

Ngā Papanga Reo ā-Tūnga mō ngā Hapori Reo Iti me ngā Hapori Taketake

John G. Stroh

Ngā Papanga Reo Whakaritea mō ngā Hapori Reo Iti me ngā Hapori Taketake

Hoahoa hanganga, ngā mātāpono whakahaere, me te hanganga whakatau huringa whakamuri a te CPU (Pepa B — whakarāpopototanga)

John G. Stroh

2026-05-03

Ngā Papanga Reo Whakaritea mō ngā Hapori Reo Iti me ngā Hapori Taketake

Hoahoa hanganga, ngā mātāpono whakahaere, me te hanganga whakapae hokinga-CPU — Whakarāpopototanga o Pepa B

Whakarāpopototanga

He whakarāpopototanga rua-whārangi tēnei mō te hoa rangahau tūturu kua whakamaheretia mō Pepa A. Ehara tēnei i te pepa rangahau tūturu. E whakamārama ana i (i) te taura hanganga — he *papanga reo ā-rohe* mōia kaiwhakamahi (SLL): he taura reo iti ā-hapori i whakangungua ki ngā ihirangi ake o te kaiwhakamahi, e whakahaerehia ana e te mana ake o te kaiwhakamahi, ā, e whakahaerehia ana i runga i ngā hanganga kei roto i te rohe mana ake o te kaiwhakamahi; (ii) ngā mātāpono whakahaere e whai ana te kaupapa i te wā e whakangungu ana, e whakahaere ana i ēnei taura; (iii) ngā rōpū e whakahaere ana i te whakaputanga i ēnei rā; me (iv) te hanganga whakatau e pupuri ana i te ara whakahaere kia tino waho noa atu i ngā hanganga e whakahaerehia ana e Amerika. Kua wātea

te aromatawai ā-rōpū, ngā whakakore whakarerekē taumaha, me te rapu tuhinga whakatairite mō te pepa katoa, ā, ka puritia kia tae rā anō ki te wā ka whiwhi i ngā raraunga whakangungu-whakahaere kua whakamana. I whakamārama a Pepa A i tētahi hanganga rēhita rangatira e noho ai ngā ihirangi, te whakahaere, me ngā anga kotahitanga i roto i te hāpori e rangatira ana i a rātou; ko te SLL te paparanga māramatanga whakahaere o taua tūāpapa — koia te mea e āhei ai tētahi mema ki te pātai ki te pūnaha, ā, ki te whiwhi i tētahi whakautu i tangohia mai i ngā tuhinga a te hāpori anō, kua ko tētahi taura rohe i hangaia e tētahi kohinga ā-ao kāore te hāpori i whai wāhi ki reira. E noho ana tēnei whakarāpopototanga kia whakatau ngā tohutoro whakamua o Pepa A ki tētahi anga tūturu, kua ki tētahi tohu wāhi noa, ā, kia tuhia ki te rekoata tūmatanui te taura hanganga i te wā e haere tonu ana ngā mahi aromātai.

Ngā kupu matua: paparanga reo ā-horopaki, taura reo iti, Tā-tari Reo ā-Tau (NLP) mō ngā reo iti, rangatiratanga raraunga take-take, taura mō ia kaiwhakamahi, whakatau whakamuri mā te CPU, tikanga whakangungu, hanganga motuhake, rōpū Tuunga-1, GPU motuhake kāore nō Amerika.

1. Whakataki

Ka tiakina e te hanganga rēhita rangatiratanga o Pepa A te rangatiratanga o te hāpori ki ngā raraunga; kāore ia anake e tiaki i te rangatiratanga o te hāpori ki te *mātauranga*. He hāpori e whakamahi ana i tētahi taura reo hei whakawhiti pātai a ngā mema, kei te whakamahi tonu i tētahi taura reo: ko te kohinga whakangungu o te taura, te tikanga whakangungu, me ngā whanonga i te wā whakahaere he wāhanga o te mata o te hanganga, ehara i te mea motuhake. Kāore e taea e tētahi taura ā-mua i whakangungua ki tētahi kohinga ā-ao kāore i hangaia e tētahi hāpori motuhake te whakautu i tētahi pātai Wēra i roto i te rēhita o te hāpori Wēra, tētahi pātai Māori i raro i te tikanga, tētahi pātai Sāmi ki te pukapuka kupu whakahou o te wāhanga reo — mehemea kāore e tuhi-whakakapi i te mana o te hāpori ki runga i te kohinga i whakangungua ai te taura.

E whakamārama ana a Pepa B i te taura hanganga e whakawhirinaki ai te SLL mō te whakamahinga ā-hāpori: he taura reo iti mō ia momo kaipāpā, i whakangungua ki ngā ihirangi ake o te kaipāpā, me te ture whakahaere mārō, te manaaki i te wā whakahaere i runga i ngā hanganga e whakahaerehia ana e te kaipāpā, e whakawhirinaki ana te hāpori rānei, me tētahi huarahi huri-whakamuri CPU e pupuri ana i te whakatau i roto i te rohe mana o te kaipāpā. Ko te hoa o te Pepa A he mea tūturu: i te mea ka whakarite te Pepa A i te

rangatiratanga o te tūāpapa raraunga, ka whakamārama te Pepa B i te tikanga whakahaere e hāngai ana kia tau ai te papa mātauranga. Ko te whakaaturanga aromātai e whakaatu ana ka whakaputa e te tikanga nei ngā āhuatanga kua whakapaetia, ko te mahi o te pepa katoa, ehara i tēnei whakarāpopototanga.

2. Te tikanga whakahaere

E rima ngā ture e whakahaere ana i te whakangungu o ia rōpū o ia papa reo motuhake. He tikanga whakahaere ia i ahu mai i ngā mahi hanga i ēnei AI, ā, kua whakapaihia i te whakamahinga o ētahi atu rōpū; kua tuhia ia ki ngā ture tū o te kaupapa.

Kāore he tokorua whakatika. Ka whakaputa he mata hē ngā tokorua whakatika hangarua (he pātai me te whakautu tika kua whakarerekētia i runga i te pātai me te whakautu hē i kitea) ka tino hāngai atu te tauira ki taua mata hē ina noho tawhiti ngā tauira whakatika i te tohatoha taiao — ā, he wā noa iho ka pēnei. Ka whakamahi te kaupapa i ngā aronga whakaterere (ngā whakahohe iti ka whakamahia i te wā whakatau) hei whakatika i ngā whanonga; ka waiho pū te kohinga whakangungu.

Kāore he tango tārua i ngā raraunga whakangungu. Ko ngā tārua e kitea ana i roto i te kohinga he whakapakari, ehara i te tāpiritanga. Ka whakangungua ngā rōpū o te kaupapa ki runga i ngā ihirangi e puta noa ana me te whakahāngaitanga taketake (ngā rerenga paerewa mai i ngā tuhinga tūāpapa; ngā kīanga tikanga e whakahokia ana; ngā kīanga whakahaere e puta anō ana); mā te tango tārua i ēnei ka whakakōpaki i te hanganga aro nui o te kohinga.

Kāore he whakautu FAQ mēnā kāore i whakamanaia te pūtake waehe. Ia tāpiritanga ki te papa FAQ ka honoa ki tētahi taonga putunga e taea te whakamana (he wāhanga o te ture matua; he whakataunga kua tuhia; he puna kua tohua i roto i te kohinga raraunga). Ko te whakatōpū i ngā papa FAQ te huarahi kua whakamātauria mō te whakawhānui; kāore e whakaaetia ngā tomokanga FAQ e hiahiatia ana.

Kāore e whakarerekēhia ngā taumaha tauira. Ko ngā huarahi whakarerekē taumaha kua whakamātauhia e te kaupapa — arā, he whānuitanga o ngā kawa whakatikatika āta, whakakō, me te whakatikatika manakohanga — kua ngoikore ake i te turanga paparanga FAQ i ngā whakamātautau a-roto a te kaupapa, tae noa mai ki tēnei rā. Ka pūrongo te pepa katoa i ngā whakataurite mō ia whakamātautau i ngā taipitopito. Ko te hua o tēnei: kia kitea tētahi kawa whakarerekē taumaha e whakaatu ana he pai ake i te turanga paparanga FAQ, kāore te kaupapa e whakamahi i tētahi.

Ko te paparanga FAQ me ngā kohinga whakahaere ko ngā huarahi whakawhānui kua whakamātauria.

Kāore he whakangungu tūmanako (Ture-2 whakaoho rōpū).

Kāore e whakahaua he rōpū Ture-2 kia tīmata tae noa ki te wā ka whakatinanahia te kaipāmu tuatahi o taua momo. E rua ngā take: ko te whakangungu me te kore he kaipāmu tūturu mō te whakatinananga e whakanoho ana i te kohinga raraunga ki ngā whakapae, kua ki ngā ihirangi a te hapori anō; ā, ko te whakapau i ngā huringa whakangungu ki ngā rōpū tūmanako e whakahoki ana i te wā GPU whaitake i ngā mahi e tū ana i te whakaputanga.

3. Te tūnga mō te whakarerekētanga taumaha

Ko te tūnga o te kaupapa mō te whakarerekētanga taumaha te mea tino whai pānga ā-mahi i ngā ture e rima, ā, me whakamārama motuhake. Ko ngā whakarerekētanga kua whakamātauhia e te kaupapa e kapi ana i te mata paerewa — te whakangāwari āta i ngā rōrahi me ngā tere rerekē, te whakamātūtū mai i ngā tauira nui ake, ngā kawa whakatikatika manakohanga, me ngā huinga o ēnei — i whakamahia ki te turanga community-v1 14B Qwen2, ā, i whakatauria ki runga i tētahi turanga FAQ-ā-papa me ngā pūwāhi ārahi kua whakamahia. Ko te tauira puta noa i ngā huarahi i whakamātauhia, ko te rere haere o ngā tauira kua whakarerekētia i ngā āhua motuhake: ka waihanga kōrero ake mō ngā pātai i waho o te kohinga raraunga, ka whakahē i ngā wā kāore i te pērā te pono ina kei waho ngā pātai i te kohinga raraunga, ā, ka whakahua me te kore e tino tika ina tonoa kia whai turanga ngā whakautu.

Kia kitea tētahi kawa whakarerekē taumaha e whakaatu ana he pai ake i te turanga paparanga FAQ, kāore te kaupapa e whakamahi i tētahi. Ka pūrongo te pepa katoa i ngā hua o ia whakamātautau, te hanganga o ngā huinga aromatawai, me ngā tikanga mahi i te taipitopito; e tuhi ana tēnei whakarāpopototanga i te hua whakahaere: ehara te whakarerekē taumaha i te huarahi whakawhānui o nāianei, ā, ko te paparanga FAQ me ngā kohinga whakahaere e kawea ana i te kawenga whakaputa tūturu o te kaupapa.

4. Ngā rōpū Tira-1 kei te whakaputanga

E rima ngā rōpū-ā-Tātai-1 kua whakatinanahia i te wā e tuhi ana:

- villageai-14b-whanau-v1 — horopaki whānau Māori whānui; whānau me ngā whakarōpūtanga whakahaere (ā-wā poto).
- villageai-14b-episcopal-v1 — horopaki pārihi komihana Anglikana.

- `villageai-14b-community-v1` — hokinga-whakamuri hapori whānui (te turanga 14B Qwen2).
- `villageai-14b-whānau-v1` — horopaki hītori-whānau.
- `villageai-14b-business-v1` — pakihi-iti horopaki rārangi-mema me te papamātakitaki-whakahaere.

Ka whakangungua ia rōpū ki runga i te kohinga raraunga mō tōna momo kaipāmu, me te tikanga whakahaere o §2. Ka pūrongo te pepa katoa i te tika mō ia rōpū i ngā pātai mō ngā ihirangi a te kaipāmu, te reiti whakahē mō ngā pātai i waho o te kohinga raraunga, te tikanga tohutoro, me te aromatawai ā-kounga o te rēhita e whakaute ana i ngā tikanga. E whā ngā rōpū-ā-tau 2 (tiaki taonga, diaspora, karapu, alumni) kua tohua, engari kua whakatāhia ā-mahi i raro i te tikanga kaua e whai whakangungu tūmanako.

I whakamātau tētahi whakahou whakangungu episcopal-v2, ā, kāore i pai ake i te v1 i runga i te huinga arotake o te kaupapa; kāore te v2 i whakarewahia. Kua whakahuatia te hua kino i roto i ngā tikanga whakahaere o te kaupapa; ka kōrerotia e te pepa katoa tēnei i te taha o ngā mahi whakarerekē taumaha whānui hei taunakitanga anō kei te huarahi o nāiane i te paparanga FAQ me ngā aronga whakatere kei te taumata tiketike rawa o te tika ā-rohe mō te rōpū.

5. Hanganga whakatau

Ka mana te whakamātau i te wā whakahaere i runga i tētahi GPU A6000 rangatira o Aotearoa i Catalyst Cloud i ngā haora mahi (08:00–20:00 NZST), ā, ka whakawhiti aunoa ki tētahi eGPU kāinga kāore i te US (RX 7900 XTX) i waho o ngā haora mahi. He Kei te wātea te ara huri-CPU mō ngā wā he iti te kawenga; he teitei ake te whakaroa, engari e tika tonu ana te tere whakawhiti mō te āhua o ngā tono a te papanga. Kāore he tono ki tētahi tauranga whakatau US-whakahaere i roto i te ara tono whakaputa. Ka toro atu te ture aukati-kaiwhakarato e whakahaere ana i ngā hanganga katoa o te papanga (kāore he kaupua, SaaS, rānei he ratonga AI whakahaere nō US i roto i te ara tono whakaputa) ki te paparanga whakatau. Ka tuhia ngā whakatau arataki mō ia tono me te rōpū kua tohua, te whakataunga o te kuaha kaupapa here, me te hauora o te ratonga matua i te wā o te tono, e whakarato ana i te mata arotake e hiahiatia ana e te Tuhinga 22 o te GDPR (whakatau aunoa) me te Tuhinga 2 o Te Tiriti (tiaki taonga mō ngā raraunga hapori me tōna whakawhitiwhiti) ngātahi.

6. Whakarāpopototanga arotake

Ka pūrongo te pepa katoa: te tika mō ia rōpū i runga i ngā huinga aromatawai tū; te tikanga whakahē (te reiti o ngā whakahē tika ā-

taunoa mō ngā pātai i waho o te kohinga raraunga); te āhua o te tuku tohutoro (te reiti o ngā whakautu kāore he tohutoro i mauhia e te tātari haumaruru tohutoro ā muri ake); te whakataurite taipitopito o te whakarerekētanga taumaha; te whakataurite whakangungu anō o episcopal-v2; te arotakenga tikanga-rēhita e ngā kaiarotake e hāngai ana ki te hapori (ki te whakaae te hunga whai mana; ki te kore, ka whakarāpopototia ki te taumata hanganga); te roa o te whakapae me te tere whakawhiti i ia ara rerenga; me tētahi tātāritanga hohonu ārai o te whakapūmau taura ki te tātari tohutoro ā muri ake — ko te mātāpono ka mahi te whanonga taura me te tātari haumaruru i ngā paparanga motuhake, ā, me pūrongo ngā mea e rua, kua rawa e whakaarohia te tātari anake hei whakautu katoa mō te whakapūmau. Ka ingoa ēnei āhuatanga i tēnei whakarāpopototanga; ka pūrongo te pepa katoa i ēnei.

7. Ngā here me te hononga ki te Puka A

E toru ngā here e here ana i te whānuitanga o tēnei pepa. Kāore anō kia aromatawaihia ngā rōpū Tier-2; ka pūrongoia ā rātou kitenga ā-taupū i te wā ka whakatinanahia ā rātou kaipāpā tuatahi. Ko te kawa aromatawai te kawa tū o te kaupapa — he rite ki ērā atu mahi aromatawai ā-hapori, engari kāore anō kia hāngai ki tētahi paearu aromatawai kua whakaputaina, kua arotakehia e ōrite; ka matapakia te pepa katoa i tēnei āputa whakataurite me ngā tuinga e whakamārama ana. Ā, ko ngā kitenga rangahau o konei he mea ā-roto o te kaupapa i te rā o te whakarāpopototanga; ka pūrongo te tuinga katoa i ēnei me te māia e hiahiatia ana mō te tuku arotake ā-tāngata, tae atu ki te uru a ngā kaiarotake ki te huinga aromatawai e tū tonu ana i raro i ngā here muna e tika ana, mēnā kei roto i ngā kohinga raraunga he rauemi e herea ana e te ahurea.

Ko te Pepa A me te Pepa B he wehenga e rua kua whakaritea: Ko te Pepa A e kapi ana i te turanga hanganga; ko te Pepa B e kapi ana i te tikanga whakahaere aromatawai e whakamana ana i te paparanga māramatanga o taua turanga kia taea ai te whakawhirinaki mō te whakamahinga a ngā hapori reo iti me ngā hapori taketake. Mā rāua e whakaahua tahi tētahi pūnaha e rangatira ai ngā raraunga me te māramatanga i runga i tō rāua hanganga. Ko te pepa anga Tractatus (kua wātea kē ki te marea i runga i Codeberg i raro i te Apache 2.0) te waewae tuatoru o te toru: te whakahaere i te wā whakawhanake mō te āwhina AI e hanga ana i te tūāpapa anō.

8. Ngā Mihi

E mihi ana te kaituhi ki a Leslie Stroh mō tōna arataki whakaaro hōhonu i runga i ngā ariā maha me te pātai mō te pai i roto i te mā-

tauranga atamai hanga. Ko te ū ki te whiriwhiringa maha e rere ana i roto i te hanganga whakahaere o te tūāpapa — me te whakapono whānui ko tētahi tūāpapa AI e tika ana kia hanga, me whakautu ki tētahi ariā nui mō te pai, ehara i te mea tikanga noa iho — nā aua kōrero i hanga ai tōna āhua taketake.

Ka whakawhetai hoki te kaituhi ki ngā kaumātua o te hapori, ngā kaiwhakahohe i te reo, me ngā kaiwhakahaere rēhita, nā ō rātou kohinga rauemi me ō rātou urupare i ārahi i ngā rōpū; kei te tatari mō te whakaaetanga ā-tangata a ia tangata, ā, kua whakaroa te tuku i konei kia tae mai taua whakaaetanga.

Ngā Pukapuka Whakaatu

[A] Stroh, J. G. (2026). *Sovereign-Record Architecture for Community-Scale Platforms — Paper A* (Review Draft v3, Mei 2026). My Digital Sovereignty Limited (NZ). Puka tāpiri. Kei te wātea iageticgovernance.digital/papers/sovereign-record-architecture-v3-may-2026.html (Ingarihi, te reo Māori, Tiamana).

[T] Stroh, J. G. (2026). *Tractatus Framework — Ngā Tauria Hanganga mō te Whakahaere Whanaketanga AI, Puka Mahi v0.2*. codeberg.org/mysovereignty/tractatus-framework. Apache 2.0.

Ngā tohutoro whakamātautau taipitopito — tae atu ki te tauria pūtake Qwen2 ngā tohutoro, ngā tohutoro kawa aromatawai, ngā rauemi pānui mō te tikanga whakarerekē taumaha (LoRA, whakangāwari taipitopito katoa, tangohanga ā-papanga, raraunga manakohanga āhua RLHF), ngā rauemi pānui mō te NLP reo take-take, ngā rauemi pānui mō te whakamāori rauemi-iti, ngā rauemi pānui mō te kōrero ā-horopaki, me ngā rauemi pānui mō te matatika o ngā tauria reo — ka waiho mō te Puka B katoa me te wetewete tuhinga Step-F kua whakamaheretia mō te tukanga whānui ake o te tuhi tuhinga mō te kaupapa.

Kaiwhakahaere kōrero: John G. Stroh, Tumuaki, My Digital Sovereignty Limited (NZ). ORCID: 0009-0005-2933-7170. Īmēra: john.stroh@mysovereignty.digital.

Rāhina: Creative Commons Attribution 4.0 International (CC BY 4.0).

Tohutoro kua tūtohutia: Stroh, J. G. (2026). *Ngā Papanga Reo ā-Tūnga mō ngā Hapori Reo Iti me ngā Hapori Taketake — Whakarāpopototanga Puka B*. My Digital Sovereignty Limited.

Wātea ana i [agenticgovernance.digital](https://zenodo.org/doi/10.5281/zenodo.10000000). (Ka whakaratohia te Zenodo DOI ina whakawhānuhia ki te puka katoa.)

Tūnga whakarāpopototanga: He whakarāpopototanga e rua ngā whārangi tēnei. Kua whakaroa te pepa rangahau whānui ki tētahi wāhanga motuhake, ā, ka whai i ngā raraunga kua whakamātauria i roto i ngā whakangungu, ngā ripanga aromātai mō ia rōpū, ngā taipitopito mō ngā hua o ngā whakamātautau whakakore, me te wetewete tuhinga whakatairite e hiahiatia ana mō te tuku arotake ā-tāngata. I whakaputaina i roto i te āhua whakarāpopototanga hei whakatau i ngā tohutoro whakamua o Pepa A, ā, hei tiri i te āhua kua whakama-heretia o te pepa rangahau hoa.