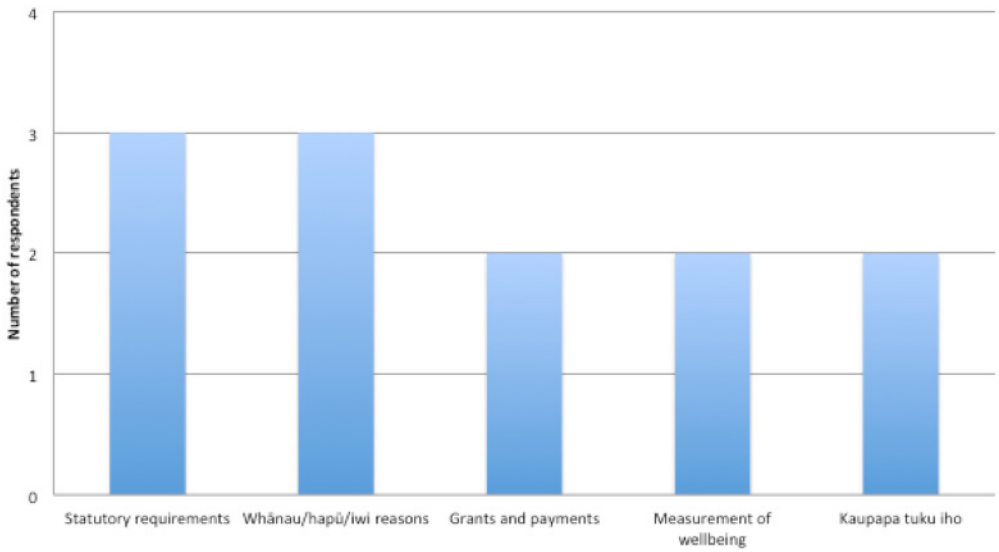

Figure 2 *A bar graph showing the development rationale preferences of our 13 Te Rere Kāhui survey respondents*

Question 7 in the Te Rere Kāhui pilot survey seeks to better understand the range of priorities that current Māori membership database development is responding to. The results depicted in Figures 2 and 54 indicate that current priorities and areas of interest are board, even though these preferences are not yet fully represented in the current rōpū tikanga Māori membership database design and builds (e.g. Figures 55). With the aid of rapidly emerging disruptive technology there is much that can be done to extend the scope of current membership databases. Figures 2 and 3 attempt to gauge the level of interest on the part of current membership database owners to embrace innovation of this kind.

Wellbeing priorities

Question 8 *If you ticked measurement of well-being in answer to the previous question, indicate which wellbeing areas.*

(a) Health
(b) Education
(c) Kaupapa/tikanga
(d) Environment
(e) Wairua
(f) Whānau-ora
(g) Other (please specify)

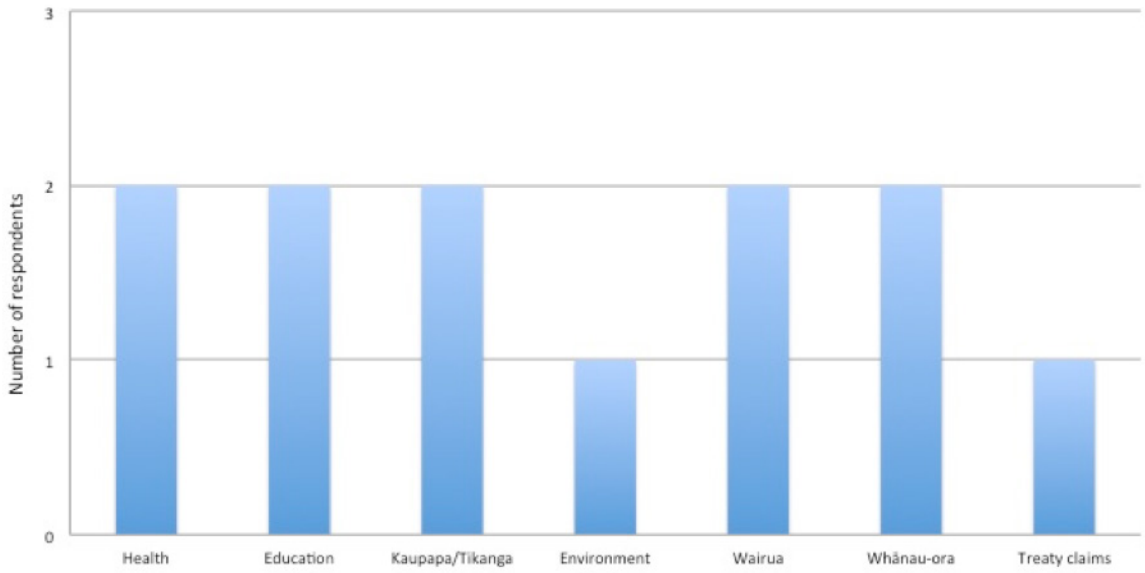

Figure 3 *A bar graph showing the whānau, hapū, iwi, taiao wellbeing preferences of our 13 Te Rere Kāhui survey respondents*

Question 8 in the Te Rere Kāhui pilot survey provided an opportunity to obtain more detailed information on the more generalised 'wellbeing' results that are depicted in Figure 2. What Figure 3 clearly shows is that a desire exists to better understand just how existing digital membership databases can be used to help achieve broad wellbeing outcomes (i.e. health, education, the expression of kaupapa and tikanga, environment, wairuatanga, whānau-ora and treaty claims). This interest is well justified. A substantial amount of direct and indirect investment is required to create a Māori membership database. Thus, it makes sense to better understand just how membership data collected during database creation can be associated with other datasets and information that provide a broader and deeper understanding of the wellbeing of rōpū tikanga Māori .

Estimated development time

Question 9 *Please indicate the amount of time that your Māori membership database has been in existence.*

(a) *Up to 1 year*
(b) *1 year – 5 years*
(c) *5 years – 10 years*
(d) *10 years – 15 years*
(e) *In excess of 15 years*
(f) *None of the above (i.e. we are currently planning to create a membership database)*

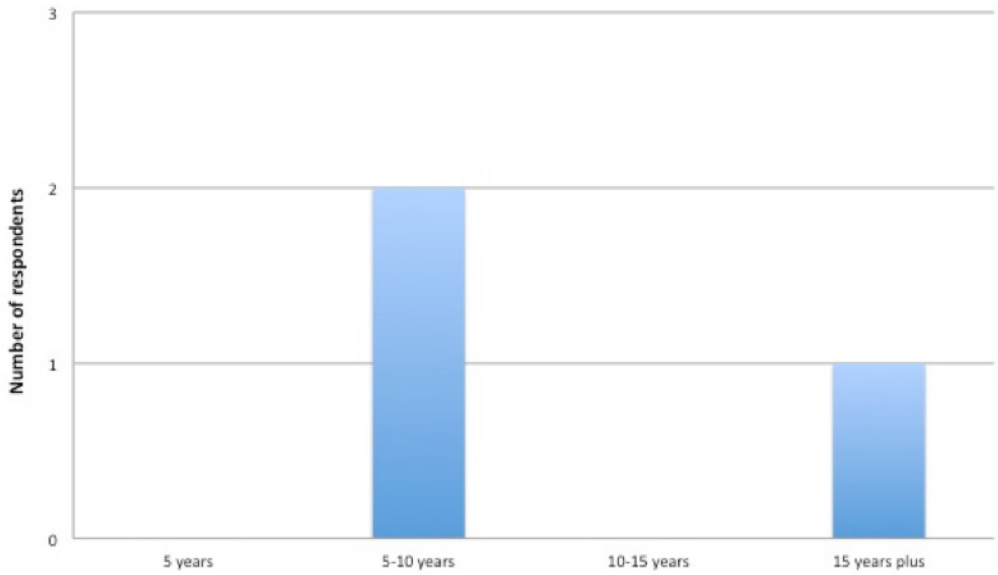

Figure 4 *A bar graph showing the estimated time that the current Māori membership databases of our 13 Te Rere Kāhui survey respondents have been in existence.*

Creating and maintaining a Māori membership database involves a commitment to ongoing cost. The design of a membership database, both in terms of technology and system architecture will strongly influence the extent of ongoing cost. For example, the life-span of membership databases associated with this Te Rere Kāhui pilot project (Figure 4) have been estimated to be between 5 and 15 years plus in terms of age. Given that a sizeable percentage of membership information needs to be update every 2-3 years, these results imply a significant cost associated with manual information updates. With careful system design, there is much that can be done to reduce the need for manual data entry of this kind. System design of this kind can reduce maintenance costs and improve the accuracy of membership database information.

Extent of change over lifetime

Question 10 *During the time that your Māori membership database has been in existence, would you say that the nature of the information contained in the membership database has.*

(a) Changed very little
(b) Changed a moderate amount
(c) Completely changed
(d) Been updated on a regular basis (e.g. weekly, monthly, annually, biannually etc)
(e) Links to external information sources or processes that automatically update

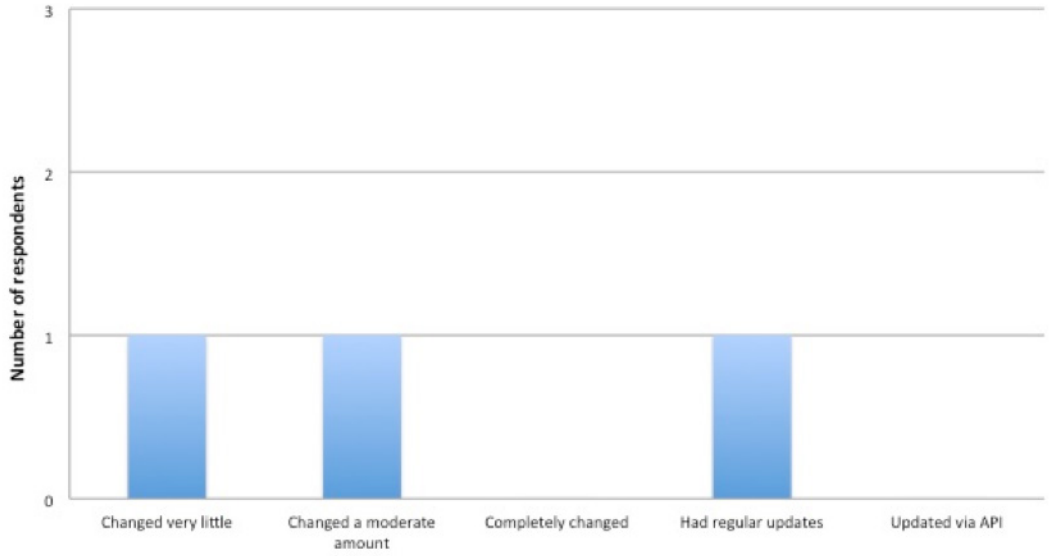

Figure 5 *A bar graph showing the extent of change in the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Apart from the differing estimates of information change in the respondents to this Te Rere Kāhui pilot project (Figure 5), it is interesting to note that none of our respondents have chosen option (e) – 'Links to external information sources or processes that automatically update' (Figure 5). Linking membership databases to external sources of information (via API-application programming interface) that are accurately and regularly maintained by other organisations is a cost efficient way of accommodating 'change'. Depending upon the varied information needs of different rōpū tikanga Māori, it may also be worth investing in innovation that makes automatic updates of this kind possible.

How up-to-date?

Question 11 *How accurate/complete/up-to-date is the information in your Māori membership database? Please indicate which of the following general descriptions applies.*

(a) Precise, complete and/or up-to-date
(b) Mostly correct, mostly complete and/or mostly up-to-date
(c) Needs significant correction, has significant gaps and/or needs up-dating
(d) Is still being created
(e) Is currently being planned

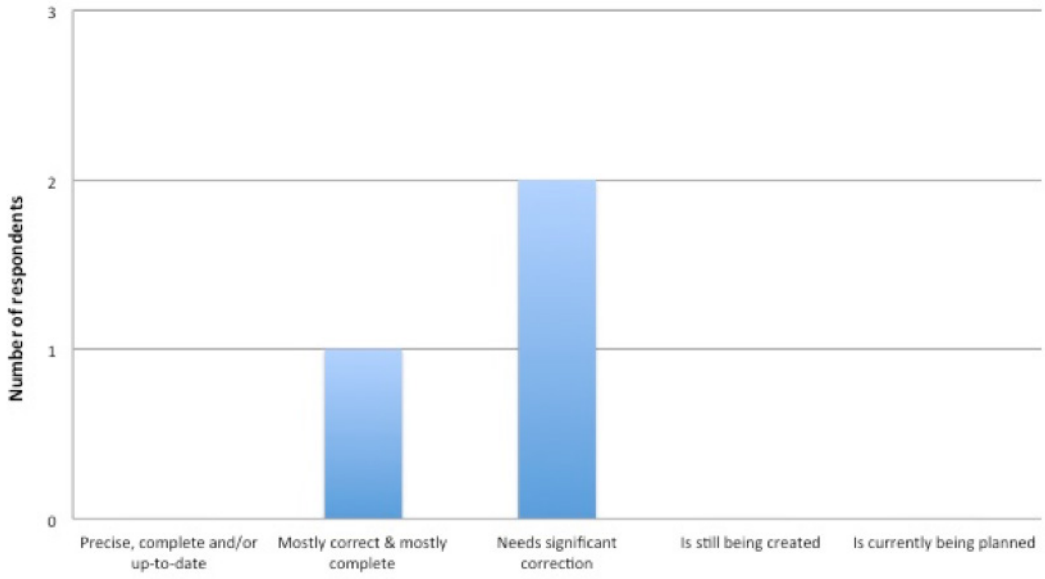

Figure 6 *A bar graph showing the extent to which the current Māori membership databases of our 13 Te Rere Kāhui survey respondents are up-to-date*

There is significant cost and time involved in the creation of a Māori membership database. The value of a digital asset of this kind can be quickly diminished by failing to ensure that database information is regularly verified and updated when-ever necessary (i.e. Figure 6). Planning for ongoing verification and updating of your membership database is an essential part of the 'business-case' or 'value proposition' that needs to be created to make sure that your digital investment delivers on the benefits anticipated.

Rate of use

Question 12 *How much use does your Māori membership database receive.*

(a) Daily
(b) Weekly
(c) Monthly
(d) Annual
(e) Every few years
(f) It is only needed as archive or record and therefore rarely used

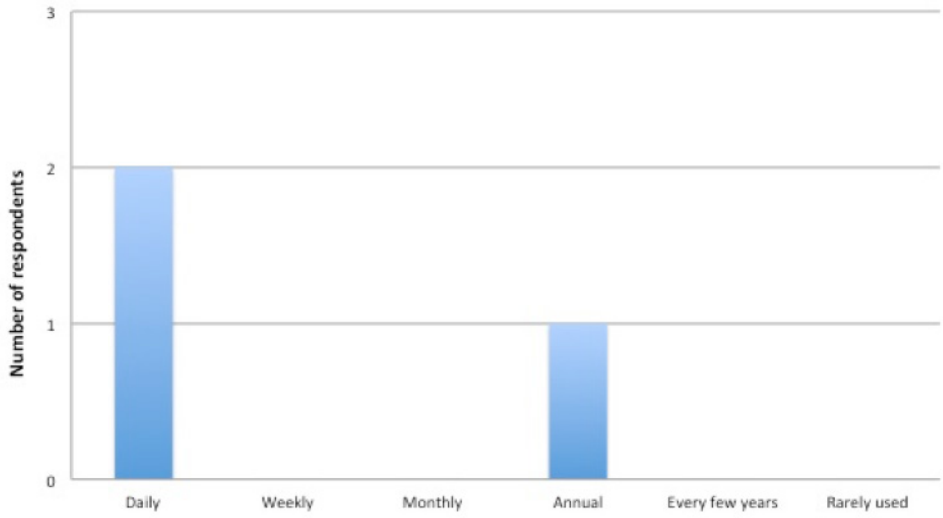

Figure 7 *A bar graph showing the rate-of-use of the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

The membership databases of our Te Rere Kāhui pilot survey respondents have been in operation between 5 – 15 years. Given the costs associated with creating a membership database, it is really desirable that it is designed in such a way that it receives daily use. Given the possibilities for cross-linking membership information with, for example, spatially explicit demographic, educational, employment, environmental and Census data etc., there really is no good reason why a membership databaseshouldn't add value to planning, policy making, administration, economic, financial and environmental decision-making on a daily basis (Figure 7).

Access priviledges

Question 13 *Indicate which groups of people can access the information in your Māori membership database ?*

(a) A super admin
(b) Administrators/kaitiaki who enter, update and maintain the membership database
(c) Whānau, hapū and/or iwi members
(d) Kaumatua/pākeke
(e) Crown agencies or service providers
(f) Māori business enities
(g) Other (please specify)

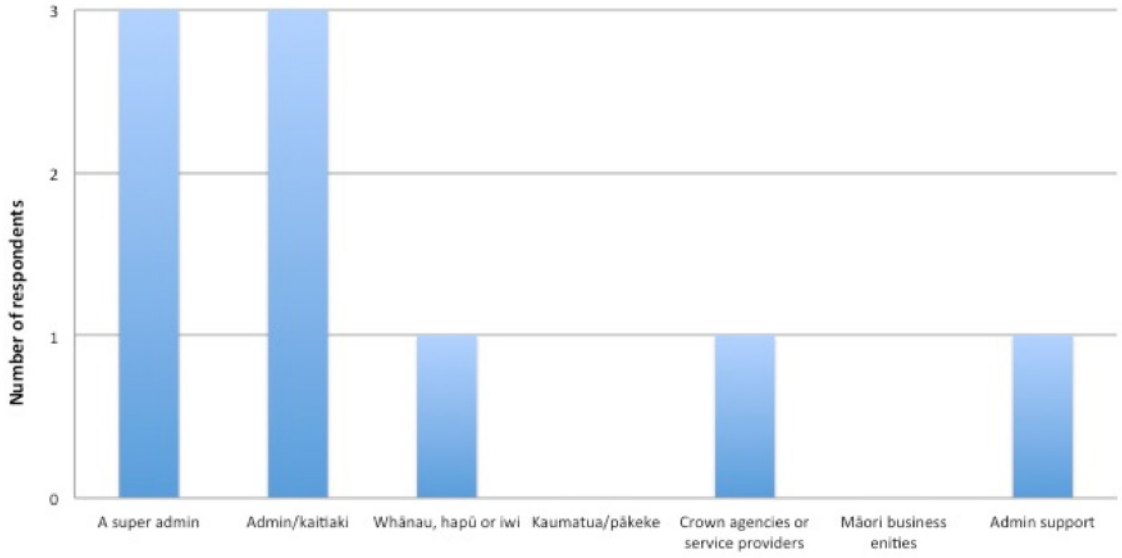

Figure 8 *A bar graph showing access privileges for the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

The value of a membership database can be realised in different ways including: (i) rate-of-use (i.e. daily, weekly, monthly, annually) and (ii) the range of users that the database is made accessible to (Figure 8). Access privileges and rates-of-use are also interrelated (i.e. the number of people given access privilege influences demand for database use). The power of digital data lies in the fact that while it may need to be updated, it never wears out. There literally is no limit to the number of times that digital assets can be used. This being the case, it really makes sense to design your membership database in a way that provides access to the greatest possible number of users and uses.

Data protection

Question 14 *Please indicate what types of protection you have implemented for your Māori membership database.*

(a) We keep paper version of all information in a secure location
(b) We keep regular onsite backups of our membership database in a secure location
(c) We keep regular offsite backups of our membership database in a secure location
(d) We have policies/processes that protect our membership database from attack by malware
(e) We have policies/processes that protect our membership database from attack by viruses
(f) We have an 'on call' or 'full-time' technical support individual/team

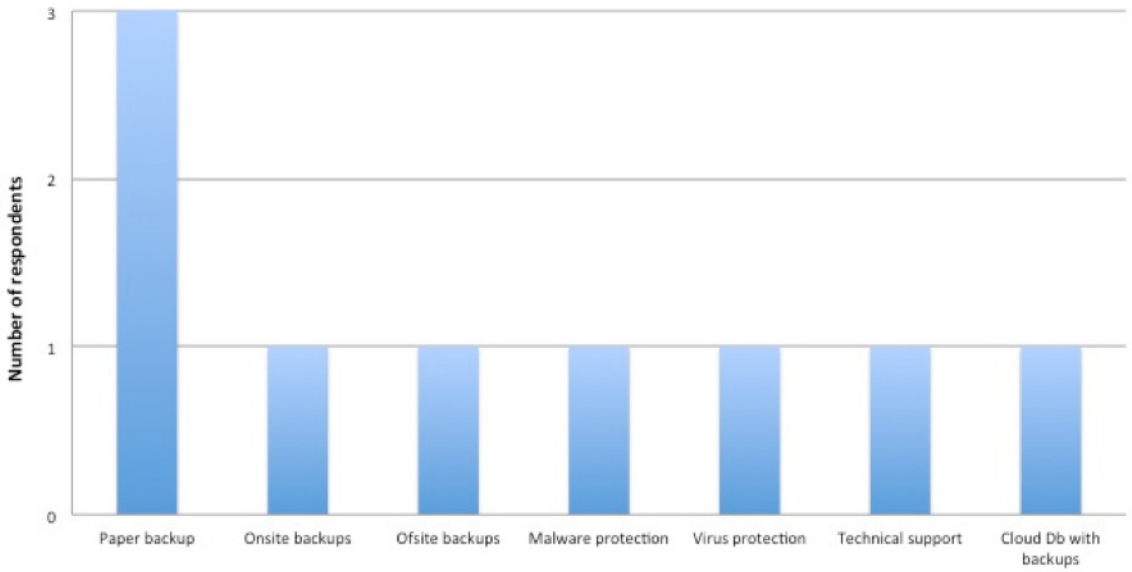

Figure 9 *A bar graph showing the types of protection being used for the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

In order to maintain the integrity of information and data in a membership database, protection measures (i.e. policies and protocols) are needed. Figure 9 indicates that our Te Rere Kāhui pilot survey respondents have different mixes of protection measures. While this is good as far as it goes, in reality, all of the protection measures listed in question 14 of our survey constituent an essential baseline for maintaining data integrity. In particular, the importance of onsite and ofsite backups cannot be over-stressed. Protection measures are an essential part of system design and the 'business case' that needs to be created to ensure that a membership database continues to deliver ongoing benefits.

Software platform

Question 15 What registry management software platform or system do you currently use?

(a) A custom database created and/or maintained by a software developer,
(b) Microsoft Excel,
(c) A commercial product (SharePoint, Access, CRM)
(d) A web-based registry system (e.g. MySQL-based)
(e) Other (please specify)

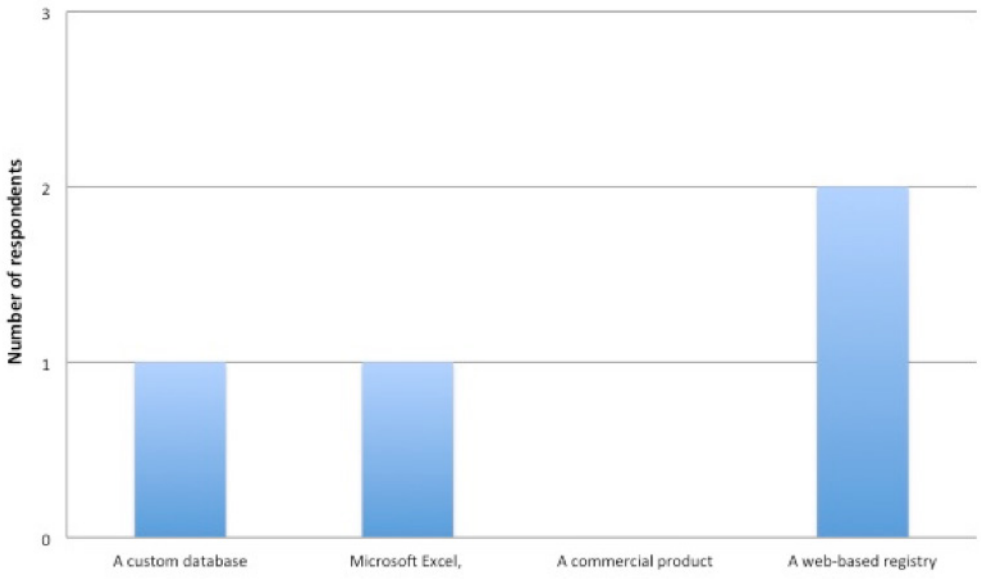

Figure 10 *A bar graph showing the types of registry management software being used for the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

During the 'period of service' (i.e. between 5-15 years) for the membership database belonging to the respondents of our Te Rere Kāhui pilot survey (Figure 10), there have been dramatic shifts in both the design and cost of technology. What was unthinkable in terms of membership database design aspirations and cost 15 years ago is now possible in ways that we could never have anticipated. Rapidly emerging digital technology opens up new possibilities for the design, creation and/or further development of membership databases. It is important to stay abreast of these opportunities for at least 2 reasons. First, earlier technology will eventually exceed its useful lifespan and need replacing. At this point, it is really helpful to clearly understand the range of upgrade options that exist[2] . Second, new developments in technology will eventually make it possible and cost effective to do things that were not possible in earlier times. Early recognition and adoption of such options may add considerable value to the use of an existing membership database.

[2]Ongoing technical assistance may be need to help stay abreast of rapidly emerging developments in disruptive, digital technologies.

Technical support

Question 16 *Who currently provides technical support for your registry management software?*

(a) A minimal or no level of technical support
(b) In-house technical support
(c) External (e.g. third party) contracted technical support
(d) In-house technical support & External technical support
(e) A professional software or web developer
(f) Other (please specify)

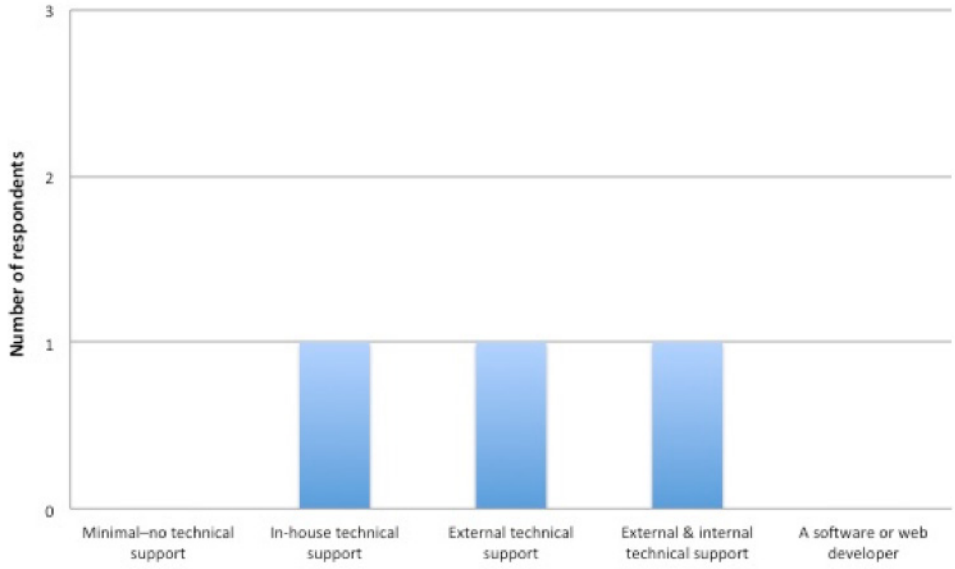

Figure 11 *A bar graph showing the types of technical support being used for registry management software of the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Feedback from our Te Rere Kāhui pilot survey respondents (Figure 11) indicates that they use a range of different support strategies. In most areas, technical support can be crafted to meet the needs of a given membership database build. Strategies for technical support can also be created in ways that provide long term employment options for whānau members who seek to train and build careers in this area and there are very real advantages in this option. First, technical support staff have administrative access to all of the data and information contained in a membership database. Māori data sovereignty preferences can more effectively be achieved if technical support staff whakapapa to affiliates of the membership database. Second, external technical staff will eventually move on in their career pathway and take with them all of the intimate knowledge that they have obtained in servicing a membership registry system. A simple fix to this problem is to build internal technical support capacity based on whakapapa. Support options of this kind are more important with larger, more complex database systems. For this reason, there is a need to make sure that operational costs of this kind have been included in the creation of a registry business case and information system design.

Availability

Question 17 *Please indicate which of the following best describes the design of your Māori membership database information syste*m.

(a) It is available on one or more in-house computers
(b) It is available (via in-house server) on our local area network
(c) It is available (via in-house server) on our virtual private network
(d) It is available on our web-site
(e) It is available (hosted by an ISP) on a dedicated virtual private network
(f) It is available on a cloud storage system

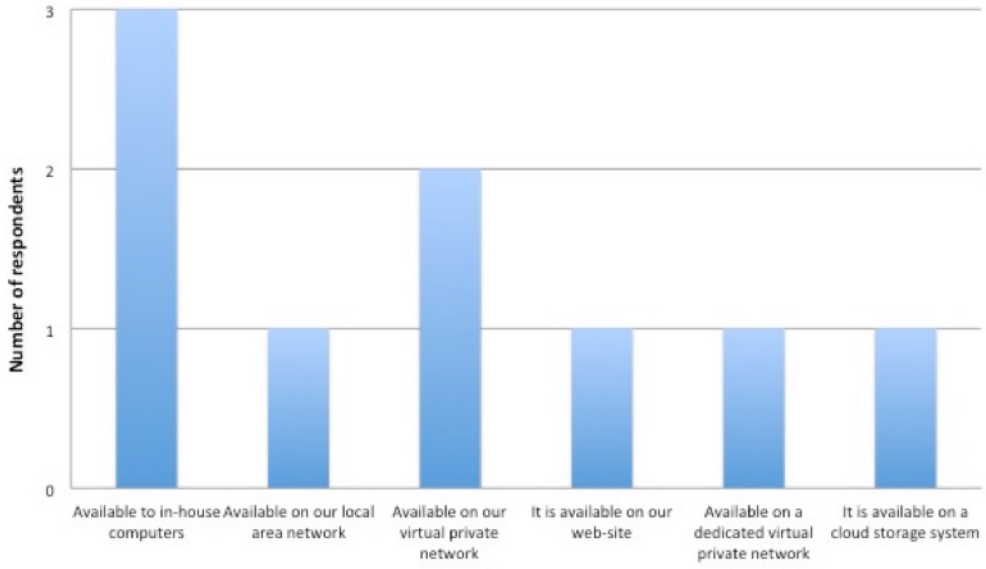

Figure 12 *A bar graph showing the types of availability of the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

There really is no single, technical solution that can be used in the design of all registry information systems. As Figure 12 shows, our Te Rere Kāhui pilot survey respondents have adapted a wide variety of technological solutions to meet their end-user needs. The intentional design of end-user technological solutions is, however, important in making sure that future growth in size and use of a membership database and changes in end-user behaviours/preferences are not constrained by a technology. Patient and careful use of a kaupapa-tikanga design process should assist in scoping out future long term pathways. This information can then be used to match anticipated registry growth with an enabling technological solution.

Protection protocols

Question 18 *Please indicate which of the following best describes the security protocols that you use to manage access to the information contained on your Māori membership database .*

(a) No security protocols at present
(b) Our Māori membership database is password protected
(b) Our Māori membership database is password and phone verification protected
(c) Our Māori membership database is stored in an encrypted format
(d) Our Māori membership database is served over an encrypted, secure connection
(e) Other (please specify)

Figure 13 *A bar graph showing the types of security protocols being used to manage access to information in the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Once again, there is no single best practice, policy or protocol that can successfully be applied to all membership registry builds (Figure 13). Strong password protection would be considered as the lowest level of security protection (by today's standards). The encryption of data has become increasingly popular because it can provide high levels of protection when and if entry point (e.g. passwords, phone verification) security fails. Membership registry design will ideally include a risk assessment that matches potential threats to cost effective security solutions. However, it is important to remember that computer security is an ever-changing landscape. This is one aspect of membership registry best practice that needs careful vigilance and ongoing revision. Having an (in-house) technical staff member who has time to stay on top of changes in the computer security landscape can turn out to be a wise investment.

Dominant language/s

Question 19 *In what languages is the information on your Māori membership databasestored?*

(a) Te Reo Māori only
(b) Apart from Māori names, only English
(c) A combination of Māori and English
(d) Visual languages (e.g. drawings, illustrations, photos, video)
(e) Oral language (e.g. digital audio recordings)
(f) Other languages (please specify)

Figure 14 *A bar graph showing the language preferences being used in the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Preferences relating to the use of Te Reo Māori in a membership database (Figure 14) ideally need to be matched with the Māori language competency of the end-user community and carefully balanced with strategic plans to reclaim the use of Te Reo Māori. The use of both English and Māori language in membership database design and creation can assist in remedying potential barriers to end-user access that can be caused by the exclusive use of Te Reo Māori. However, the nature of content accessible to end-users needs to be carefully assessed as a basis for written, visual and oral language preferences. Māori to English translation is an imperfect instrument. In some cases, it will not be possible to effectively communicate 'meaning' through translation. Also, the use of loan words and transliterations that assist in communicating contemporary 'meaning' more effectively, can also work to diminish the mana of the Reo of Tūpuna Māori. A comprehensive registry design process can assist in exploring issues of this kind and forming best practice policies and protocols that assist in harnessing the use of digital technology to move beyond dependence on just (one) written language.

Development time

Question 20 *Please indicate which of the following indicates how much time has been invested in building your Māori membership database .*

(a) Hours
(b) Days
(c) Weeks
(d) Months
(e) Years

Figure 15 *A bar graph showing estimates of how much time has been invested in the development of the Māori membership databases of our 13 Te Rere Kāhui survey respondents*

As Figure 15 indicates, a considerable amount of time can be invested in the design, creation and ongoing development of a membership database. This survey result shows how important it is to ensure that membership database design and costing is scoped out using a facilitation process that makes it possible to (i) comprehensively understand the need that exists for a tool of this kind, (ii) effectively match end-user needs with emerging developments in technology and best practice in a way that (iii) adds and grows value. Needs analysis and synthesis will ideally be kaupapa-tikanga based. This will ensure that funds invested in membership database creation also enhance the mana of the Māori communities that they ultimately aim to serve.

Education and training

Question 21 *Please indicate which of the following best describes the training that you or your organisation provides those who have responsibility for building and maintaining your Māori membership database.*

(a) No training is currently provided; our staff learn on-the-job
(b) We are currently thinking about training options
(c) A basic introductory training session is provided
(d) Our staff have tertiary educational qualifications
(e) We provide ongoing professional development as needed
(f) Our staff are industry trained and certified (e.g. Microsoft certification)

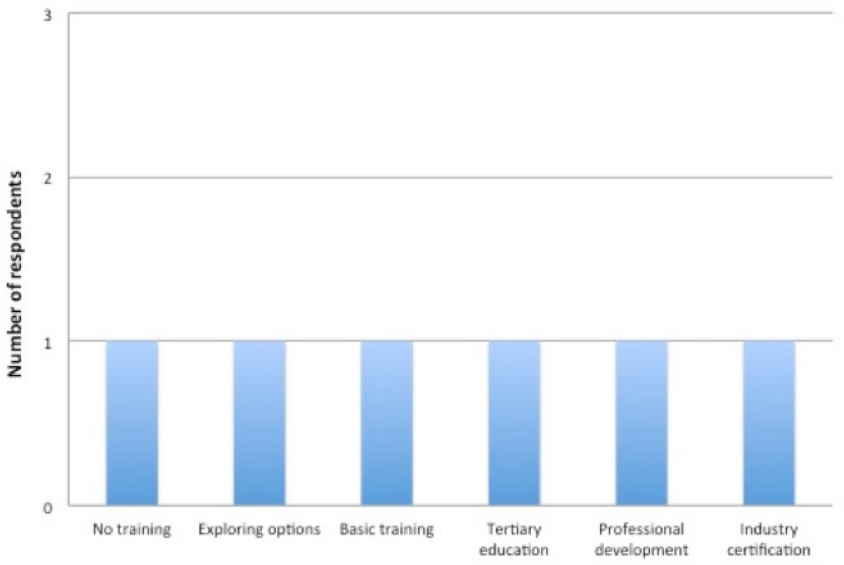

Figure 16 *A bar graph showing the types of education and training being provided to staff who build and maintain the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Te Rere Kāhui pilot survey results depicted in Figure 16 indicate that a wide range of educational and professional development training activities are being used to empower and support the staff who build and maintain the current Māori membership databases of our survey respondents. Current developments in technology and the increasing availability of government data are opening up a new space of possibilities for membership database development. Membership databases of the future will be more complex and will provide instant access to whānau and taiao wellbeing in ways that we have not yet begun to imagine. As we enter this new era in membership database development, education is going to become even more important than it is now. For this reason, it would be strategically wise to begin planning for this future now. Future membership database development is going to need technical experts, programmers, knowledge developers, innovators and technically oriented business managers.

Data strategy

Question 22 *Does your organisation have a data strategy in place?*

(a) Yes

(b) No

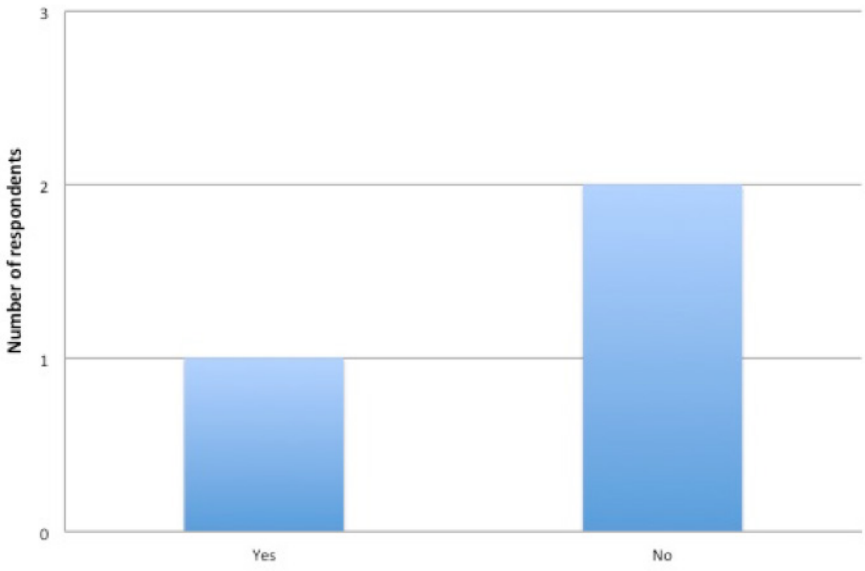

Figure 17 *A bar graph showing the existence of a data strategy for the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Not all of our Te Rere Kāhui survey respondents have a data strategy (Figure 17). The creation and use of a data strategy can assist in moving a membership database from a goal orientation based on just 'legal compliance' to a goal orientation that recognises data as an 'asset' that can add enormous value to the strategic and operational decision-making of an organisation. A data strategy assists in realising the full potential of data by providing collective agreement on: data quality, metadata, performance, data distribution, organisation, ownership, security and privacy. The creation of a data strategy is ideally initiated in the planning and design stages of membership database creation. However, they are typically living documents that need ongoing revision and adaptation in response to ongoing changes in technology as well as membership database development and use.

Policies on data security

Question 23 *Please indicate which of the following best describes your rōpū tikanga Māori policies on data security:*

(a) We have no particular view about data security
(b) We are currently seeking to better understand how to make our data secure
(c) We have well developed data security policies
(d) We have well developed and implemented data security policies
(e) We consider data security to be an extremely serious matter
(f) We have inhouse data security policy capability
(g) We receive data security policy advice and guidance from a 'third party'

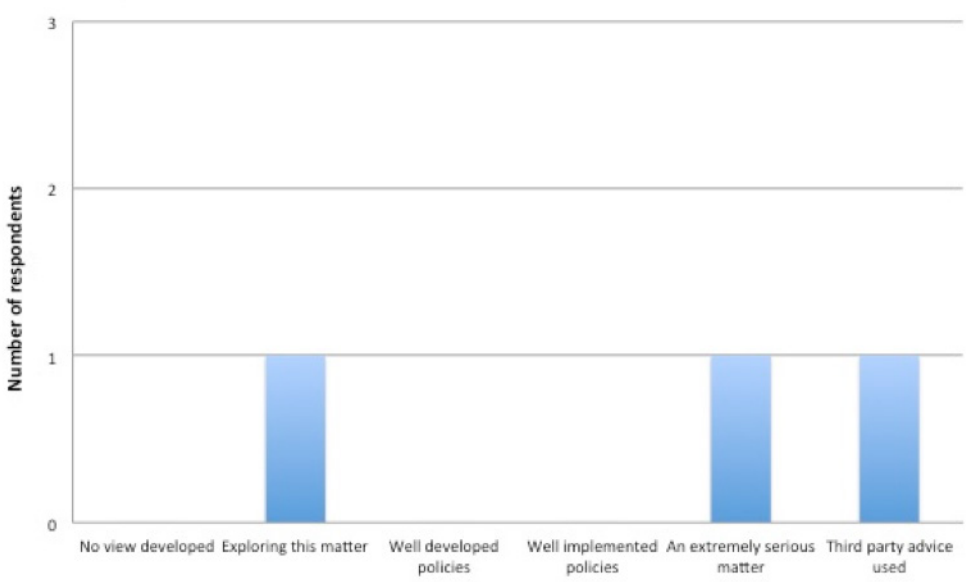

Figure 18 *A bar graph showing the level of development of data security policies for the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Data security (Figure 18) is another aspect of membership database creation and use that will ideally receive careful consideration during early design and development stages. The utility of a membership database is directly related to the existence and effective implementation of data security policies. Those who have worked for many years with information technology are generally aware that a momentary lapse in data security protocols can: (i) render a large or small information system completely inoperative and (ii) require great expense and precious time to remedy. Thus, time invested in the short-term creation and implementation of data security protocols is a management investment that can deliver long term and far reaching benefits for an organisation.

Number of membership database members

Question 24 *How many members are currently membership database ed?*

(a) 5-10
(b) 10-100
(c) 100-1000
(d) 1000-10,000
(e) 10,000 plus

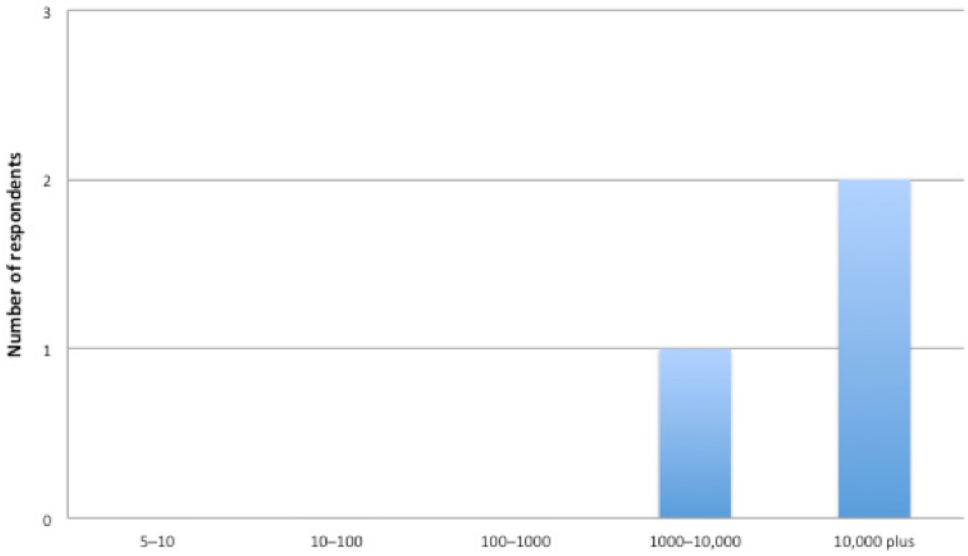

Figure 19 *A bar graph showing the number (range) of membership (in numbers) associated with the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

It has been common practice in the past to assess the size of a membership database by the number of membership records that it contains (Figure 19). One of the most important aspects of database design concerns the identification of 'keys' that are used to establish and identify relationships between different database tables. Membership records are one type of key. However, it is also possible to structure data around, for example, demographic (e.g. age cohort), employment or economic (e.g. industry) and cultural (e.g. kaupapa or tikanga) keys. While there is additional cost involved in adding new keys to existing data, they can open up a totally new world of possibilities for the way in which membership database data is used. Investment in the services of a talented database developer can involve an upfront investment that adds substantial value to existing 'membership record' based membership databases. It would also be wise to include such an individual in the project team tasked with creating a completely new membership database.

Identity protection

Question 25 *Please indicate which of the following best describes the way in which your organisation makes use of data derived from your Māori registry?*

(a) We have clearly stated and implemented policies on 'personal data'
(b) Our use of registry data protects the anonymity of the applicant
(c) We have implemented policies that prevent the re-identification of anonymous data
(d) The use of registry data by a third party is strictly prohibited

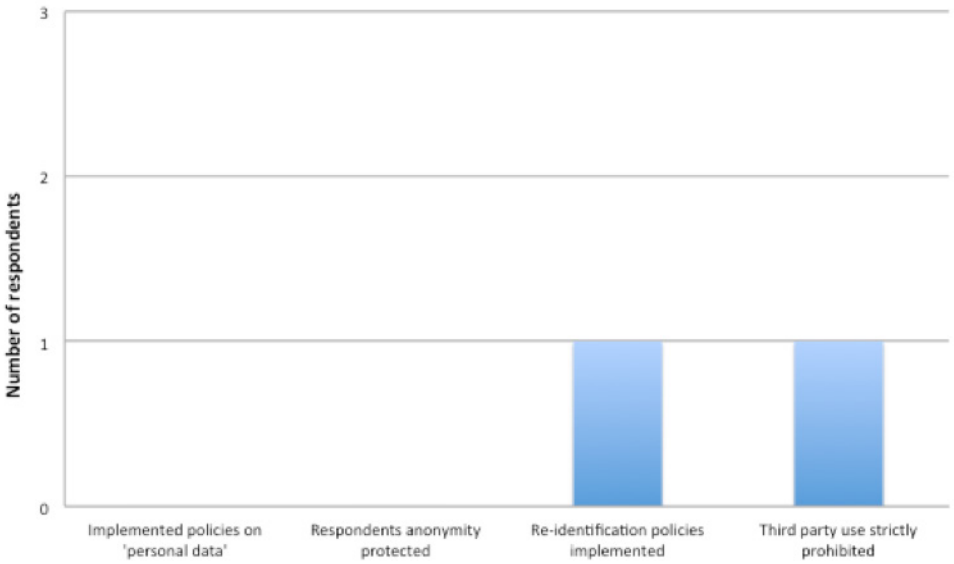

Figure 20 *A bar graph showing preferences for personal identity protection practices associated with the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

The successful creation and implementation of personal identity protection policies and protocols (Figure 20) is an important (albeit incomplete) contribution towards building and maintaining 'trust' in a membership database project. It is not possible to create and use a membership database without trust and much has been written on this matter in recent literature. A breach of trust can result in serious problems for membership database kaitiaki. While most membership database kaitiaki are generally aware of the importance of maintaining trust, they do not always appreciate the importance of effectively and regularly communicating what they are doing to membership database members. Effective, regular communication about personal identity protection practices can greatly assist in maintaining high levels of 'trust'. Regular communication can also provide opportunities for members to share concerns and ask questions as part of communication feedback. The sharing of concerns and questions can help to identify weaknesses in identity protection practices and provide opportunities to respond with comforting reassurance and evidence (where necessary) that current policies and practices are adequate.

Registration method

Question 26 *How do members currently join a membership database ?*

(a) They complete a paper form
(b) They participate in an interview process
(c) They complete an online form
(d) They complete a registration process based on a mixture of items a-c above
(e) Other (please specifiy)

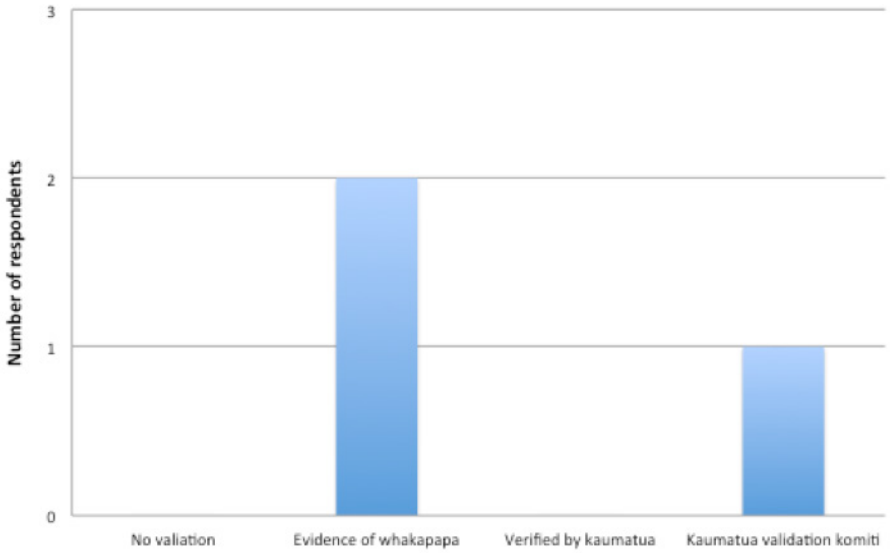

Figure 21 *A bar graph showing preferences for method of registration associated with the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

The rapid emergence of technology is creating new options for membership database members. Paper based registration has been a mainstay of membership database development for a long time (Figure 21). However, a problem with the paper based method is that all data has to be entered into the membership database manually. This can be a tedious task and one that easily introduces error into membership database data. It is possible and necessary to verify manually entered membership database data, but this is another manual task that needs completion. Once data has been entered, there remains the question of what to do with paper copies. Some rōpū tikanga Māori scan paper documents and then store the originals. This adds yet another task and the problem of long term 'primary paper document' storage. Today it is possible to create web-based, online registration forms that can be customised and linked to other sources of online information like postal/contact address databases. The custom design of web-based 'front ends' to a membership database can greatly reduce the cost of membership database maintenance and increase the accuracy of membership database data and information.

Verification of whakapapa

Question 27 *How are members validated as iwi members?*

(a) We currently do not have a validation process
(b) Applicants provide information about their whakapapa
(c) Applicants provide information about their whakapapa supported by a Kaumaatua
(d) Applicants provide land registration information
(e) Other (please specify) e.g. birth certificate drivers licence etc

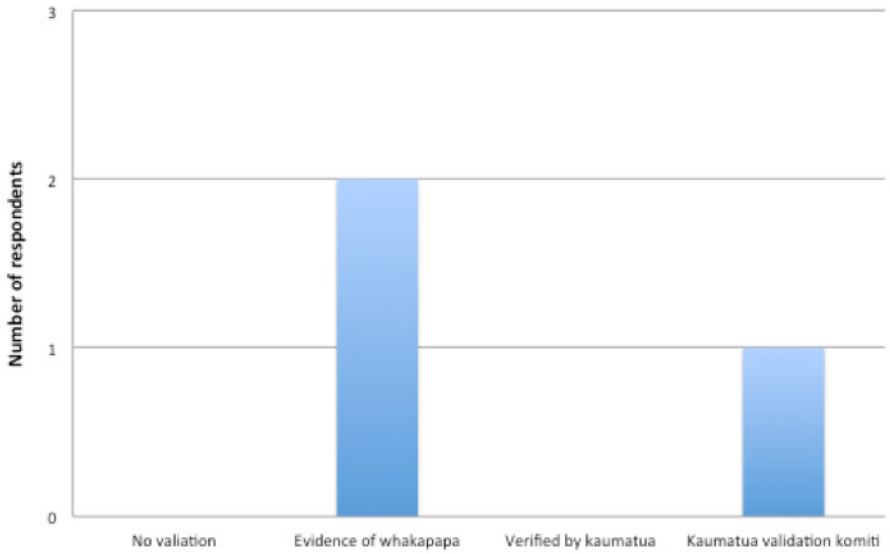

Figure 22 *A bar graph showing preferences for methods of whakapapa verification associated with the current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Preferences for verifying membership whakapapa differ from one rōpū to another (Figure 22). Recent developments in technology can be used to customise, streamline and reduce the inconvenience and time associated with preferred verification methods/protocols. This is an innovation that can be designed and added during membership database creation or to existing membership databases.

Type of address information

Question 28 *Please indicate which of the following best describes the address information that you seek to capture as part of the registration process.*

(a) We do not keep address information
(b) We aim to obtain a (contactable) home or postal address for the applicant
(c) We aim to obtain a (forwarding) home or postal address for the applicant
(d) We aim to obtain an international home or postal address for the applicant
(e) We aim to obtain an address for the applicant's marae
(f) We aim to obtain an address for the applicants supporting Kaumaatua

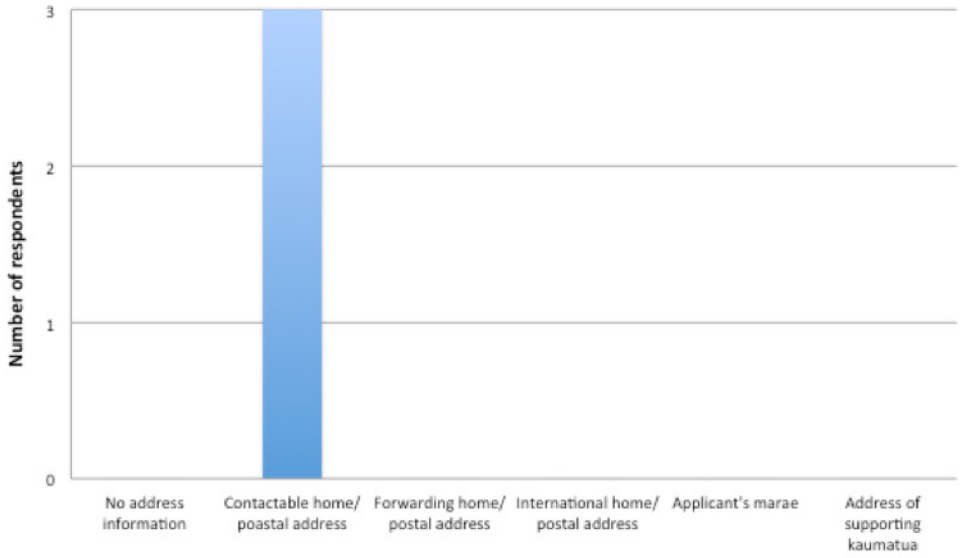

Figure 23 *A bar graph showing preferences for different types of address information used in current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Accurate contact information (Figure 23) largely determines the utility of a membership database. A factor that tends to greatly impact on maintaining accurate contact information is the increasingly transient nature of the New Zealand population. It is not unusual for home owners and those with rental accommodation to move to a new house once every 2–3 years. Unfortunately, a rapidly increasing number of our whānau are unable to find and maintain stable accommodation. When a membership database contains 10,000 plus records, there can be considerable, ongoing cost associated with attempts to manually update and maintain contact information.

Use of PAF address API

Question 29 *Do you use a system to keep this information accurate or automated (e.g. PAF, other).*

(a) Yes

(b) No

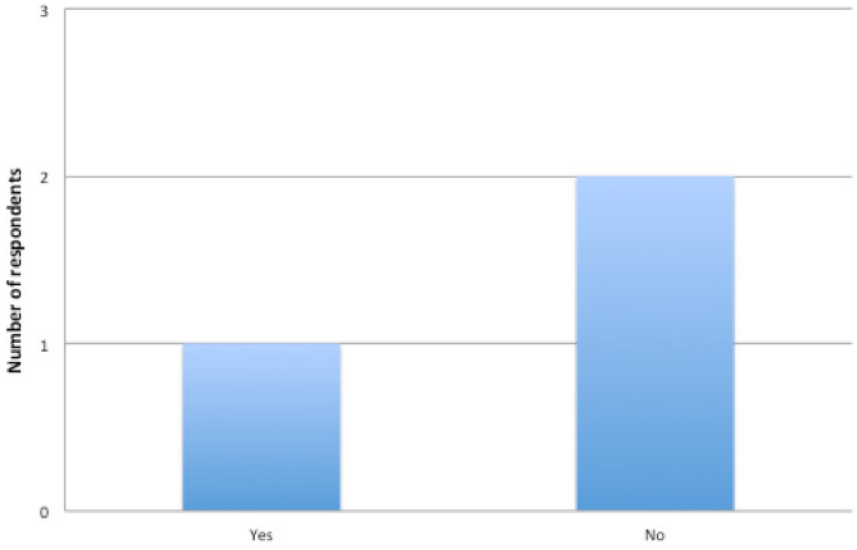

Figure 24 *A bar graph showing preferences for different types of address information used in current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

The emergence of new online contact and postal information services like PAF[3] – which is New Zealand's most up-to-date, national database on addresses – can be used to greatly reduce the time and cost associated with maintaining contact information (Figure 24). Once again, online services like PAF can be added to the design of new

[3]Postal address file

Contact information

Question 30 *Please indicate which of the following best describes the contact information that you seek to capture as part of the registration process.*

(a) We do not keep contact information
(b) We aim to obtain a (contactable) home phone number (i.e. a landline)
(c) We aim to obtain a personal mobile phone number
(d) We aim to obtain a (contactable) email address
(e) We aim to obtain social media information (e.g. facebook, LinkedIn)
(f) We aim to obtain relevant contact web-addresses
(g) Other (Please specify)

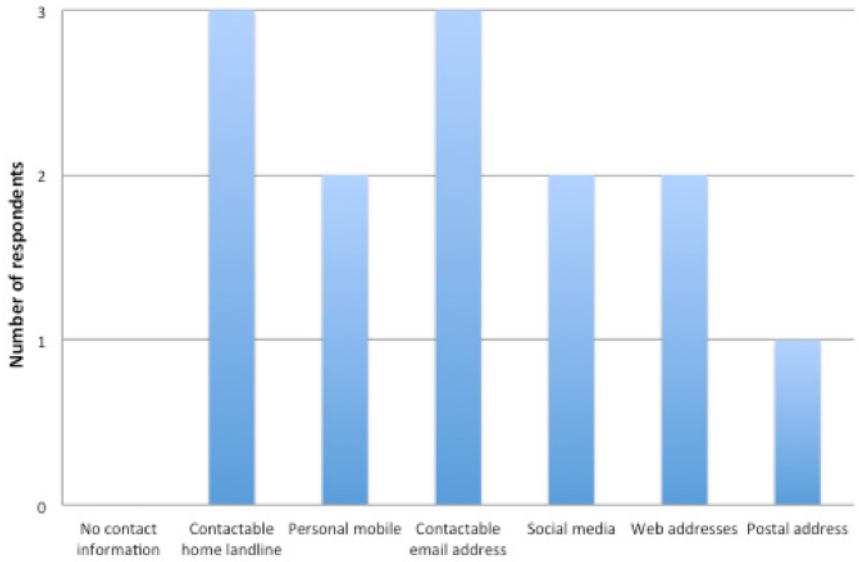

Figure 25 *A bar graph showing preferences for the use of different types of contact information in current Māori membership databases of our 13 Te Rere Kāhui survey respondents*

Figure 25 shows that our Te Rere Kāhui pilot survey respondents employ a range of different methods to try and maintain communication with the members of their database. The existence of an increasingly transient population in New Zealand also presents a challenge for maintaining accurate address and contact information (i.e. landline, mobile, email etc). For a long time in New Zealand a landline phone and postal address were considered to be primary means of contact. However, the introduction and affordability of mobile phone and internet technology has dramatically changed this situation. Written letters have all but been replaced by email and many New Zealanders now choose to use mobile phones instead of landlines. However, while mobile phones and email are now generally recognised as replacements for written letters and landlines, some of our survey respondents indicated that social media may well be the next frontier in effective contact information.

Digital assets

Question 31 *Please indicate which of the following best describes the digital assets that an applicant is asked to provide as part of the registration process.*

(a) No digital assets are requested from the application (a paper based form is used)
(b) The applicant provides a photograph of themselves
(c) Personal identification documentation
(c) Parts or all of the application process are recorded (e.g. digital audio/video)
(d) The applicant provides a digital document to support their application
(e) Paper assets are digitally scanned

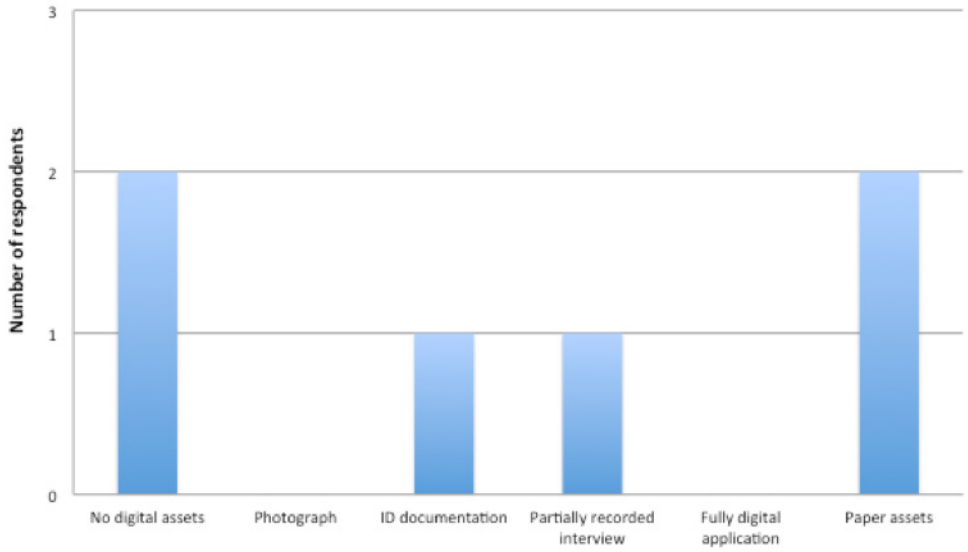

Figure 26 *A bar graph showing preferences for the use of digital assets in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Figure 26 provides a useful insight into the role of digital assets in the creation and use of membership databases by our Te Rere Kāhui survey respondents. The reference made to 'paper assets' seeks to indicate that hand written registration forms are scanned and stored in digital form. Digital assets are relatively easy to include in the structure of a membership database and given the low cost of disk drive (HDD), flash memory and cloud storage today there really is no reason why membership database design and development should not be enhanced with the use of differing digital assets (e.g. photographs, video, audio, maps, digital documents etc). Digital assets can add substantial value to an information system of this kind, especially by helping to capture dimensions of a Māori perception of reality that cannot easily be recorded in written form.

Storage of personal information

Question 32 *Please indicate which of the following best describes the way that personal information that is provided as part of the registration process is treated long term.*

(a) We do not keep any registration forms containing personal information
(b) We attempt to maintain both a digital and paper-based file system
(c) We digitally scan and/or securely archive all registration forms
(d) Our registry is based on a digital file management system of scanned documents
(e) We manually transfer all information from paper forms to a digital format

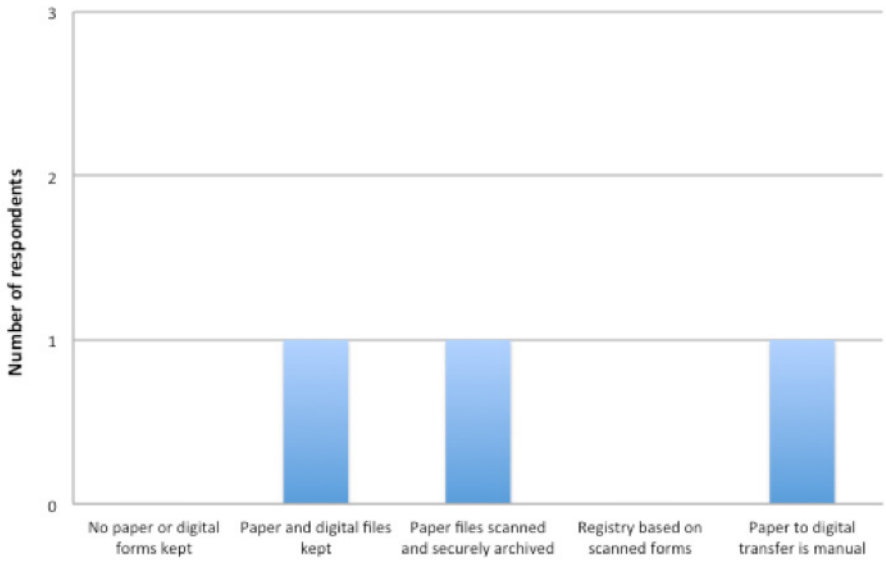

Figure 27 *A bar graph showing preferences for different methods of storing personal information in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Membership database development has always been associated with different methods of storing membership information (Figure 27). Paper based registration forms have been an important means of recording personal information since the development of the very first membership databases. For some rōpū tikanga Māori, a rather innovative use of paper forms concerned the construction of a membership database from scanned, paper, source documents. A limitation of this approach is that it was not easy to edit and change information. However, it did avoid the need for manual data entry from source documents to digital storage. Today, web-based registration forms are relatively easy to create and provide a more cost-effective means of both capturing and updating membership information that avoids tedious, manual data entry. In the education sector, some theorists are now suggesting that video, artificial intelligence (AI), virtual and augmented reality platforms will eventually replace the need to learn to read and write as we have done in the past. While this 'future' might seem hard for us to imagine today, with the speed at which disruptive technology is now reshaping our world, it is very likely that changes of this kind could well emerge within our lifetimes. Given this situation, it's important to expect and where possible anticipate, rapid, ongoing innovation and change in membership database development.

Method of updates

Question 33 *Please indicate which of the following best describes the way in which an applicant is able to provide you with information about changes in their personal information (e.g. contact details).*

(a) At present, we do not have provision for changes of this kind
(b) Complete and submit a paper form that provides a written record of changes
(c) Complete and submit a web-form that provides a written record of changes
(d) Log into a web-based user account and change their personal information

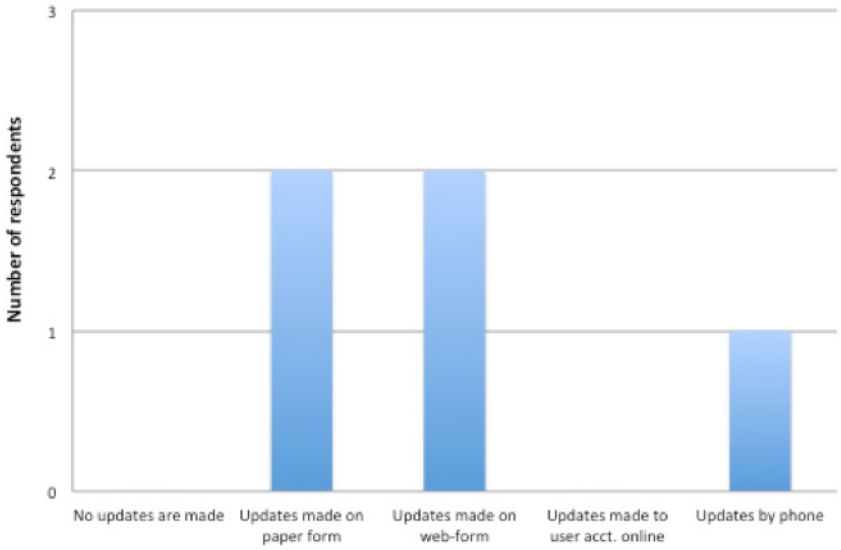

Figure 28 *A bar graph showing preferences for different methods of updating personal information in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

The task of updating membership information (Figure 28) in a database is arguably just as important as the goal of capturing it in the first place. Membership information changes over time and for a membership database to be practically useful as a support to decision-making and planning activities, membership information has to be kept up-to-date. The use of paper-based and telephone-based capture of update information has been an important way of keeping a membership database up-to-date in the past. However, this situation is rapidly changing. The use of web-based forms for data entry online, the use of membership accounts, links to real-time changes in government databases and social media accounts are some of the many ways that can now be employed to keep membership data – current. Because of the varied use of technology by our whānau, it is very unlikely that any one of these approaches will provide a comprehensive strategy for up-dating a membership database - entire. However, the ongoing adoption of these innovative technologies can assist in more effective data capture and updating in a way that assists in minimising the need for *manual data capture and entry.*

Database design

Question 34 *Please indicate which of the following best describes the design of the computer file system or database that you use as a Māori registry.*

(a) We use a flat file database model structure (i.e. each record has a unique ID)
(b) We use a hierarchical database model structure
(c) We use a relational or network database model structure
(d) We use tags or smart tags
(e) Other (please specify)

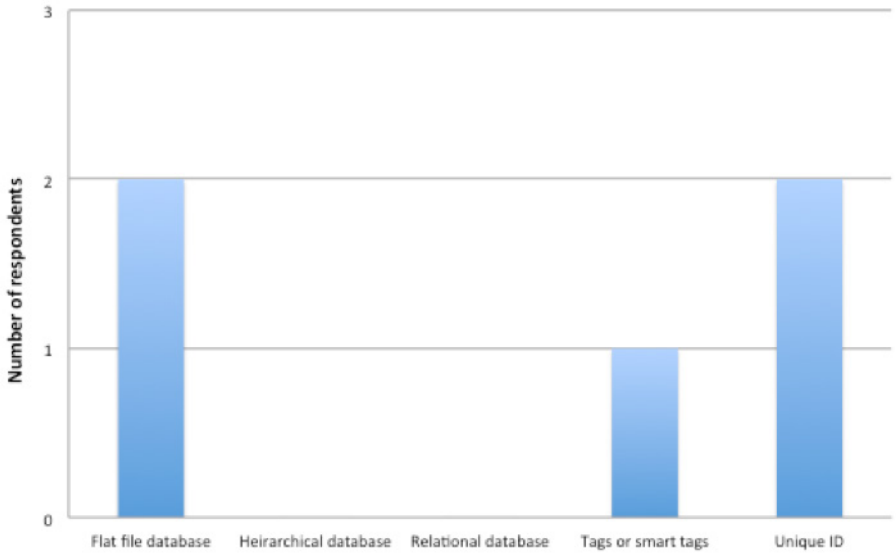

Figure 29 *A bar graph showing preferences for different types of database design used in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 34 in our Te Rere Kāhui pilot survey was an attempt to try and better understand to what extent membership databases had moved beyond the use of flat file and hierarchical data structure, tags and unqiue IDs (Figure 29). In the ongoing evolution of database design, relational database structure is probably one of the most recent innovations. While it can be costly and time consuming to create, a well-designed relational database can be a very powerful tool. One of the disincentives associated with the creation of relational databases in the past has been the ongoing cost associated with adding appropriate metadata to the digital information and assets that are added to a database. However, with the emergence of neural networks and machine learning, this situation is rapidly changing. It really is time to start thinking about relational database design as a default standard for future membership database design and development.

The end uses of raw data

Question 35 *Please indicate which of the following best describes what you do with the raw data in your Māori membership database.*

(a) We store membership database data as part of our legal compliance requirements
(b) We convert membership database data into tables and visual aids (e.g. graphs)
(c) We analyse membership database data to look for patterns and detect change
(d) We process membership database data using mathematical or statistical tools
(e) We use the membership database data in ways that 'add value' of benefit to our rōpū tikanga Maori members

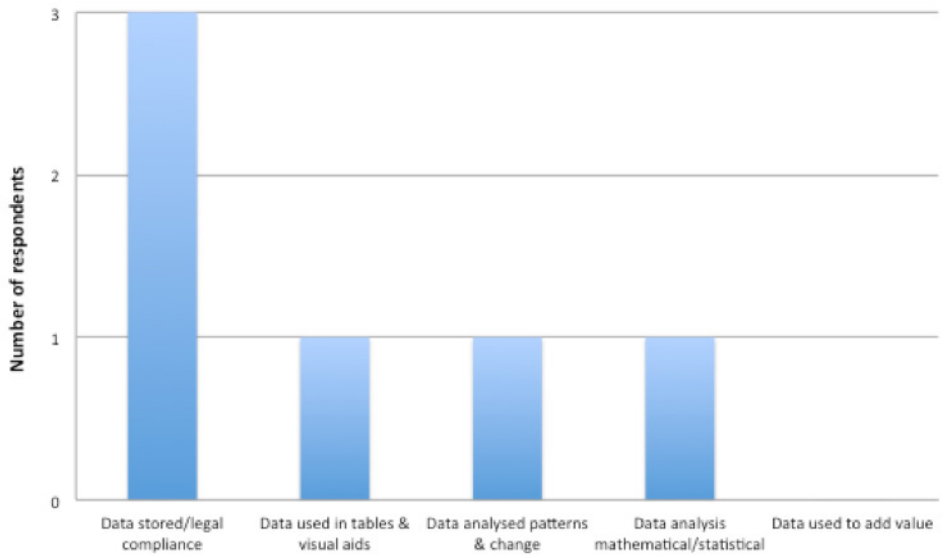

Figure 30 *A bar graph showing preferences for different end-uses of raw data in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

As is to be expected, Figure 30 shows that membership data is analysed and depicted in a range of different ways with the storage of membership information for legal compliance purposes still acknowledged as a key use. Technology now provides cost effective options for the digital storage and retrieval of membership information. A focus of current technology innovation is the creation of more powerful and effective analytical and synthetic tools that can be used to process digital information to aid decision-making, planning and policy development activities. There are already a wealth of such tools available and more are constantly being developed. Once again, it really is time to think about just how these rapidly emerging tools can be adapted in ways that (i) assist in adding value to the use of current membership databases and (ii) can guide the design and development of future membership databases.

Preferences for different end-uses of raw data

Question 36 *Please indicate which of the following best describes the way you or your organisation views a Māori membership database?*

(a) A collection of records
(b) An essential part of our oral history (e.g. Mātauranga)
(c) A legal compliance requirement
(d) A strategic asset
(e) An expression of kaupapa and tikanga

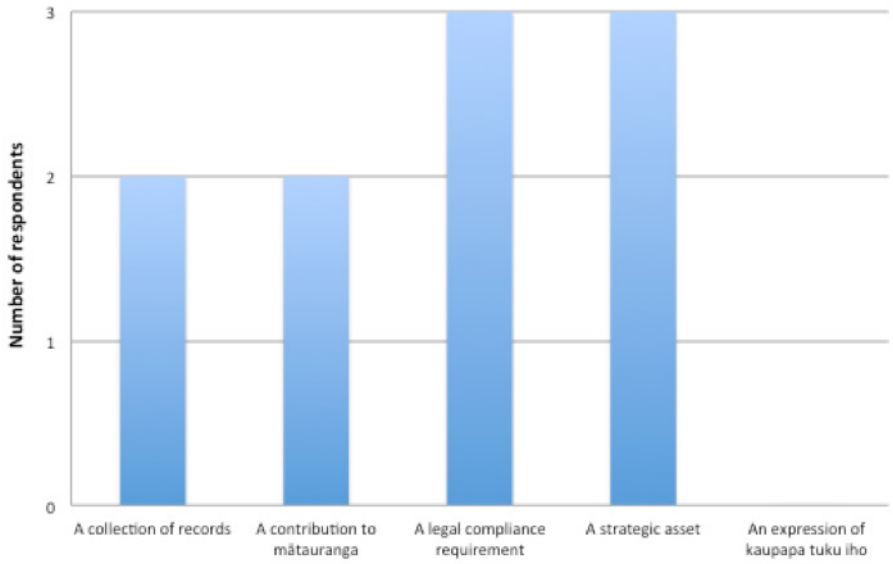

Figure 31 *A bar graph showing preferences for different end-uses of raw data in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 36 of the Te Rere Kāhui pilot survey provided an opportunity to express differing ideas about how existing membership databases were viewed (Figure 31). It is important to note that 5 multi-choice answers were potentially correct. For this reason, it is interesting that none of our survey respondents chose option (e) 'an expression of kaupapa and tikanga'. Ideally, the expression of kaupapa and tikanga provide unmistakable evidence of Māori cultural identity. Perhaps these results reflect the thinking of our time and the fact that membership database kaitiaki have not yet realised that a membership database can be built with the use of kaupapa-tikanga methodology. Given that Māori cultural survival is completely dependent upon the continued expression of Māori cultural values (i.e. kawa, kaupapa, tikanga), the adaptation and use of kaupapa-Māori methodology in membership database design, creation and development might be considered by rōpū tikanga Māori and Te Puni Kokiri as a strategic priority in terms of future investment.

Cultural protocols

Question 37 *Please indicate which of the following best describes your use of cultural protocols in the design of a Māori registration record system.*

(a) We have not created or used Māori cultural protocols
(b) We are currently developing Māori cultural protocols
(c) Our Māori membership database is an expression of kaupapa tuku iho
(d) Our Māori membership database is guided by tikanga
(e) Our Māori membership database is an expression of kawa

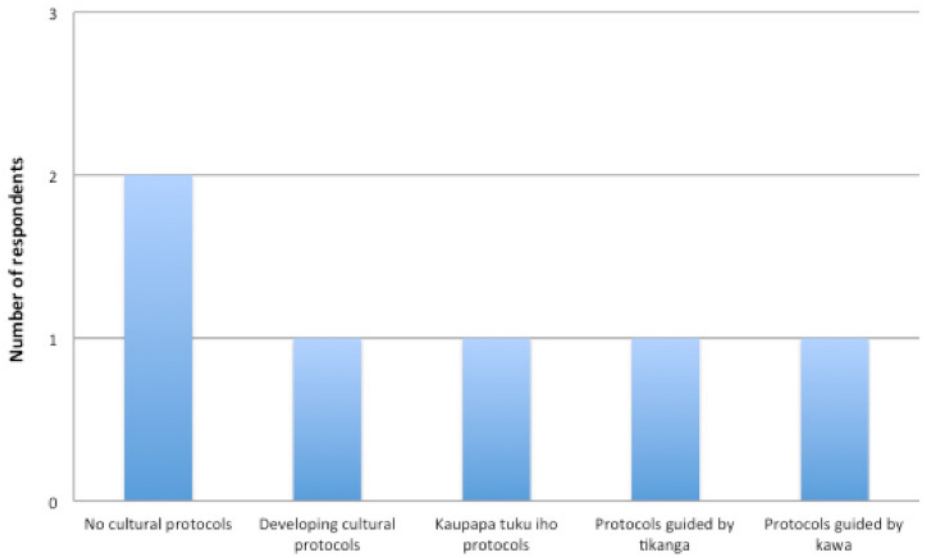

Figure 32 *A bar graph showing preferences for different cultural protocols in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 37 of the Te Rere Kāhui pilot survey probes a little beyond question 36 to better understand if 'protocols' (i.e. systems of rules that govern our behaviour) are used in the design phase of membership database development (Figure 32). One of our 3 survey respondents indicated that they were developing more extensive cultural protocols, but in the meantime, had drawn on kaupapa, tikanga and kawa to help guide the creation of membership database design protocols. This is encouraging to see. As noted in comment on question 36, there really is no reason why the design, creation, ongoing development and use of a membership database should not give effective expression to kawa, kaupapa and tikanga in every stage of its life cycle. In particular, this would include the expression of reciprocity to the community members who contribute to the membership database and who are its ultimate beneficiaries.

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Protocol creation process

Question 38 *Please indicate which of the following best describes the way in which you or your organisation went about creating Māori cultural protocols for use in building and using a membership database.*

(a) We did not follow any process
(b) Protocols were created by those who built the Māori membership database
(c) A team of rōpū members and/or researchers created the protocols
(d) We used hui or wānanga to collectively create protocols
(e) Our protocols were guided by Kaumaatua or pākeke

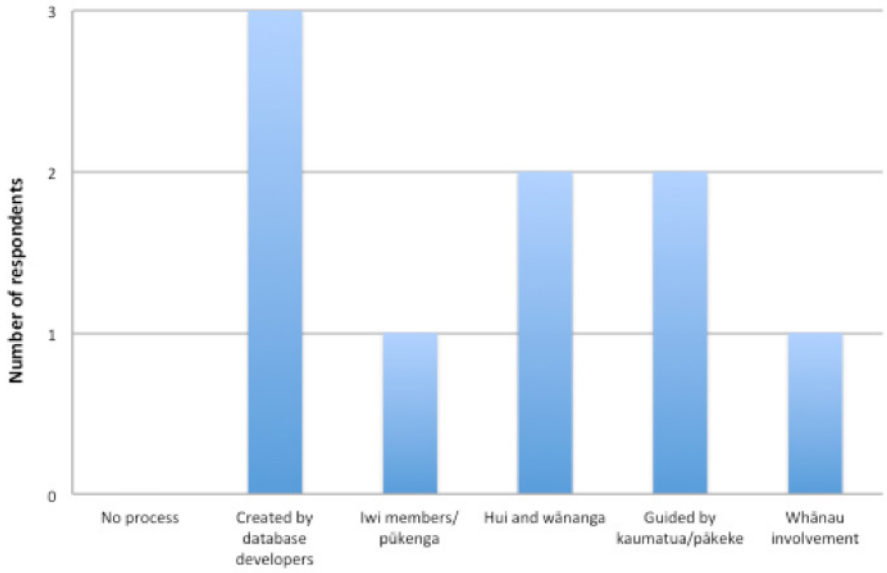

Figure 33 *A bar graph showing preferences for the use of different cultural protocol creation processes in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

In answer to question 38, all 3 Te Rere Kāhui pilot survey respondents indicated that the technical developers of their membership databases had played a significant role in the creation of the protocols that guided its creation and use (Figure 33). Survey respondents indicated that they had also created Māori cultural protocols with assistance from various rōpū tikanga Māori. This is entirely appropriate, especially given that whānau, hapū and iwi are, or should be, the ultimate beneficiaries of the use of the membership database. What is to be avoided is a situation in which the creation of a membership database becomes an end in its own right, and whānau, hapū iwi members become the means to this end. This can happen in ways that we might not immediately think of. For example, whānau members are encouraged to enrol. 10 years later, whānau members are wondering (i) what ever became of that membership database they were asked to give all of their personal information too, (ii) is their personal information safe and (iii) what was the purpose of the membership database because there seems to be no tangible benefit over the last 10 years. In this real-world example, those who built the membership database were so focused on its creation and use (i.e. the end) that they lost sight of their beneficiary community and the responsibilities they had to reciprocate, redistribute, maintain relationships and responsibilities.

Obtaining consent

Question 39 *When an applicant is providing information for your Māori membership database , please indicate which of the following best describes the way in which you provide them with information about what will happen to the personal information that they provide.*

(a) We did not provide any information

(b) We provide written or oral information

(c) The applicant is required to indicate that they 'understand and agree' with clearly written or orally communicated terms and conditions of data use

(d) We assume that our whānau members will be okay with whatever we decide to use their personal information for

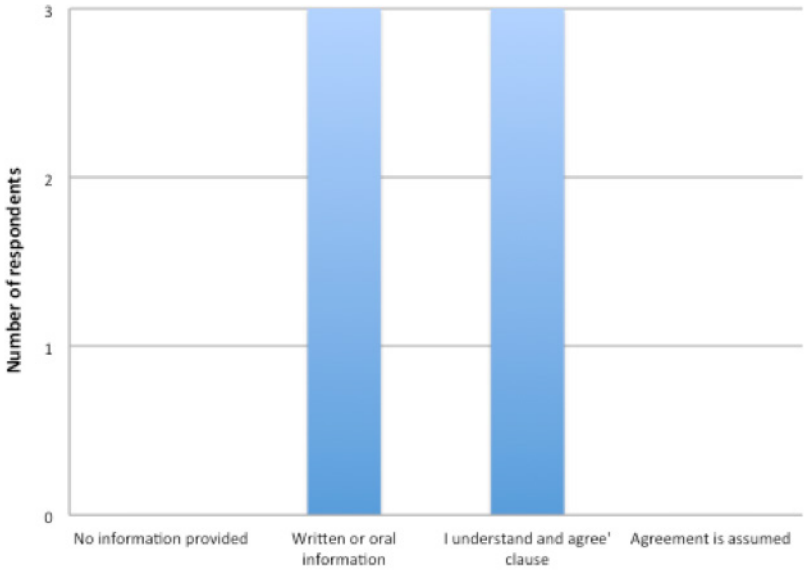

Figure 34 *A bar graph showing preferences for different approaches to obtaining data–use-consent in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 39 of the Te Rere Kāhui pilot survey probes a little beyond question 38 to better understand to what extent membership database creation processes actually provide adequate information to members concerning their legal rights in sharing personal information and what will happen to the personal information that they provide (Figure 34). All 3 survey respondents have indicated that oral/written information is provided and that an 'I understand and agree' clause is used to affirm that due process has been followed. While this procedure is good as far as it goes, it is important to recognise that membership preferences and permissions can change. For this reason, it is also important to provide members information on how they can apply to have changes made to their past permission status. With current web-based technology, an easy way to accomplish this goal is to provide an online interface that members can use to change their permission status.

Consent for 'change of use

Question 40 *Please indicate which of the following best describes the way in which you communicate with your rōpū members about ongoing changes in the way that you desire to use their personal data that are not covered under the terms and conditions of an earlier disclosure statement.*

(a) We do not have any process for dealing with changes of use
(b) We are currently working on the design of such a process
(c) We asked our members to sign a new consent form
(d) We provide our members with up-to-date information on a regular basis
(e) We use web-based APIs to provide information and update consents
(f) We make changes to the written 'terms and conditions' on our web-site

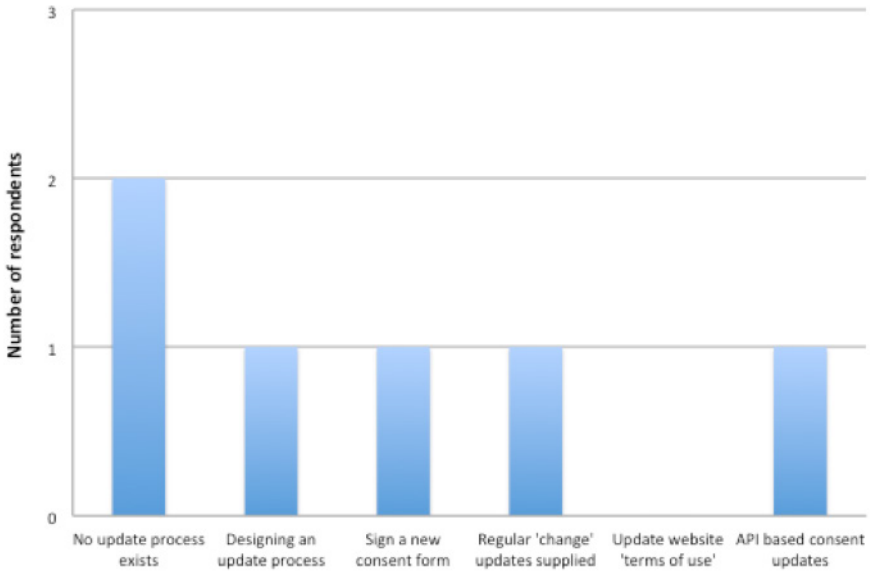

Figure 35 *A bar graph showing preferences for different approaches to obtaining consent for 'change-of-use' in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

In reply to Question 40 of the Te Rere Kāhui pilot survey, 2 of our survey respondents indicated that no process existed for obtaining consent from members for 'change-of-use' (Figure 35). One respondent indicated that a range of strategies were used while another indicated that such a process was currently being designed. Change-of-use requests should be included in regular communication with the members of a membership database. This is actually important in maintaining 'high levels of trust', without which the long-term maintenance of a membership database is actually not possible. This is because, membership databases only exist by the collective consent of the members. The kaitiaki of a membership database are part of a mutually mana-enhancing relationship that can best be maintained by the ongoing expression of kaupapa-tuku-iho and in particular - manaakitanga. The need for regular communication need not be a burden. There are many ways that technology can be used to assist in implementing a really effective communication strategy with members that is respectful of their particular communication preferences.

Data sovereignty

Question 41 *Please indicate which of the following best describes the way in which you give expression to 'rangatiratanga' (i.e. data sovereignty) over your Māori membership database.*

(a) We do not have policies regarding the expression of rangatiratanga
(b) We have written policies that clearly state who has access to what types of data
(c) Our computer hardware including off-site cloud or VPN storage is located in NZ or in house
(d) Our computer hardware including of-site cloud or VPN storage is only ever serviced by technical staff who whakapapa to our iwi
(e) We depend heavily on data security protocols in order to maintain sovereignty over our data

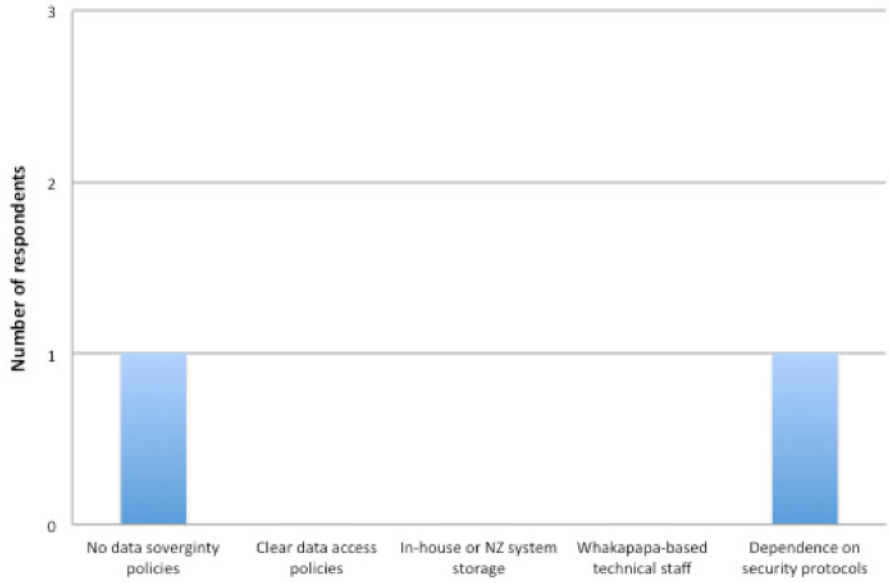

Figure 36 *A bar graph showing preferences for the expression of data sovereignty in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 41 of the Te Rere Kāhui pilot survey provides some common examples of data sovereignty practices, but by no means the only ones. The results depicted in Figure 36 indicate that our Te Rere Kāhui pilot survey respondents are probably not yet fully aware of the complicated tangle of issues, questions and problems associated with the goal of Māori being able to exercise fully sovereignty (cf. tino rangatiratanga) over the digital data and information that rightfully belongs to them. It is unlikely that this is an aspect of the digital revolution that individual rōpū tikanga Māori will be able to satisfactorily and completely resolve by themselves. The matter of Māori data sovereignty really needs collective intelligence, the expression of kotahitanga and urgent resourcing from central Government to address.

Out-of-date data

Question 42 *Please indicate which of the following best describes how many members, as a % of all members in your membership database , have out-of-date information? (e.g. old postal address).*

(a) Less than 10 %
(b) 10 – 25 %
(c) 25 – 50 %
(d) 50 – 75 %
(e) 75 – 100 %

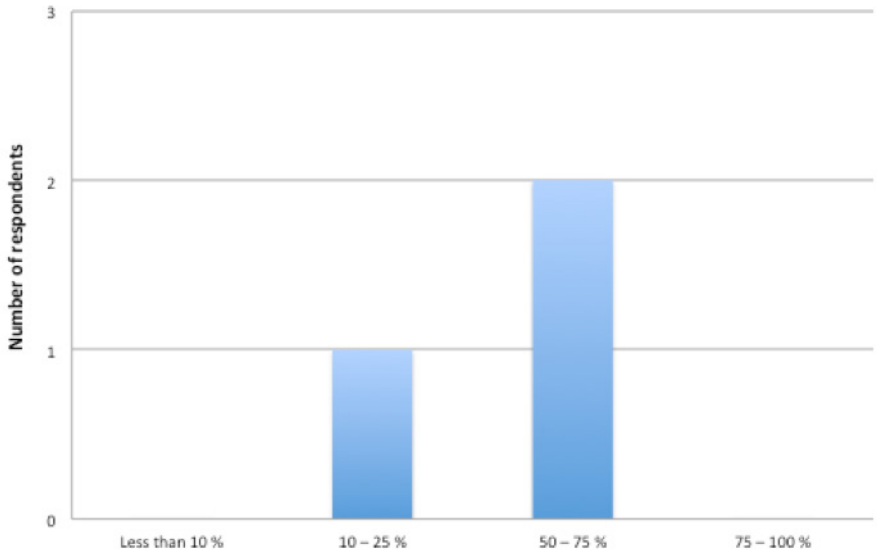

Figure 37 *A bar graph showing estimates for the amount of out-of-date data in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

As noted earlier in this report, the previous generation of Māori membership databases that were designed and created around the manual entry of data, can involve substantial cost to maintain. Figure 37 indicates that 50–75% of the data in the databases belonging to two of the respondents[4] of our Te Rere Kāhui pilot survey is out-of-date. The utility of such a membership database is greatly diminished when it has data and/or information that is out-of-date to this extent. The good news is that technology now provides a number of different remedies that can be used to address this problem both in the short-term and long-term. In particular, social media and existing government datasets can be used to assist in quickly updating contact information while the redesign of membership database architecture can assist in automating the tasks of verifying and updating contact information long-term.

[4] Representing 12 of 13 rōpū tikanga Māori affiliates involved in this study

Downloadable forms

Question 43 *Are any of your registration or grant application forms available for download online?*

(a) Yes

(b) No

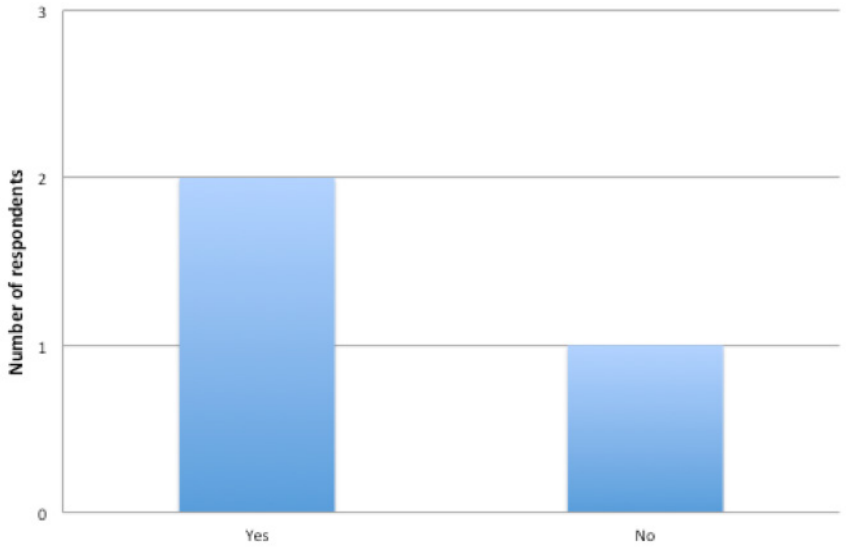

Figure 38 *A bar graph showing preferences for the use of downloadable forms in the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

A simple extension of the previous generation of membership databases can be made by making provision for downloadable pdfs with interactive form fields. This type of downloadable form provides the best of both worlds (i.e. the ability to enter digital information or print and complete in writing). Two of the respondents[5] of our Te Rere Kāhui pilot survey have membership databases that already make use of downloadable forms (Figure 38). This simple modification can be used to good effect to extend the life span of existing membership database information systems. The next development step beyond digital forms involves the creation of a web-based membership database that has online forms linked directly to the membership database. Web-based information capture can completely eliminate the need for manual data entry.

[5] Representing 12 of 13 rōpū tikanga Māori affiliates involved in this study

Level of registry staffing

Question 44 *Number of registry management team members.*

(a) Less than 1 FTE
(b) 1 FTE
(c) 2 FTE
(d) 3 FTE
(e) 4 FTE
(f) 5 FTE
(g) 6 FTE
(h) More than 6 FTE

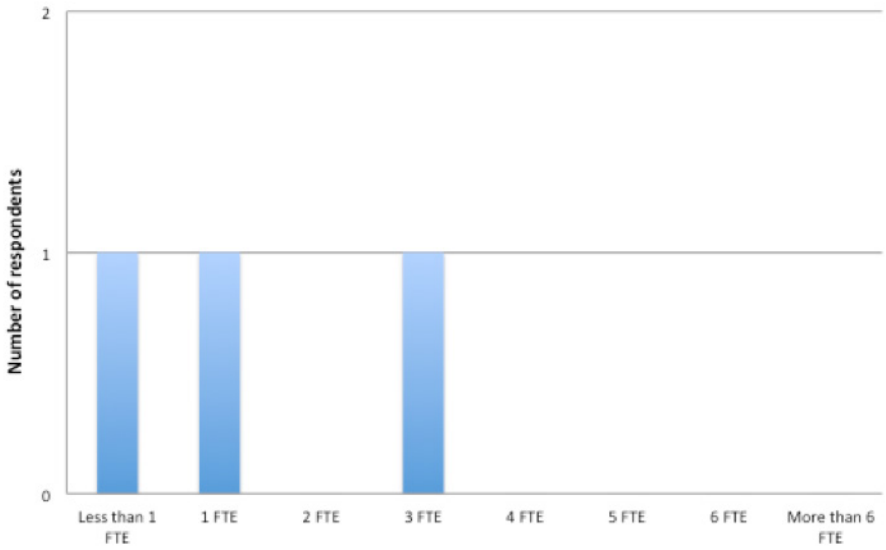

Figure 39 *A bar graph showing data associated with levels of registry staffing used to support current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 44 of the Te Rere Kāhui pilot survey provides an insight into the level of staffing that is being used to support membership database development, maintenance and use (Figure 39). There is an interesting relationship between membership database size/complexity and the employment options it provides. This relationship ideally needs to be explored as part of the design process associated with the creation of a 'business case' or 'value proposition'. A small, simple membership database that can be maintained by minimum staff is not necessarily the 'business case' that will add greatest benefit (cf. value) to beneficiary communities (i.e. whānau, hapū, iwi or rōpū tikanga Māori). While a more complex membership database will cost more to create, it will also create more employment and educational opportunities, while the benefits it creates for Māori communities can actually be exponentially greater. It is important to include technical advisors on a membership database planning team who can assist rōpū tikanga Māori in scoping out a broad range of development pathways and showing how development options can be stair-cased.

Future use goals

Question 45 *How many other users would you like to access your current registry information system, no matter what permissions they might have?*

(a) 5-10
(b) 10-100
(c) 100-1000
(d) 1000-10,000
(e) 10,000 plus

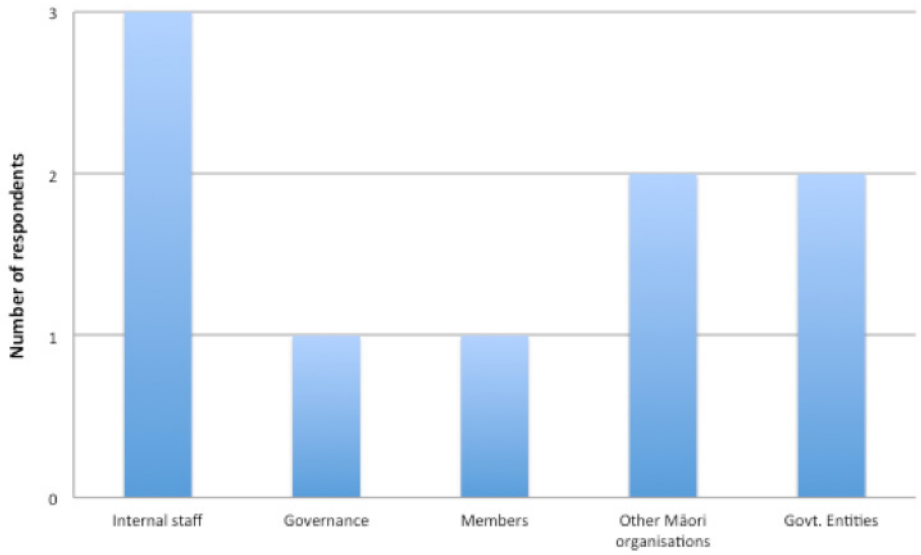

Figure 40 *A bar graph showing aspirations for the future use of data associated with current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 45 of the Te Rere Kāhui pilot survey provides an insight into the aspirations of our survey respondents concerning options for future data use (Figure 40). It is certainly possible to achieve the aspirations depicted in Figure 40 given the current state of technology. These outcomes can be achieved in away that makes it possible for rōpū tikanga Māori to maintain control over what they allow membership database end-users to have access to. What is a more difficult problem to solve is the question of how to maintain data sovereignty once data and information has been released, beyond the confines of hapū and iwi whakapapa. Thus, while technically possible, the desire to share needs careful consideration and the formation of a team of technical and academic advisers who can assist whānau in the adaptive creation of best practice policies and protocols that guide activities of this kind.

What works really well?

Question 46 *In your current information system, what features and/or functions work well and you'd like to replicate as much as possible?*

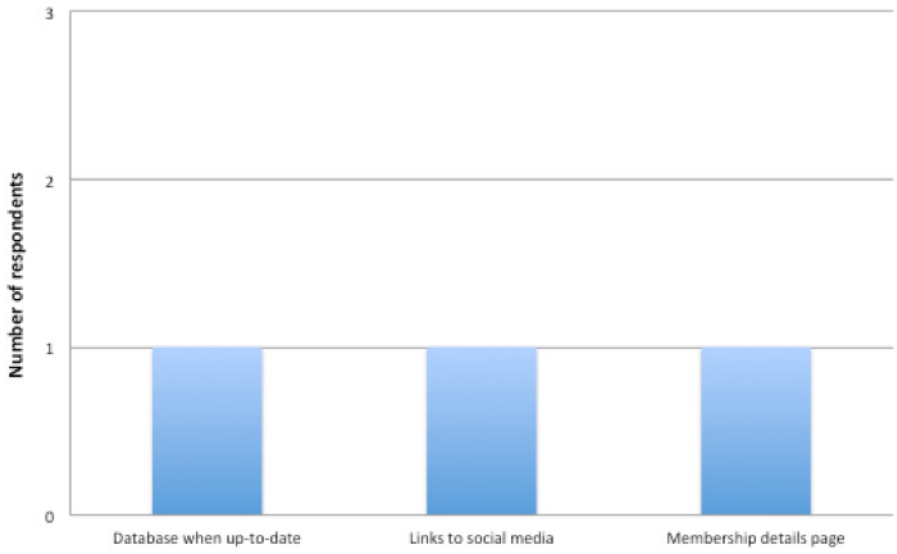

Figure 41 *A bar graph showing positive development pathway experiences associated with current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 46 of the Te Rere Kāhui pilot survey was an opened ended question that provided our survey respondents an opportunity to share with us experiences and/or membership database design features that had worked well (Figure 41). Our respondents feedback included 3 key ideas: (i) when up-to-date their membership database works well, (ii) links to social media had provided a really effective means of keeping in touch with whānau and (iii) the use of a membership details page. In a future survey, it would be helpful to focus more attention and time on recording positive and not-so-positive experiences so that we can begin to characterise different development pathways and better assess the net benefits they are capable of delivering. This survey strategy may also assist in identifying practices that involve differing levels of risk and those somewhat unintuitive practices that produce beneficial results. It would be really helpful to have a membership database forum where experiences and also questions could be collectively shared among the community of kaitiaki who currently have responsibility for Māori membership databases.

Member grants and payments

Question 47 *Do you provide grants/payments/sponsorships to members?*

(a) Yes

(b) No

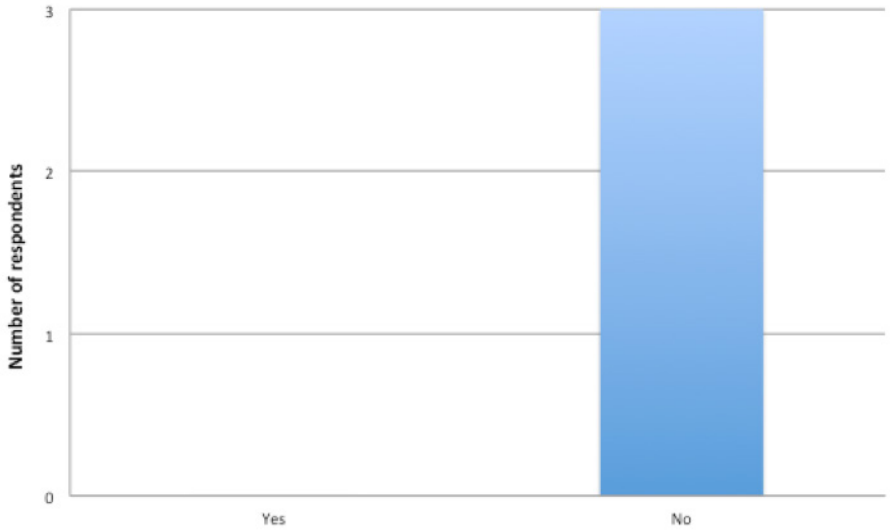

Figure 42 *A bar graph showing preferences for the use of current Māori membership database builds of our 13 Te Rere Kāhui survey respondents to facilitate member grants and payments*

Question 47 of the Te Rere Kāhui pilot survey (Figure 42) was intended to assess to what extent the current generation of membership databases were linked to differing financial management tasks. Technologically speaking, such a membership database goal is certainly possible, even though the membership databases of our survey respondents have not focused on this goal with respect to database members. Question 48 provides an elaboration of this same question.

Non-member/group grants and payments

Question 48 *Do you provide grants/payments/sponsorships to non-members or groups?*

(a) Yes

(b) No

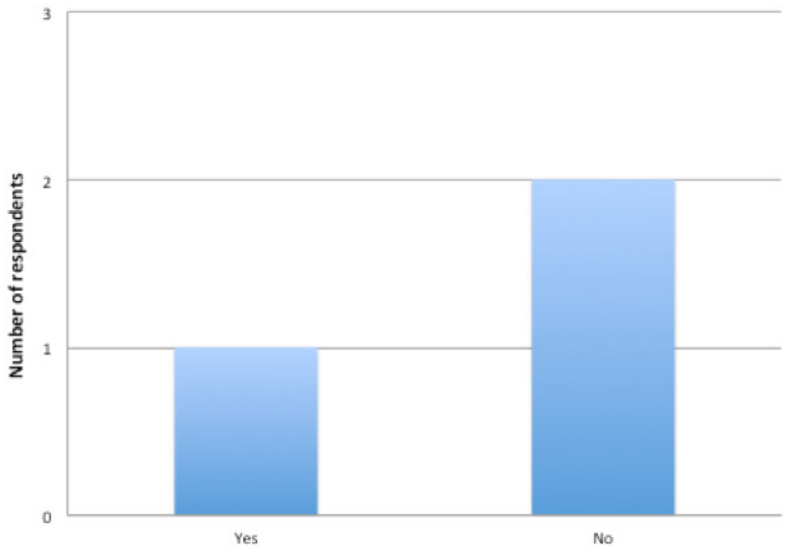

Figure 43 *A bar graph showing preferences for the use of current Māori membership database builds of our 13 Te Rere Kāhui survey respondents to facilitate non-member grants and payments*

Question 48 of the Te Rere Kāhui pilot survey (Figure 43) extends the scope of question 47 into the domain of non-membership and groups. One of our survey respondents indicated that their membership database was being used for such payments. Because dividends are not paid from Treaty settlement monies, it seems quite likely that in the future we will increasingly see membership databases being used to administer financial and non-financial benefits to members. As noted in comment on the results of question 47, there is no valid technological reason why this aspiration could not be operationalised as an integral part of future membership database design.

Iwi marae member grants and payments

Question 49 *Do you provide payments to Iwi Marae?*

(a) Yes

(b) No

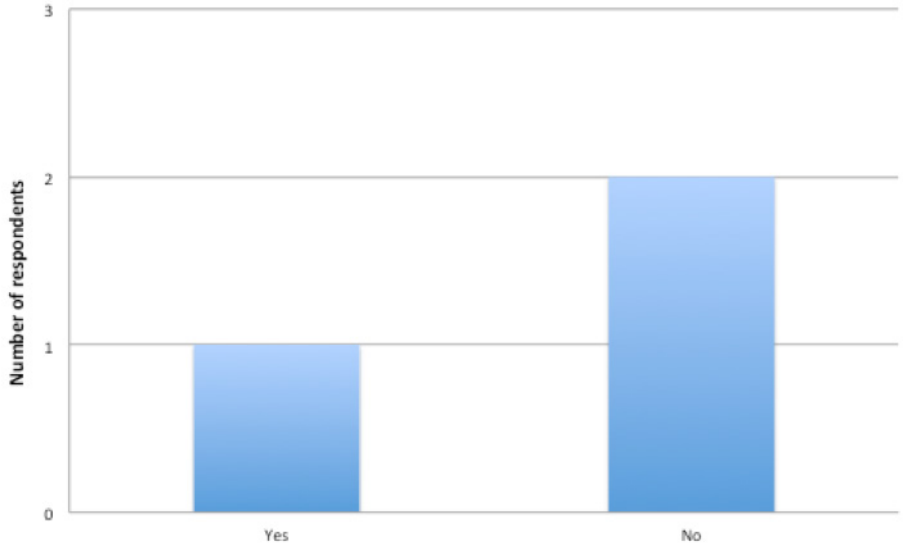

Figure 44 *A bar graph showing preferences for the use of current Māori membership database builds of our 13 Te Rere Kāhui survey respondents to facilitate iwi marae grants and payments*

Question 49 of the Te Rere Kāhui pilot survey (Figure 44) extends the scope of questions 47–48 into the domain of iwi marae. One of our survey respondents indicated that their membership database was being used for such payments. Because dividends are not paid from Treaty settlement monies, it seems quite likely that in the future we will increasingly see membership databases being used to administer financial and non-financial benefits to iwi marae and other rōpū tikanga Māori. As noted in comment on the results of questions 47, there is no valid technological reason why this aspiration could not be operationalised as an integral part of future membership database design.

Onsite IT support

Question 50 *Do you have an onsite IT support person or team?*

(a) Yes

(b) No

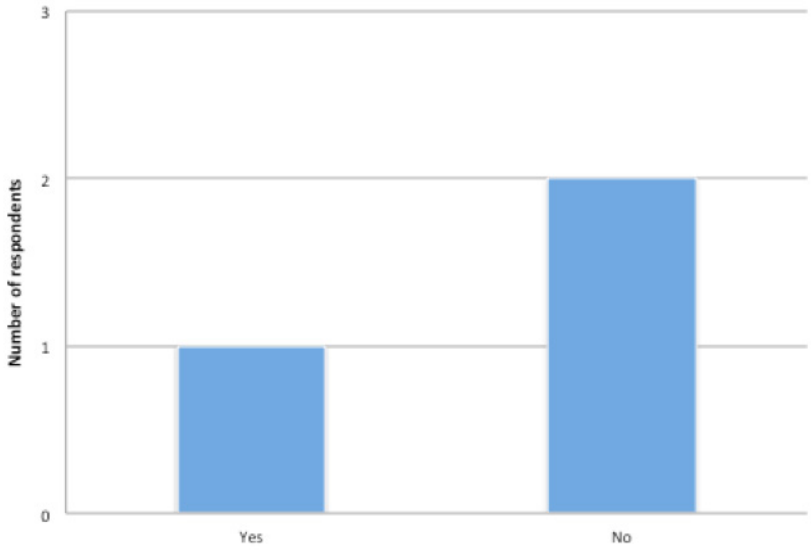

Figure 45 *A bar graph showing preferences for the use of onsite IT support for current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

The choice to acquire onsite IT support needs to be carefully assessed, but on balance, there can be real advantages in having an onsite IT support person or team as an integral part of a membership database project (Figure 45). Technically, onsite IT support have the opportunity to grow an intimate knowledge of a membership database and the infrastructure that supports it. Thus, when problems arise, those problems are likely to be far more easy to remedy. Onsite IT support can also provide ongoing access to a breadth of technical knowledge that can prove to be invaluable when it comes to protecting, maintaining, updating, developing and using membership database data and hardware. Finally, because of the way disruptive technology is rapidly redefining and reshaping business activities, we are quickly approaching a time when onsite IT support will be required as a standard part of a business staff team. For these reasons, onsite IT support should be carefully considered during the membership database design stage and in particular when it comes to creating a 'business case'.

Preferred Operating System

Question 51 *What operating systems do you currently run on your computers?*

(a) MacOS
(b) Unix/Linux
(c) Windows 7
(d) Windows 8
(e) Windows 10
(f) Other (please specify)

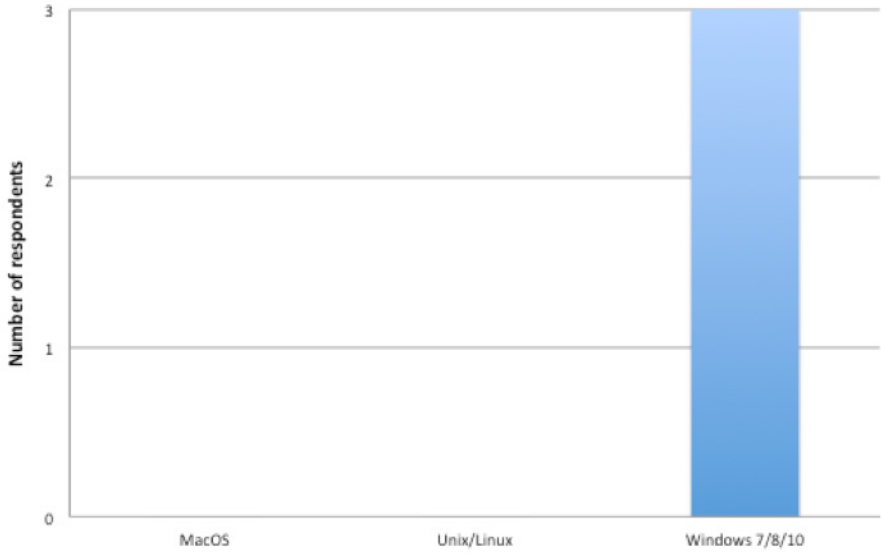

Figure 46 *A bar graph showing preferences for computer operating system used to run the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 51 of the Te Rere Kāhui pilot survey (Figure 46) was an opportunity to better understand the preferences that our survey respondents have for end user operating systems. During any design stage, the development of your database needs to ensure that it will work with the operating systems end users will use to access their membership database. If the database is designed to be a multi-platform (Windows, Linux, Apple OS) information system, the question of operating system should not matter. However, it is still an important question to ask.

Use of Microsoft Office Programs

Question 53 *Do you currently run Microsoft Office programs?*

(a) Yes

(b) No

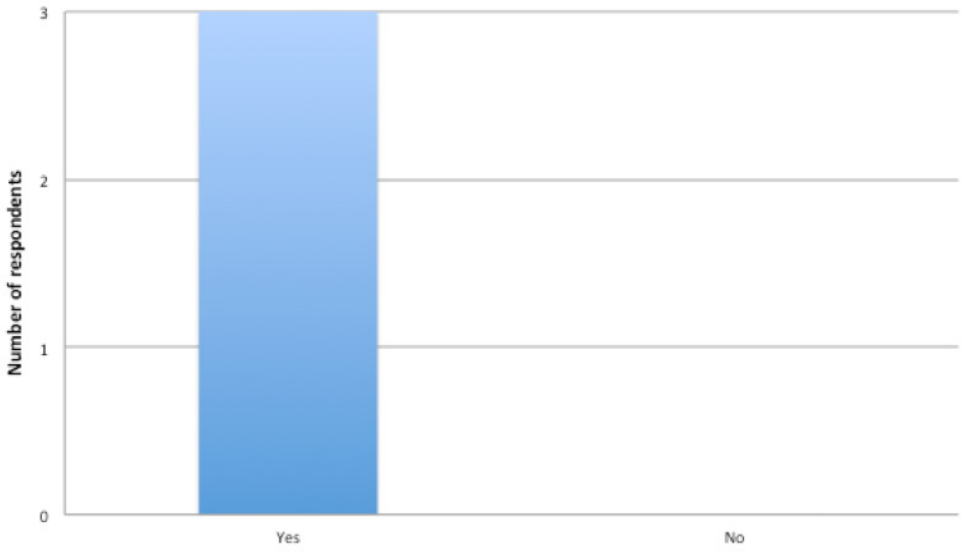

Figure 47 *A bar graph showing preferences for the use of Microsoft Office programs to support the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 53 of the Te Rere Kāhui pilot survey attempts to move beyond the preferred choice of operating system (OS) into the realm of supporting productivity tools. It really comes as no surprise to discover that Microsoft Office is a preferred productivity, software platform (Figure 47). It is also not unusual to still find membership databases in operation that were built using Microsoft Excel. While Microsoft Office has been a mainstay of business operations for a very long time, it is now possible to integrate essential productivity tasks associated with the development, maintenance and use of a membership database directly into cloud-based platforms. Design of this kind can save money, produce a more efficient work flow, offer greater security protection, improve system resilience and save time.

Internet access

Question 54 *How is your head office connected to the internet?*

(a) ADSL
(b) VDSL
(c) UFB

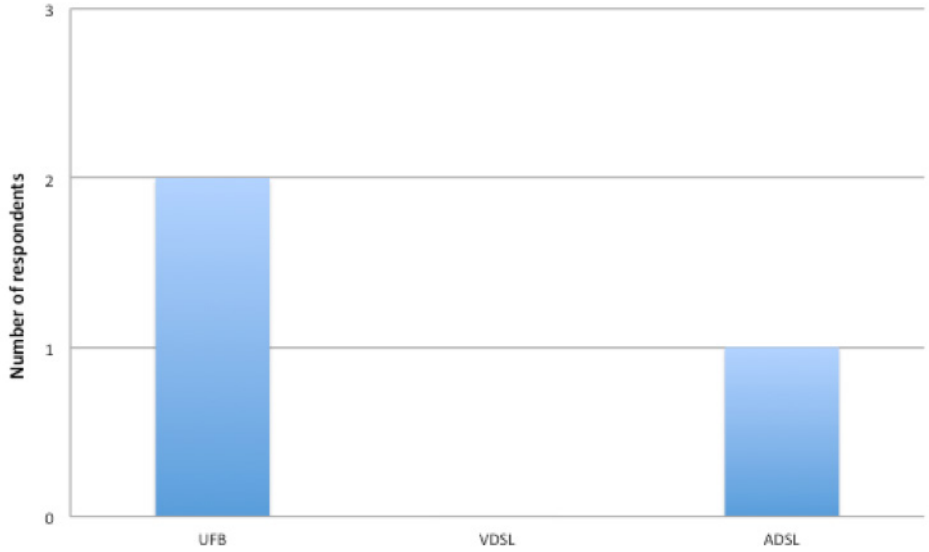

Figure 48 *A bar graph showing preferences for different types of internet access used to support the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 54 of the Te Rere Kāhui pilot survey seeks to measure the extent to which rapidly changing internet technology and services are being used to support membership database activities (Figure 48). The roll out of Ultrafast Broadband (UFB) is a game changer for New Zealand businesses. The availability of UFB and the promise of substantial speed increases over the next few years means that the kaitiaki of Māori membership databases will be able to more seriously consider the prospect of onsite data hosting, supported by offsite backups. Up until now, most online membership databases have been hosted by external internet services providers (ISPs). There are some definite advantages associated with onsite hosting including (i) the more effective expression of Māori data sovereignty and (ii) the ability to ensure that data security is managed in ways that give appropriate expression to kaupapa tuku iho. New and existing Māori membership database projects can now consider onsite hosting options as part of design and business development activities.

Internet speed

Question 55 *At what download and upload speed is that connection?*

(a) 30/10mbps
(b) 10/5mbps
(c)) Don't know

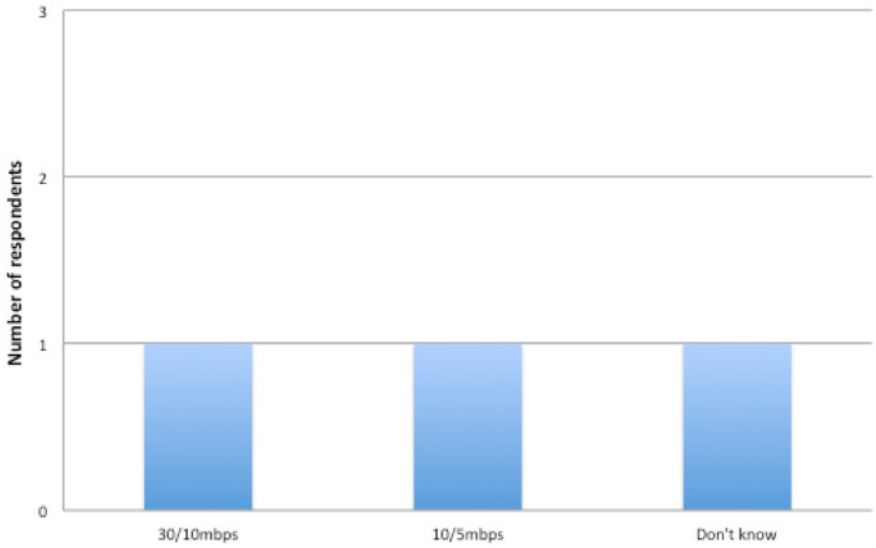

Figure 49 *A bar graph showing preferences for different types of internet plans used to support the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 55 of the Te Rere Kāhui pilot survey seeks to understand to what extent the rōpū tikanga Māori represented by our survey respondents are able to benefit from the use of their preferred internet connection type, in terms of data transfer 'upload and download speeds' (uds) – (Figure 49). The uds figures provided seem to be very conservative. Given these results, it might well be worth investigating the full range of internet service provider business plans that are available today. A great range of options exist and it might well be that it is possible to obtain much faster uds for the cost of current services that are, by todays standards – slow. This will need to be done (anyway) as the kaitiaki who are responsible for Māori membership databases seek to create and grow membership databases based on design that includes a wider range of wellbeing, analytical, reporting and strategic data management systems. The need to manage greater amounts of data over increasingly shorter time frames will require faster internet speeds and bandwidth.

Membership database member access to computer and internet

Question 56 *As best you understand, please indicate what percentage of your Māori membership database members have access to both a computer and internet connection in their home.*

(a) Less that 10 %
(b) 10 – 25 %
(c) 25 – 50 %
(d) 50 – 75 %
(e) 75 – 100 %

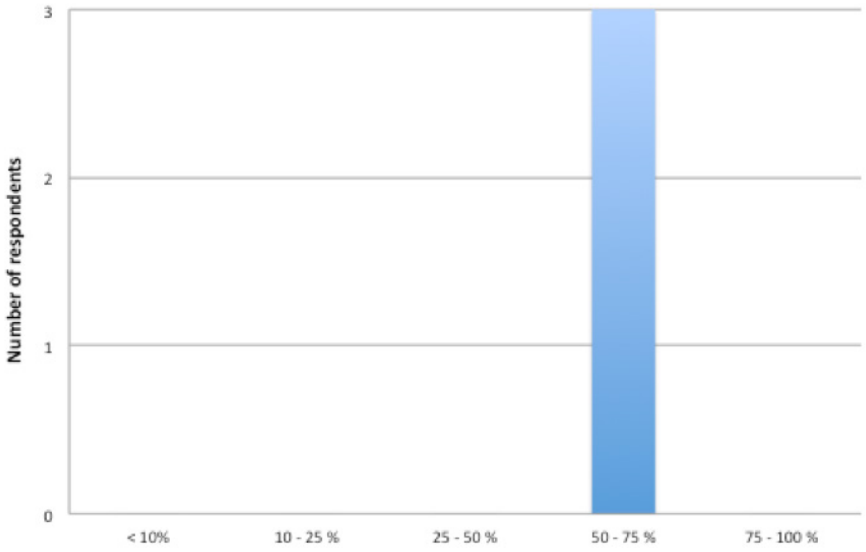

Figure 50 *A bar graph showing percentage of membership database member access to computers and internet as a pre-requisite for online engagement with the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Statistics NZ[6] suggests that across all age cohorts, 2.8M New Zealanders out of a current total population of 4.6M are connected to the internet (i.e. approximately 60% of the population). Based on this estimate of internet access, Figure 50 would seem to indicate that Māori membership database members are well-represented in terms of their access to the internet (and by implication of this, varied forms of computer technology). It would be helpful to have membership internet access count estimates by 5 year age cohort, because the likelihood of cohort variability is high. For example, in the New Zealand population (entire), 93% of the 15-24 age cohort has internet access whereas only 32% of the 75+ age cohort has internet access. Accurate age-cohort membership database data is valuable for planning purposes. In this case it would help to guide membership database design policies regarding online membership access to a membership database for updating their personal information, lodging funding applications and obtaining information.

[6]http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/yearbook/society/technology/connection.aspx

Adoption of best practice policies

Question 57 *Please indicate which of the following best describes your use of best practice policies and protocols for the creation of a Māori membership database?*

(a) We have not followed any best practice policies or protocols
(b) We are currently developing best practice policies or protocols
(c) We have followed best practice policies or protocols used by another organisation
(d) We created our own best practice policies or protocols based on published work
(e) Our best practice policies or protocols are based on years of experience

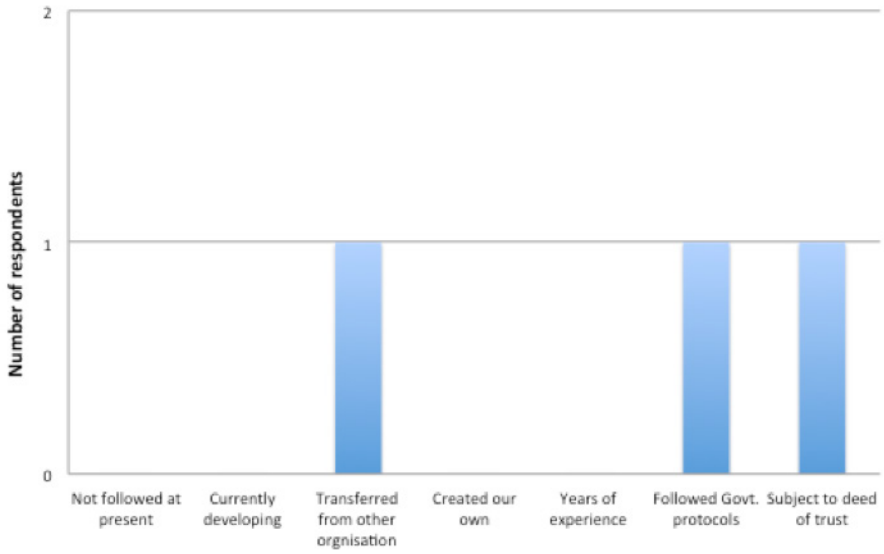

Figure 51 *A bar graph showing preferences for the adoption of best practice policies associated with the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 57 of the Te Rere Kāhui pilot survey (Figure 51) seeks to understand to what extent the creation, development, maintenance and use of membership databases is being informed by 'best practice'. A wealth of best practice information now exists in Government, academic and corporate publications. A very real challenge concerns the need to read through all this information, distil it down, understand best practice contexts and then formulate policies. This would involve a considerable amount of work that would be largely replicated by different Māori membership database providers. One of the aims associated with the Te Rere Kāhui was to help avoid investigative replication of this kind and to assist in creating a nationally informed dialogue around best practice.

Management policies and protocols

Question 58 *Please indicate which of the following best describes the use of best practice policies and protocols by management staff in your organisation.*

(a) In the past, best practice policies or protocols have not been a priority for management in our organisation
(b) Management are currently developing best practice policies or protocols
(c) Management draw on some best practice policies or protocols
(d) Management have well developed some best practice policies or protocols
(e) Our organisation has a kaitiaki whose fulltime job is to stay up-to-date and offer organisation guidance on best practice policies or protocols

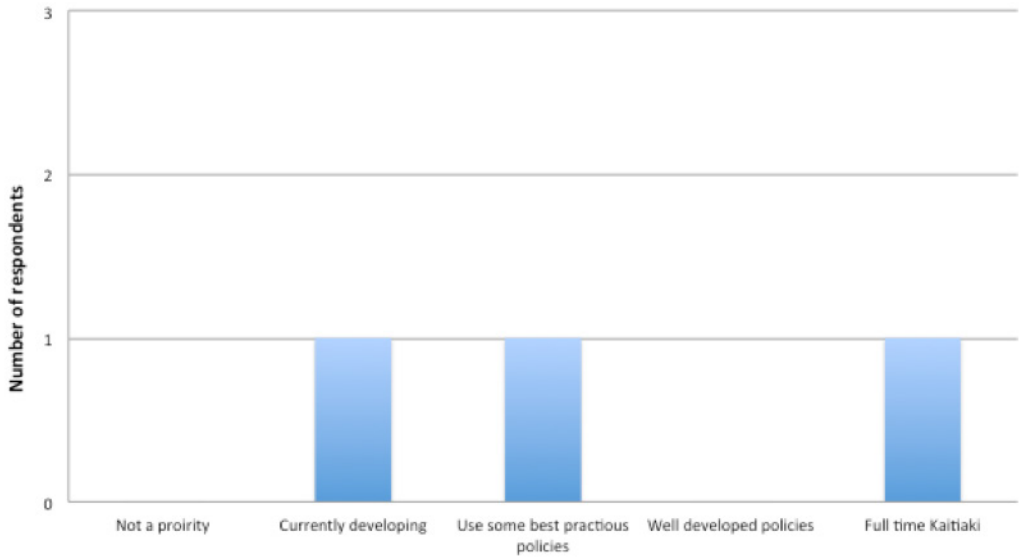

Figure 52 *A bar graph showing preferences for the adoption of management policies and protocols to support the current Māori membership database builds of our 13 Te Rere Kāhui survey respondents*

Question 58 of the Te Rere Kāhui pilot survey (Figure 52) seeks to assess current level of management commitment to the creation and use of best practice protocols. This question exists for at least key two reasons. First, because the investigation and creation of best practice policies takes time and costs money. Second, because such a project may not, in the short term, appear to yield immediate cost-benefit results, there is need for strategic, long term investment and thinking. For these reasons, the creation and implementation of best practice policies and protocols can be easily 'de-prioritised'. It is however important to keep in mind that while the creation and implementation of best practice can involve short term costs, it can also deliver long term benefits that well justify the upfront investment in this aspect of membership database design, creation and use.

Relevant legislation

Question 59 *New Zealand legislation provides guidance on the creation, ownership, storage, sharing and commercial use of data. To the best of your understanding, the creation and use of a Māori membership database falls under the jurisdiction of which of the following Acts of Parliament*?

(a) The Copyright Act
(b) The Official Information Act
(c) The Privacy Act
(d) The Public Records Act
(e) The Statistics Act

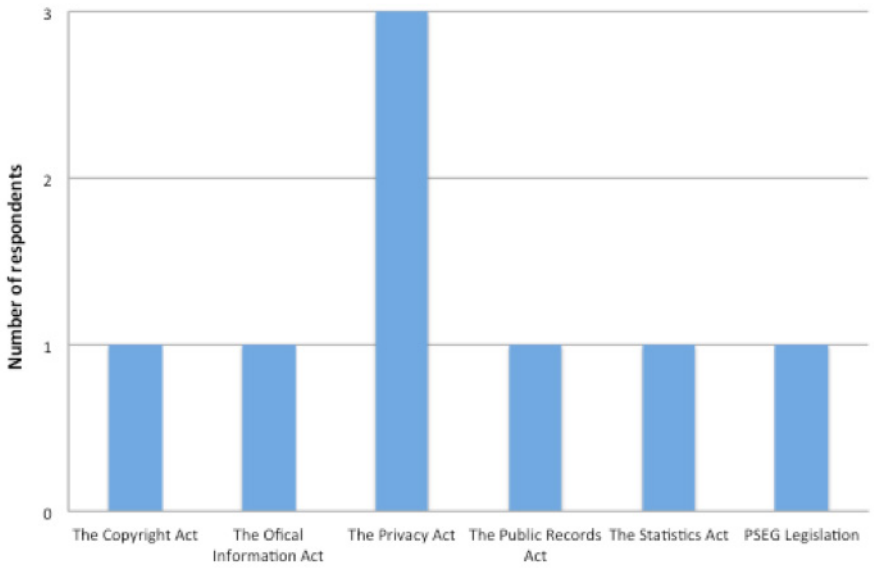

Figure 53 *A bar graph showing respondent understanding about the jurisdiction of differing legislation over Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

Question 59 of the Te Rere Kāhui pilot survey (Figure 53) seeks to assess the extent of current awareness of the jurisdiction of Government legislation over membership database activities. An ideal scoring for this question would have been for all of our survey respondents to select all answers. This is because all of these pieces of legislation have jurisdiction, of one kind or another, over the creation and use of membership databases. Once again, there would be considerable time and expense involved in the reading of these Acts as a basis for informing best practice in membership database creation and use. There is then the additional problem of correctly interpreting just how the law applies in differing contexts and circumstances. This may require expensive legal advice and consultation. An aim of the Te Rere Kāhui project is to raise greater awareness about the importance of legal compliance and explore ways in which collective dialogue and learning in this area can be shared.

Adding value to our membership database

Question 60 *Please indicate which of the following best describes the way in which your organisation views a Māori membership database in terms of its potential to create and add value to your whānau, hapū, iwi and perhaps New Zealand more generally.*

(a) We do not view our Māori membership database as a strategic asset

(b) We are currently seeking to better understand how our membership database might be used as a strategic asset that will add value to our people

(c) We are very aware of the strategic nature of our Māori membership database and have made some progress towards understanding how we can use it to create and grown value

(d) Our Māori membership database was envisioned, designed, created and implemented in a way that would fully capitalise on its potential to add value to our people

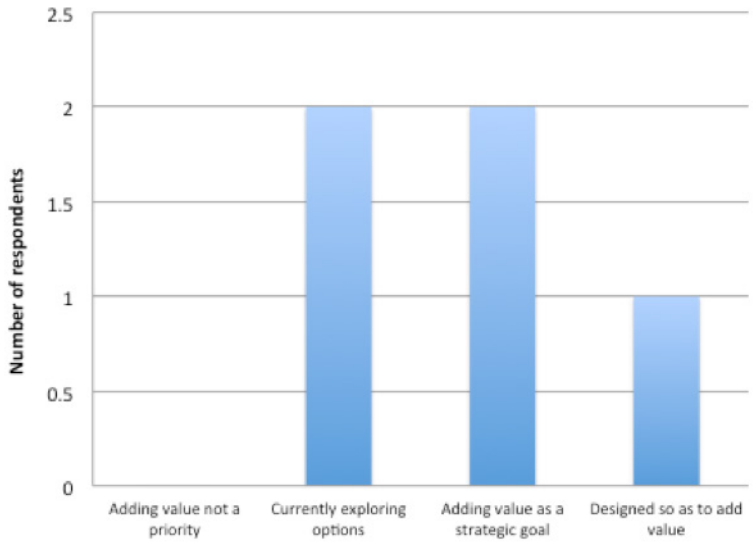

Figure 54 *A bar graph showing respondent aspirations to add value to current Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

Question 60 of the Te Rere Kāhui pilot survey (Figure 54) seeks to assess the extent to which existing membership databases are viewed as strategic assets rather than just a means to achieve legal compliance. While legal compliance is both necessary and important, potential now exists to think about membership database development from a kaupapa and tikanga design perspective. This means that membership databases could be used to measure, analyse and report on a much wider range of wellbeing areas and development outcomes of importance to rōpū tikanga Māori. In terms of the options depicted in Figure 54, the creation of a membership database as a strategic asset with the ability to add value to the activities of rōpū tikanga Māori can be achieved, but requires intentional design and strategic, adaptive development. Given current technology, this option is now available to every rōpū tikanga Māori.

Integrating Government Open Data

Question 61 *Please indicate which of the following best describes the experience of your rōpū tikanga Maori in building a membership database ?*

(a) We built our membership database from the ground upwards to completion

(b) We are currently seeking to understand how we can build our membership database in a way that makes full use of the New Zealand Governments emerging policy on open data

(c) We have been successful in making use of some Government data as part of the construction and design of our Māori membership database and this has saved us valuable time

(d) We intentionally designed our Māori membership database to make full use of Government's open data policy and this has made it possible for us to incorporate data, achieve higher levels of accuracy and add value to our membership database in a way that would otherwise not been possible

(e) We have made submissions to Government that clearly outline which Government datasets need to be prioritised as part of an emerging 'open data' policy

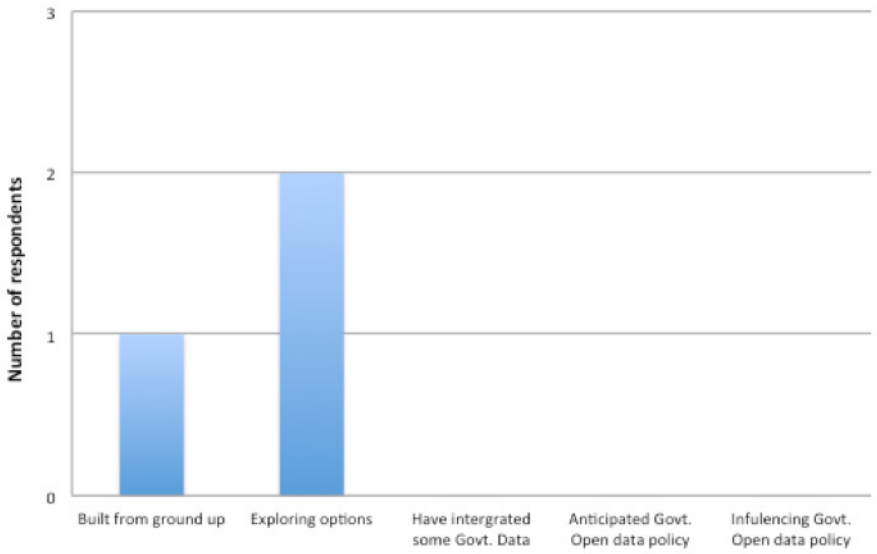

Figure 55 *A bar graph showing progress made towards integration with Govt. open data in the current Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

Question 61 of the Te Rere Kāhui pilot survey (Figure 55) seeks to elaborate question 60 by assessing the extent to which existing membership databases have taken advantage of the New Zealand government's rollout of open data. Two of our survey respondents indicated that this opportunity was being explored. Adoption, integration and use of Government open data is one very simple, but effective way in which existing membership databases can begin to: (i) measure a broader range of wellbeing areas and (ii) thereby add significant value to existing membership database design. But this is indeed only a first step. The development of disruptive technology is rapidly adding innovative ways of capturing raw data and information that can now be used for more creative and strategically oriented membership database development.

Organisation views of Maori Membership database

Question 62 *Please indicate which of the following best describes the views of your organisation concerning the use of a Māori membership database (beyond legal compliance) to address and solve real-world problems confronting our people.*

(a) We have chosen to limit the use of our Māori membership database to legal compliance

(b) We are seeking to better understand just how our membership database might be used to address and solve real-world problems that confront our people

(c) We have had some positive experiences in using our Māori membership database to solve real-world problems

(d) Our membership database has been designed, built and used to address and solve real-world problems and we have a track record of success in this area

(e) We employ or contract innovators who are helping us to better understand how we can adapt our membership database in novel ways that will make it possible for us to address and solve real-world problems

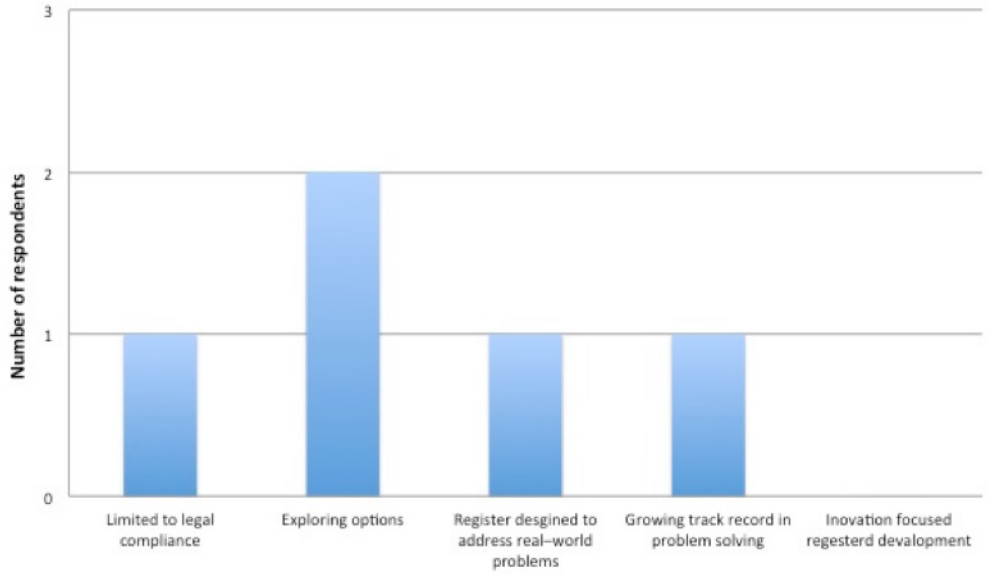

Figure 56 *A bar graph showing progress made towards use in real-world problem solving in the current Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

Question 62 of the Te Rere Kāhui pilot survey (Figure 56) seeks to understand the extent to which the existing generation of membership databases are being used as aids for real-world problem solving. This questions further explores the idea of using membership databases as strategic assets that can be used to add and create value. Figure 56 indicates that the current generation of membership databases, while not yet fully integrated with existing Government open data (Figure 55) are already being used to solve real-world problems. The potential to create, further develop and grow tools of this kind is now significant. When business computer technology first began to emerge on the market, data was a limiting factor in the use of these tools. However, data is no longer the limiting factor. What now limits the use of computer technology as a tool for real-world problem solving is innovation and creativity

Orientation of Membership database

Question 63 *Please indicate which of the following best describes the goal orientation of your membership database.*

(a) Our membership database makes it possible for us to meet our legislative responsibilities

(b) Our membership database was intentionally designed to help more effectively give expression to whānaungatanga and manaakitanga within our rohe

(c) Our membership database was intentionally designed to help us more effectively give expression to kaitiakitanga within our rohe

(d) Our membership database was intentionally designed to help us more effectively achieve the goal of Māori cultural survival (incl. the survival of Te Reo Māori)

(e) Our membership database was intentionally designed to help us more achieve the goal of wealth generation for our people

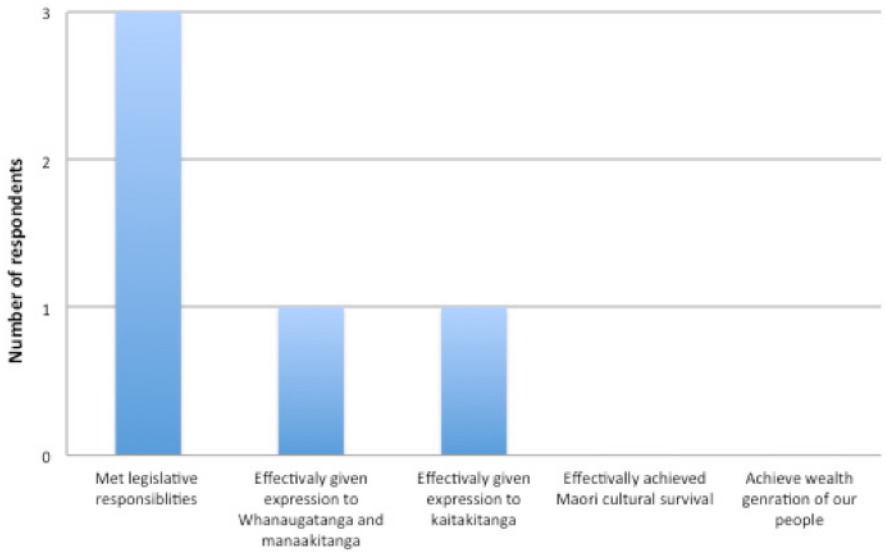

Figure 57 *A bar graph showing progress made towards desired outcomes in current Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

None of the answers given in response to Te Rere Kāhui pilot survey question 63 are wrong. Instead, this question seeks to understand the extent to which existing membership databases are being used to support the expression of kaupapa tuku iho and the goal of Māori cultural survival more generally (Figure 57). It is interesting to note that the current membership databases of our survey respondents are mainly being used for legislative compliance. One of our survey respondents indicated that the expression of whānaungatanga and kaitiakitanga were also important. One of the aims of this Te Rere Kāhui pilot survey was to raise greater awareness about the potential that also exists to create membership databases that support legal compliance and Māori cultural wellbeing/survival goals. Given the costs of setting up a membership database for the purposes of meeting legal compliance requirements, the use of additional development costs to create a tool that supports Māori cultural wellbeing/survival goals really makes good business sense.

Policies on educational qualifications

Question 64 *Please indicate which of the following best describes the policies of your organisation concerning the role of education in potentially realising the value that can be added through the envisioning, design, creation and use of a Māori membership database.*

(a) We do not think that education plays a vital role in the use of a Māori membership database

(b) We are seeking to better understand the role of education in realising the innovation potential of a Māori membership database

(c) We have a succession plan in place to train our people so that they will have the skills and knowledge need to realise the innovation potential of a Māori membership database

(d) We have tertiary qualified employees who have been able to guide us in realising the innovation potential of our Māori membership database

(e) We are in the process of setting up an innovation centre that will employ our people along with innovators, analysts, educators, managers and influencers who can help us to grow the technical capability needed to add substantive from our collection and use of data in a Māori membership database

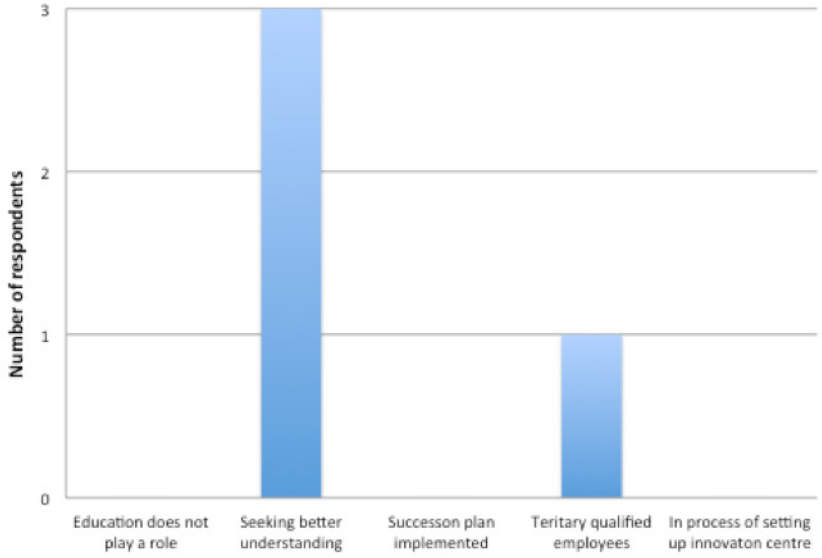

Figure 58 *A bar graph showing preferences for worker qualifications when employing staff to build, manage and use the current Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

Question 64 of the Te Rere Kāhui pilot survey (Figure 58) seeks to move on from exploring what can be done to broaden the use of existing and new membership databases (Questions 60–64, Figures 54–57) towards the question of just how outcomes of this kind can be achieved. The education of whānau clearly plays an important role in achieving this long-term 'outcomes' goal and one of our survey respondents indicated that they currently employ tertiary qualified staff. While this is a good step, the role of innovation teams (cf. rōpū) in Māori economic endeavours have the potential to offer much and for this reason deserve careful consideration. From innovation teams composed of the right mix of 'thinkers', 'tinkers', 'doers', 'influencers', 'technical experts' and 'educators' will emerge the next generation of membership databases that dramatically assist in creating a new future for our people.

Creating a culture of inclusion

Question 65 *Please indicate which of the following best describes the policies of your organisation in creating a culture of 'inclusion' associated with your Māori membership database.*

(a) Membership database applicants are not given any form of information about the status of the membership database that they are members of

(b) We are currently seeking to better understand how we can be more inclusive

(c) Membership database applicants receive regular updates about the state of membership database data

(d) Membership database applicants provide us feedback about the regular membership database updates that we provide them. This feedback is used to improve our data visualisation

(e) Membership database applicants are consulted and able to provide feedback about changes to the membership database and the policies that govern how it is used

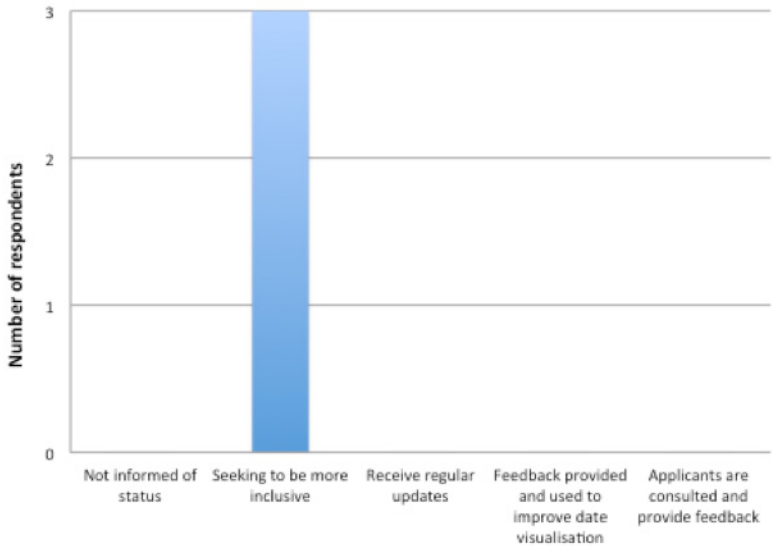

Figure 59 *A bar graph showing efforts made to create a culture of inclusion associated with the building, managing and use of current Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

Question 65 of the Te Rere Kāhui pilot survey (Figure 59) seeks to better understand the extent to which existing membership databases are supported by policies, protocols and practices that create a 'culture of inclusion' for membership database members who are both the 'clients' and ultimately the 'beneficiaries' of the membership database. Policies, protocols and practices that keep an open channel of communication with membership database members and provide options for them to provide feedback, give ideas and challenge what is being done are vitally important in growing and maintaining 'trust' and what is increasingly being referred to as 'social license' to operate. By contrast, efforts to operate a membership database in isolation from regular communication and feedback from membership database members can introduce unwanted problems.

Organisational awareness

Question 66 *Please indicate which of the following best describes the level of awareness in your organisation of: (i) the rapid nature of changes in the national data environment and (ii) just how these changes can potentially benefit the present and future development of your Māori membership database.*

(a) We are generally not focused on rapid changes in New Zealand's data environment

(b) We are currently seeking to better understand what changes are occurring in New Zealand's data environment

(c) We are aware of the rapid nature of change in New Zealand's data environment and have successfully translated some of these changes into improvements in our Māori membership database

(d) We pay close attention to changes in New Zealand's data environment so that we can strategically benefit by improving our Māori membership database

(e) The current version of our Māori membership database does not look anything like version 1. This is because the development and use of our Māori membership database has benefited from extensive improvement linked with rapid changes in New Zealand's data environment. Our membership database now has elements of innovative best practice that other hapū and iwi are adopting

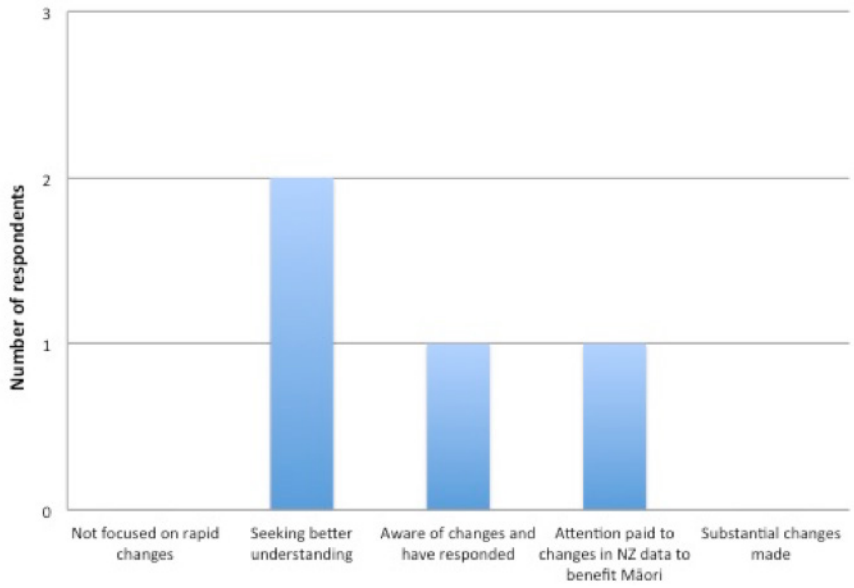

Figure 60 *A bar graph showing level of organisational awareness associated with changes in New Zealand's data environment and the impact this can have on the current and future development of Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

Question 66 of the Te Rere Kāhui pilot survey (Figure 60) seeks to better understand how our survey respondents are managing to stay abreast of rapid changes in New Zealand's data environment. The current rate of change is so fast that it is not surprising that 2 of our respondents have indicated that they are seeking to better understand these changes and the opportunities they provide. Te Rere Kāhui pilot survey and toolkit provide an opportunity to share information and explore this rapid change process - *collectively*.

Privacy/security by design

Question 67 *Please indicate which of the following best describes your rōpū tikanga Māori use of 'privacy-by-design' and 'security-by-design'.*

(a) So far, in the development of our membership database we have not involved ourselves in the purposeful design of privacy or security features

(b) We are currently seeking to better understand what 'privacy' and 'security by design' means as we acknowledge the existence of both security and privacy problems with our Māori membership database

(c) We have made initial attempts to purposefully design both privacy and security features of our Māori membership database. However, this initial effort now needs revision.

(d) The design of our Māori membership database involved explicit and purposeful planning for both privacy and security features. The effectiveness of these features is regularly monitored and we have systems in place to quickly respond to emerging privacy and security risks

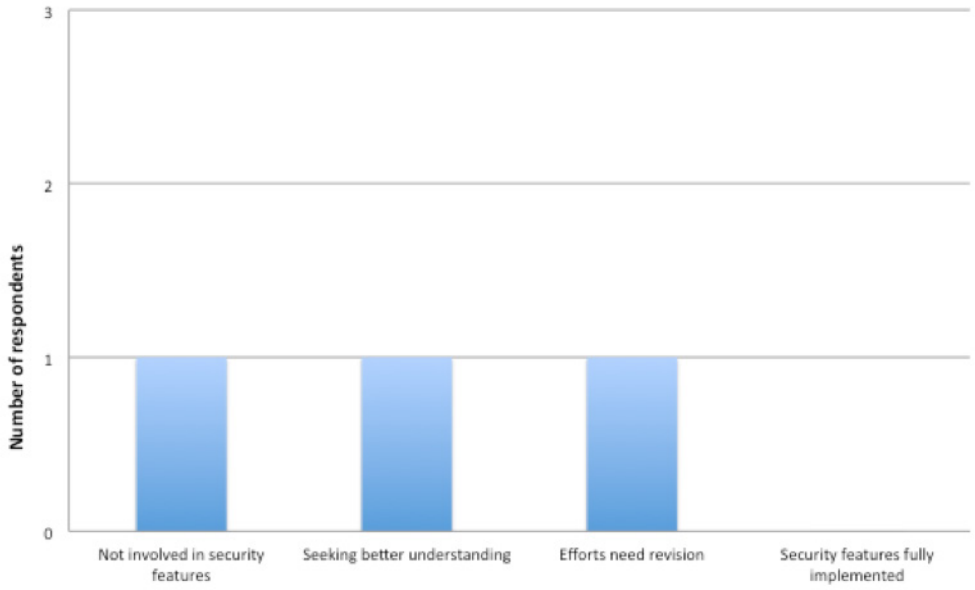

Figure 61 *A bar graph showing preferences for privacy and security by design in the current and future development of Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

The purposeful design of privacy or security features in a membership database makes achievement of the goal of Māori data sovereignty possible and easier. This matter must be a high priority during the creation and/or revision of membership databases if data breaches and particularly identity thefts are to be prevented. Figure 61 indicates that our survey respondents have not yet fully implemented security or privacy features of this kind. In the case of one survey respondent, initial efforts have been made that now need revision. Te Rere Kāhui pilot survey and toolkit provide an opportunity to share information and collectively explore this important area of membership database design, maintenance and use.

Organisational commitment to trust policies

Question 68 *Please indicate which of the following best describes the policy's used by your organisation to ensure that applicants and users of your Māori membership database have and maintain a high level of trust in what you are doing.*

(a) So far, we have not really thought about the importance of 'trust' to the creation and use of our Māori membership database

(b) We are currently seeking to better understand what policies and best practices we should have in place to maintain high levels of trust

(c) We have tikanga or rules that are consistent with collective and individual decision rights and accountability associated with each data use or re-use

(d) We have tikanga or rules that guarantee anonymity for each data use or re-use

(e) We have tikanga or rules that require us to obtain informed consent for any disclosure of data that does not fully protect applicant anonymity

(f) We run a regular survey to provide our membership database members and data clients and opportunity to offer feedback on what they 'trustworthiness'. The information from this survey is used to fine tune our 'trust' policies and practices

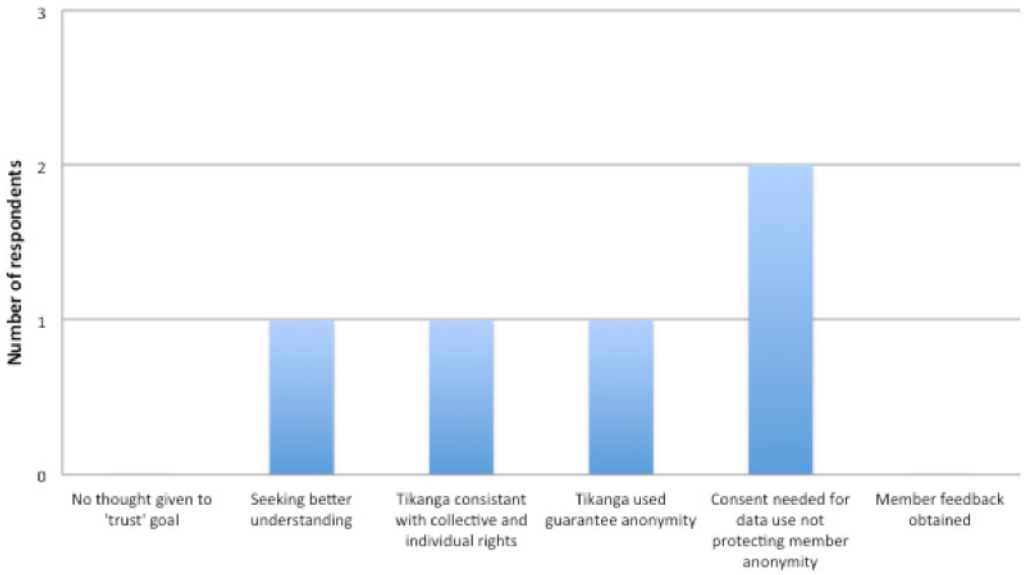

Figure 62 *A bar graph showing organisational commitment to trust policies for Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

Question 68 of the Te Rere Kāhui pilot survey (Figure 62) is an extension of question 67 concerning privacy and security practices. Social licence for the provisioning of member services (online) based on the direct use of supplied personal information is only possible while high levels of member 'trust' exist in membership database privacy and security arrangements. International trends in reported data breaches are upwards and a common target are the digital records needed to support identity theft. Best practice policies and protocols that maintain high levels of membership trust are an essential and urgent development priority.

Organisation Aspirations

Question 69 *Please indicate which of the following best describes the aspirations that your organisation has for the future development and expansion of your Māori membership database.*

(a) Business & entrepreneurship – to assist in establishing sustainable business models and networking opportunities to expand new and existing ICT business

(b) Governance & leadership – to assist in developing a high-level ICT strategy and framework that aligns with whānau, hapū and iwi aspirations. Also provide assistance to upcoming Māori ICT leaders to improve their skills and experience through mentoring initiatives

(c) Wahine & Rangatahi - assist Māori women and youth to engage further in the ICT industry and utilise the educational benefits linked with access to and use of information systems and technology

(d) Whānau-ora - to assist in raising the wellbeing of whānau as measured against well-established performance measures (e.g. workforce participation, educational achievement etc)

(e) Tangata-whenua - to assist in developing spatially explicit datasets that can be used to support the expression of kaitiakitanga

(f) A mix of the above.

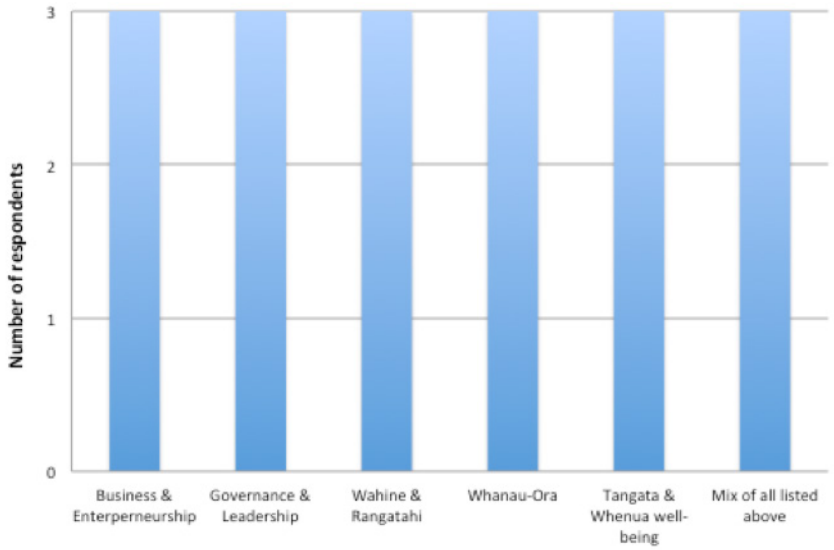

Figure 63 *A bar graph showing organisational aspirations for Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

Question 69 of the Te Rere Kāhui pilot survey (Figure 63) builds on a number of earlier questions and seeks to better understand the aspirations of our survey respondents relating to the future development of existing membership databases. Given such aspirations, a very real question concerns just what the journey between existing membership database builds and these membership databases of the future will look like. The Te Rere Kāhui toolbox that accompanies this pilot survey report provides guidance drawn from best practice on how to begin and successfully complete this transformational journey. Further developments to this toolbox are expected to emerge as part of stage 2 of this Te Rere Kāhui project.

Member registration online

Question 70 *Would you like members to be able to membership database and update their information online when necessary?*

(a) Yes
(b) No

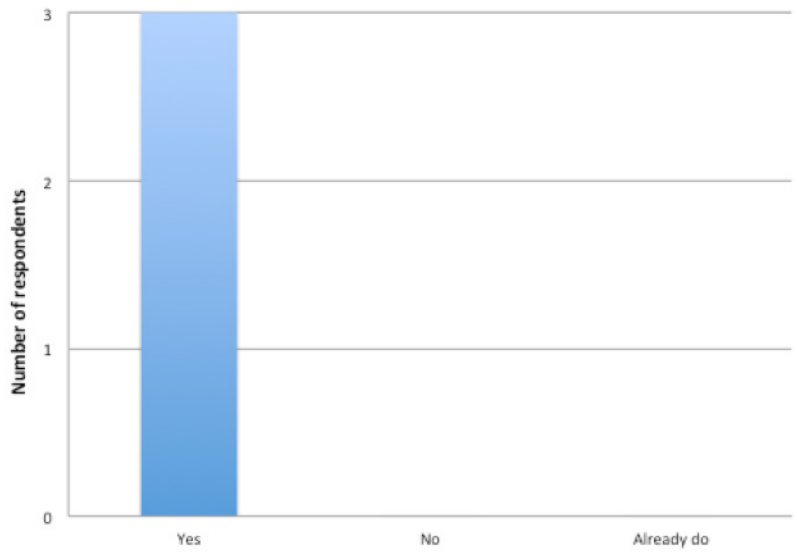

Figure 64 *A bar graph showing preferences towards the use of online accounts for members in current Māori membership database builds for our 13 Te Rere Kāhui survey respondents*

While the number of membership database members who currently have access to internet and supporting computer technology (Figure 64) is only estimated to be about 50–75% of our survey respondents (question 56, Figure 50), a desire currently exists to provide members online access so that they can register and update personal information more easily. While a 100% online engagement of members of all age cohorts is not yet possible, online registration and updating of personal information by 50–75% of members will already save a lot of work that is currently being done manually. The creation of an online account for members will also provide a good opportunity to plan and design a supporting communication strategy (question 68, Figure 62). As noted in a number of different places in this report, the Te Rere Kāhui toolbox provides guidance drawn from best practice on how to go about designing and creating an online interface for existing membership databases.

4. What we are learning as a basis for best practice

The aim of this report section is to provide a more succinct outline of the Te Rere Kāhui pilot survey results presented in the previous 'results' section of this report. We have organised this information (Sub-sections 4.1–4.3) around the Te Rere Kāhui pilot survey goals that were outlined earlier in section 3 of this report.

4.1 Creating a value proposition for a membership database

Membership databases started as a legal compliance requirement for Māori authorities relating to the verification of whakapapa and gathering of personal and contact information. There is now a much wider interest in membership database creation and use by rōpū tikanga Māori more generally (Figure 1), while the latest developments in membership database design are focused around a much broader set of cultural wellbeing (Figure 63) and survival priorities (Figures 2, 3). There is both interest and technological potential to expand this goal orientation (Figure 32) in ways that give more effective expression to Māori cultural protocols (Figure 33). Despite this fact, current membership databases have been slow to adopt the use of simple digital innovations like the use of digital assets (Figure 26) as an alternative for paper-based primary documents (Figure 27). Overall, the results of this Te Rere Kāhui pilot survey indicate that (i) a quite distinctive landscape of membership database policies, practices and protocols is emerging, despite the fact that best practice gaps clearly exist and that (ii) the value proposition on which earlier membership databases were based in rapidly changing.

4.2 An emerging landscape of policies, practices and protocols

The time (Figure 4) and implied cost associated with setting up a membership database for 1,000 – 10,000 plus members (Figure 19) can be substantial (i.e. 5–15+ years). Furthermore, moderate to high levels of updating has been a distinguishing characteristic of 1st generation membership databases that depended (primarily) on manual data entry (Figures 5, 15) and methods of obtaining consent (Figure 34). While technology exists that could be used to automate registration and updating activities online, the use of paper forms and downloadable pdfs (Figure 38) is still the dominant method being used for registration (Figure 21), the verification of whakapapa (Figure 22) and data maintenance. Membership databases fall under the jurisdiction of numerous different legislations and this adds a level of complexity to design and maintenance activities (Figure 53). However, these challenges aside, the rapid emergence of new technology means that 'membership databases of the future' can be positioned to add significant value to rōpū tikanga Māori (Figure 54), solve real-world problems (Figure 56) and give more effective expression to kaupapa tuku iho (Figure 57). This is especially true as the opportunity space created by open government data is recognised and fully utilised (Figure 55).

4.2.1 Keeping up-to-date

Despite efforts made to maintain the accuracy of membership database information, our survey respondents indicated that their membership databases currently needed moderate to high levels (i.e. 10–75%) of updating corrections (Figures 6, 37). Lag-time in staying up-to-date is likely to be partly related to the ongoing use of manual update methods (Figures 28) and available funding. This conclusion seems likely given that 'having a membership database up-to-date' was cited as a key effectiveness criteria (Figure 41). In the case of seeking consent for 'change-of-data-use', while different strategies are being explored, more clearly defined best practice is still emerging (Figure 35). Software platforms used in membership database development are now focusing around cloud computing (Figure 64) although 1st generation membership

databases created in Microsoft Excel are still being used (Figure 10). A wide range of different educational options are being used to support staff who are responsible for the use, updating and maintenance of membership databases (Figure 16). A commitment to ongoing education is important in this area as a way of keeping abreast of emerging best practice (Figure 57). As the focus of membership databases broadens, whānau (cf. staff) with tertiary education will become increasingly important as they will be able to bring new skills, knowledge and innovative ideas to the future development activities (Figure 58).

A home or postal address is still the main form of contact information collected (Figure 23) in membership database development, even though the costs associated with postal communication and its displacement by digital forms of communication (Figure 25) are now well-established. The adoption of PAF in membership database design is still work-in-progress (Figure 24), even though it can save substantial time and cost associated with manual data verification and updating. PAF is but one of a number of innovations in the rapidly changing data environment of New Zealand (Figure 60).

4.2.2 The protection of digital membership database information

All of our survey respondents indicated that primary paper documents were kept as a backup. However, paper-based backups aside, best practice policies and protocols for the protection of digital membership database information are not as well developed as they probably should be (Figure 9). The use and regular updating of 'strong' passwords, encryption and secure internet transfer are important baseline protection protocols (Figure 13) while more advanced policies on data security are still emerging (Figure 18). While baseline protection of this kind is important, the creation of a privacy/security protocol by intentional design is really needed (Figure 61). Access to the use of the current generation of Māori membership databases appears to have been limited primarily to technical support staff, kaitiaki and administrators (Figure 8). It was interesting to discover that despite considerable public discussion about the topic of Māori data sovereignty, implementation of this aspiration is really in its early stages of development (Figure 36). This observation is important given that these survey results seem to indicate that best practice policies and protocols are still emerging (Figure 52).

4.2.3 Technical support

While there would seem to be a strong rationale for the education and training of whānau as technical support staff, external technical support is still most commonly used (Figure 11). In the case where onsite support staff are employed (Figures 39, 45), the level of staffing is conservative (<1 FTE to 3 FTEs). This current staffing arrangement is likely to quickly change as aspirations for extending the scope and use of membership databases are realised (Figures 40). While levels of onsite technical and administrative support are conservative, it is interesting to note that current membership databases run on Windows platforms that ideally require higher levels of technical support (Figure 51), especially to ensure that productivity software (Figure 47) and operating system updates are scheduled and completed. Failure to do this can quickly result in security problems.

4.3 Learning from emerging practice experiences

The rate of use of membership databases ranges from mostly daily-use to some annual-use (Figure 7) while thinking around preferred goal orientations and the organisation of data (Figure 29) for this relatively new digital tool are still emerging.

What we are learning as a basis for best practice

While a range of options exist today for managing the use of membership databases to different audiences, availability on in-house networks is still the main form of enduse (Figure 12). Current membership databases tend to preference linguistic modes of information delivery that mix both English and Te Reo Māori in differing ways (Figure 13), even though the option for all Māori, or all English, or mixed language delivery now exists. Thinking and best practice around the use of data strategies is still emerging (Figure 17) even though their use plays a central role in dictating potential for membership database enduse. While the use of membership databases is dependent on maintaining social licence, policies and protocols that protect membership identity are probably not as well developed as they could be (Figure 20). The importance of this point is especially related to a growing interest in the use of the membership database platform to administer certain types of grants and payments (Figure 44).

The enduse of membership database information is still primarily focused on legal compliance and data storage priorities; although interest in a broader range of uses is now emerging (Figure 30). However, we still have some way to go before the moemoea of membership databases as a 'digital asset' is fully realised (Figure 31). Even though the infrastructure needed to achieve this goal is no longer a limiting factor (Figure 48), in this study it is interesting to discover that membership database platforms are being supported by very conservative bandwidth allocations (Figure 49). This study suggests that between 50–75% of members now have access to internet and computer technology (Figure 50) which means that a case for expanding the current scope and goal orientation of existing membership databases can easily be made. Increasing participation on the part of our whānau and hapū as membership database end-users and active members will assist in growing a culture of inclusion (Figure 59) and trust (Figure 62).

4.4 A list of things we can do and emerging questions

The outcomes of Te Rere Kāhui pilot survey documented in this report section have identified a number of: (i) 'things we can do' to improve the performance and lower the costs associated with existing membership databases and (ii) 'emerging questions that need more work' in order to create the next generation of membership databases. For the convenience of our Te Rere Kāhui project participants we have provided a concise list of these 'things to do' and 'emerging questions' below. These summary lists might also be considered as priority areas for future innovation investment.

4.4.1 Things we can do

There are a number of ways that we can improve the existing generation of membership databases so that they produce better results, are easier use and less costly to maintain. For example:

- PAF integration
- online registration and updating
- the use of digital assets
- the online verification of whakapapa
- the creation of communication, consent and data strategies
- the creation of long term educational and capacity building strategies and plans
- making our membership database fully available in both English and Te Reo Māori

4.4.2 Emerging questions that need more work

There are a number of areas of current practice that ideally need to be improved and developed, even though the way ahead is not yet completely clear. For example:

- How do we gain greater clarity on our collective visions, aims and goals for membership database development?
- How can we obtain more information about existing legislative responsibilities?
- How might we create membership databases that add substantial value rather than just consuming it through ongoing maintenance costs?
- How might we better understand how to use membership database design/frameworks to create membership databases of the future that solve 'real-world' problems?
- How might we develop our membership database so that it gives more effective expression to our kawa, kaupapa and tikanga?
- How might we integrate open government data into our existing and future membership database developments in a way that helps us to create new value?
- How can we use technology to make the goal of keeping our membership database data 'up-to-date', easier and less costly to achieve?
- What types of membership database software platforms exist and which one would best meet our needs, now and in the future?
- What are the range of emerging technology alternatives to 'communication by post' via the use of printed documents, and which of these technologies would be best for our needs?
- Do we still need paper-based registration processes and associated document storage systems? What are the range of alternatives and which option is best for our needs?
- What are the range of best practice policies and protocols for the protection of digital membership database information and which ones should we adopt?
- How might we create a privacy/security protocol by intentional design?
- How might available technology help us to fully realise our aspirations in the area of Māori data sovereignty?
- How might we plan for and create educational outcomes that will effectively support the emergence of a membership database of the future?
- Which computer operating system and supporting productivity software will produce the best security and performance arrangements for our membership database, now and as it develops into the future
- Given the substantial investment that has already been made in our membership database, what types of future development pathways will help us to obtain a greater return on our investment?
- We would like to make our membership database available to a diverse range of endusers. How might we achieve this aspiration in a way that also (i) maintains our commitment to member privacy, (ii) customises data and information availability to the needs of different endusers and (iii) ensures the protection of our data?
- How can we create and implement a data strategy that will make it possible for us to obtain the greatest possible value from our data?
- How can we design and implement best practice policies and protocols that will ensure that the privacy and identity of our members is always protected?

What we are learning as a basis for best practice

4.4.2 Emerging questions that need more work

- How can we get the best value for investment from our use of rapidly emerging and changing internet technology?
- How could we design our membership database or update it so that we make the best possible use of the rapidly emerging internet and (computer) technology preferences of our members and intended endusers?
- What might a communication and inclusion policy look like that makes it possible for us to create and maintain a culture of inclusion and trust that are fundamental to our social licence?
- How might we create a culture of knowledge development and innovation in our organisation that will be needed to support the development of the next generation of membership databases?

Glossary of key technical terms

Application programming interface (API) – a set of functions and procedures that allow the creation of applications which access the features or data of an operating system, application, or other service. In general terms, it is a set of clearly defined methods of communication between various software components.

Artificial intelligence (AI, also machine intelligence, MI) – intelligence exhibited by machines, rather than humans or other animals

Augmented reality (AR) – a live direct, or indirect view of a physical, real-world environment whose elements are "augmented" by computer-generated sensory input such as sound, video, graphics or Global Positioning System data

Big Data – extremely large data sets that may be analysed computationally to reveal patterns, trends, and associations, especially relating to human behaviour and interactions.

Cloud storage – is a model of data storage in which the digital data is stored in logical pools, the physical storage spans multiple servers (and often locations), and the physical environment is typically owned and managed by a hosting company. These cloud storage providers are responsible for keeping the data available and accessible, and the physical environment protected and running. People and organisations buy or lease storage capacity from the providers to store user, organization, or application data.

Cyber Security – the state of being protected against the criminal or unauthorized use of electronic data, or the measures taken to achieve this.

Data – the quantities, characters, or symbols on which operations are performed by a computer, which may be stored and transmitted in the form of electrical signals and recorded on magnetic, optical, or mechanical recording media.

Data sovereignty – the concept that information/Data which has been converted and stored in digital form is subject to the laws of the country in which it is located. Data sovereignty also covers a person's or groups right to control access to, and disclosure of their own personal data.
Data strategy (data management strategy) – choices we make about how to manage data assets. These choices include: How we define data management, its scope, mission, long-term goals and short-term (12-24 month) objectives

Domain – a field of study that defines a set of common requirements, terminology, and functionality for any software program constructed to solve a problem in the area of computer programming, known as domain engineering. The word domain is also taken as a synonym of application domain.[1] It is also seen as a sphere of knowledge.

Domain-specific language (DSL) – a computer language specialised to a particular application domain.

Encryption the process of converting information or data into a code, especially to prevent unauthorized access.

Firmware – is a type of software that provides control, monitoring and data manipulation of engineered products and systems.

Flash memory – is an electronic (solid-state) non-volatile computer storage medium that can be electrically erased and reprogrammed.
Flat file database – is a database stored as an ordinary unstructured file called a "flat file". To access the structure of the data and manipulate it on a computer system, the file must be read in its entirety into the computer's memory. Upon completion of the database operations, the file is again written out in its entirety to the host's file system. In this stored mode, the database is said to be "flat", meaning that it has no structure for indexing and there are usually no structural relationships between the records. A flat file can be a plain text file or a binary file. This term has generally implied a small, simple database. As computer memory has become cheaper, more sophisticated databases can now be entirely held in memory for faster access. These newer databases would not generally be referred to as flat-file databases.
Hard disk drive (HDD), hard disk, hard drive or fixed disk – is a data storage device that uses magnetic storage to store and retrieve digital information using one or more rigid rapidly rotating disks
Hierarchical database model – a data model in which the data is organised into a tree-like structure. The data is stored as records which are connected to one another through links.
Information sharing – has a long history in information technology. Traditional information sharing referred to one-to-one exchanges of data between a sender and receiver. These information exchanges are implemented via dozens of open and proprietary protocols, message and file formats.
Māori Data sovereignty – data is a tāonga (Article II of Te Tiriti o Waitangi) and a highly valuable strategic asset to Māori. Data that is produced by Māori or that describes Māori and the environments we have relationships with.
Open data – is the idea that some data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control.

Operating system (OS) – is system software that manages computer hardware and software resources and provides common services for computer programs. All computer programs, excluding firmware, require an operating system to function.

Personal data – shall mean any information relating to an identified or identifiable natural person ('Data Subject'); an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity.

Raw data (sometimes called source data or atomic data) – data that has not been processed for use. A distinction is sometimes made between data and information to the effect that information is the end product of data processing. Many of the current concerns that surround data sovereignty relate to enforcing privacy regulations and preventing data that is stored in a foreign country from being subpoenaed by the host country's government.

Glossary of key technical terms

Relational database – a digital database whose organization is based on the relational model of data, as proposed by E. F. Codd in 1970. The various software systems used to maintain relational databases are known as a relational database management system (RDBMS). Virtually all relational databasesystems use Structured Query Language as the language for querying and maintaining the database.

Structured Query Language (SQL) – a domain-specific language used in programming and designed for managing data held in a relational database management system (RDBMS), or for stream processing in a relational data stream management system (RDSMS).

System architecture – a conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organised in a way that supports reasoning about the structures and behaviours of the system.

Virtual reality (VR) – a computer technology that uses Virtual reality headsets, sometimes in combination with physical spaces or multi-projected environments, to generate realistic images, sounds and other sensations that simulate a user's physical presence in a virtual or imaginary environment. A person using virtual reality equipment is able to "look around" the artificial world, and with high quality VR move about in it and interact with virtual features or items. VR headsets are head-mounted goggles with a screen in front of the eyes. Programs may include audio and sounds through speakers or headphones.

Virtual private network (VPN) – extends a private network across a public network, and enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network. (In the simplest terms, it creates a secure, encrypted connection, which can be thought of as a tunnel, between your computer and a server operated by the VPN service) Applications running across the VPN may therefore benefit from the functionality, security, and management of the private network.

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