Te Tari Taiwhenua
Internal Affairs

Internal Affairs aide memoire

Hon Tracey Martin
Minister of Internal Affairs

Title:	**Use of Facial Recognition Technology at Internal Affairs**
Date:	25 May 2018

Key issues

This aide memoire provides you with information on the utilisation of Facial Recognition Technology (FR) within the Department of Internal Affairs (DIA) as a precursor to a Cabinet paper that will seek approval to replace the existing passport software using an as a service model.

We expect to provide you with this Cabinet paper in early October 2018.

Contact for telephone discussions (if required)

Name	Position	Direct phone line	After hours phone	Suggested 1st contact
David Philp	General Manager	04 382 3512	9(2)(a)	✓
Dion Chamberlain	Manager, Product Development	04 382 3616	9(2)(a)	

Return to	William Hopgood, 45 Pipitea street Level 10
Cohesion reference	WHQPJXVXQWTM-320010367-31
Ministerial database reference	**IA201800381**

Chris East
Deputy Chief Executive, Service Delivery and Operations

Purpose

1. The purpose of this aide memoire is to provide you with background information on the uses of facial recognition technology (FR) within the Department of Internal Affairs (DIA).

2. This document will provide the information on how facial recognition is currently utilized to improve the production of Passports and verified identities for RealMe as well as give introduction on what is next to further improve FR systems by replacing the aging system currently in use.

Facial Recognition Technology

Background

2. FR is a category of biometric software that maps an individual's facial features mathematically, storing the data as a template. The software identifies measurable variables of a person's face, such as the length or width of the nose, depth of the eye sockets; inter eye distance and shape of the cheekbones.

3. DIA has a long history of the utilization of FR Technology. In 2000 DIA worked in collaboration with Bundesdruckerei (a company owned by the German Government) to test the accuracy of the current FR technology against New Zealand passport photos. At the time New Zealand was one of the very few countries to have a significantly sized database of passport photos. This testing, in conjunction with the US National Institute of Standards and Technology testing in 2000 and 2002, demonstrated that FR was becoming a reliable technology that could be utilised in passport processing.

4. In 2004 the International Civil Aviation Organisation introduced ePassport specifications that created the opportunity to introduce automated border processing using facial recognition technology.

5. In 2005, after further testing on New Zealand passport images DIA determined that FR was suitable for integration into passport processing. 9(2)(k)
9(2)(k)

9(2)(k)

6. New Zealand introduced the ePassport in 2005, and our FR capabilities have been utilised at automated borders since 2007, with the introduction of the first Australian SmartGate for ePassports, and in 2009 with the introduction of eGates at Auckland International Airport.

7. 9(2)(k)

8. More recently DIA has identified occasional instances of attempted fraud through the use of FR however it has become more of a deterrent as New Zealand's criminal element is well aware that the technology is used in passport application processing.

Passports Production

9. The types of FR matches DIA performs can vary depending on the passport application type:

9(2)(k)

9(2)(k)

10. FR is currently only used on adult applications (16yrs and over) due to the limitations of the current FR technology and its inability to effectively match children's images.

11. Passports use a threshold based approach where the threshold is carried based on the applicants risk profile (High, Medium, Low, and No Risk). Any result above the threshold is manually reviewed by a staff member.

12. The Passport Office has the capacity to carry out periodic many to many searching. This is an intensive process where the entire photo database is matched against itself, as was the case in Operation Doppelgänger. Many to many matches are normally used to cleanse the database after installing updated FR algorithms to identify any fraudulent applications that may not have been identified using the older FR algorithms.

13. FR is traditionally in most countries exclusively as an anti-fraud measure, however DIA utilises facial recognition matching as a cornerstone of automated processing. This creates significant efficiency in passport application processing with the added benefit of fraud detection.

14. The use of FR and other automated processes enabled DIA to process the exponential increase in passport volumes that occurred as a result of the introduction of five year passport validity, in 2005, without the commensurate increase in people resources.

15. Border authorities use similar FR technology to automate their border control systems to allow passengers to clear immigration more rapidly by performing an electronic match between the holder and image stored on the ePassport. The ePassport, combined with high quality images and FR algorithms, provide the border security agencies with a high level confidence with the travellers' identity, providing an overall positive traveling experience and decreased transit time for passengers.

Identity Verification Service

16. The identity verification service (IVS) is responsible for the issuance of digital identities for customer use via RealMe. Although IVS it doesn't use FR to automate its application processes at this time, it has the potential to follow the passport model to automate renewal applications.

17. IVS has already introduced FR by utilizing it as an integral part of its RealMe Now app. RealMe Now uses a series FR matching and cutting edge FR features, such liveness

testing, within the App to enable a citizen who holds a passport to prove who they are online.

18. This has the benefit of enabling the customer to complete the application process anywhere without having to appear in person at PostShop to have their photo taken, as is the standard process. This allows citizens applying to verify their identity to do it all from their smartphone.

Investigations

19. 9(2)(k)

What's next

20. The FR Technology we have now is adequate for its current use; however it has reached the end of its end of economic life and is no longer supported by the vendor. This presents a significant risk to our ability to efficiently process passport applications using automated processes.

21. Recent evaluation of newer FR algorithms, through a competitive tender process, indicates the potential for materially improved accuracy. This has the potential to reduce the number of cases that require human intervention to confirm identities and early indications show improved performance of FR on children's images from 12yrs upward. This would allow for increased use of automated passport application processing.

22. Later this year DIA will provide you a Cabinet paper on the outcomes of the procurement of a FR solution. The Cabinet paper will seek approval for the replacement of the current unsupported and outdated FR technology using an as a service offering that may also be utilised by other agencies when they seek to update their current FR technology.

Hon Tracey Martin
Minister of Internal Affairs

___/___/___

Te Tari Taiwhenua
Internal Affairs

Internal Affairs briefing

Hon Tracey Martin
Minister of Internal Affairs

Copy to:

Title: **Facial Recognition Services Business Case**

Date: 15 October 2018

Key issues

- Attached for your approval is the Business Case for Facial Recognition Services. Facial recognition is a key component in automated processing of passport applications. It automates the verification of old and new photographs for passport renewals, checks that the person does not have an alternative identity and checks the person is not on the Department's watch list.

- Following the acquisition of the facial recognition software vendor that provides the Department's current facial recognition system, the software was no longer supported in New Zealand after October 2017. This presents a significant risk of facial recognition system failure.

- A Request for Proposals (RFP) for facial recognition capability was issued in April 2017. 9(2)(b)(ii)
  9(2)(b)(ii)
  9(2)(b)(ii) After evaluation of the responses DXC Technology has emerged as the preferred supplier.

- Ministerial approval of the Business Case is required as the whole of life cost is between $23.9m and $24.6m, which is within your delegated authority of $25m to approve.

- Although the whole of life cost is within your delegated authority, it is also close to the Cabinet approval threshold. We will be guided by you whether you choose to approve the business case or refer the business case to Cabinet for approval.

Action sought	Timeframe
Approval of the Facial Recognition Services Business Case	At your convenience

Contact for telephone discussions (if required)

Name	Position	Direct phone line	After hours phone	Suggested 1st contact
Maria Robertson	Deputy Chief Executive, Service Delivery and Operations	04 494 0615	9(2)(a)	✓
Russell Burnard	General Manager Operations, Service Delivery and Operations	04 494 0681	9(2)(a)	

Return to	Daniel Anderson, Official Correspondence, SDO BDS, Level 10, 45 Pipitea Street
Cohesion reference	WHQPJXVXQWTM-320010367-180
Ministerial database reference	IA201800934

Purpose

1. This paper seeks your approval of the Facial Recognition Services Business Case (attached). The Business Case requires your approval as the Whole of Life Cost (WOLC) of the preferred investment option is between $23.9m and $24.6m and is within your delegated authority to approve. The costs will be met from the Department's Capital Plan and the operating expenditure will be funded from the Passports Memorandum Account as these costs relate to the provision of Passport services. Given the WOLC is close to your delegated authority you may wish to seek Cabinet endorsement of this decision. We seek your guidance on this.

Executive summary

2. The facial recognition system is a key component in automated processing of passport applications. Its role is to automate the verification of old and new photographs for passport renewals, check that the person does not have an alternate identity under another name, and check the person is not on DIA's watch list[1].

3. Our current facial recognition system was introduced in 2012. The supplier of the Department's current Passport facial recognition system was subsequently acquired and the software has not been supported in New Zealand since October 2017.

4. This project aims to replace the existing, unsupported facial recognition system to reduce the risk of facial recognition system failure.

5. A Request For Proposal for a facial recognition capability to be provided as a service was issued in April 2017. 9(2)(b)(ii)

   9(2)(b)(ii)

6. DXC Technology has been identified as the preferred supplier. DXC Technology has the better organisational capability and capacity. This facial recognition capability:

   - meets the business requirements;

   - is the best value for money option over whole of life that reduces business risk to acceptable levels; and

   - has the best solution capability with extremely high accuracy results.

7. The WOLC of the project is between $23.9m and $24.6m and is within your delegated authority to approve.

8. The costs will be met from the Department's Capital Plan and the operating expenditure will be funded from the Passports Memorandum Account as these costs relate to the provision of the Passports service. The cost of the replacement system has been taken into account in the Passports Pricing Review.

Background

9. Facial recognition is a cornerstone of the automated rules processing in the Passports system. Its role is to automate the verification of old and new photographs for passport renewals, check that the person does not have an alternative identity under another name and checks that the person is not on the Department's watch list.

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[1] This tracks persons of interest (POI) who have been flagged as potential risks. POI codes can be applied for the following reasons, but is not limited to these: deportees, court orders, bankruptcy, custody orders

10. The system reduces manual checks, improves turnaround time for passport renewals, and reduces errors and security risks for delivered passports.

11. The Department implemented the existing facial recognition system in 2012. Since that time the global market for biometric solutions has grown rapidly, and has recently undergone a period of acquisition and rationalisation. As a result, the software vendor that provides the Department's current facial recognition system was acquired and the software no longer supported in New Zealand after October 2017.

12. Given this, our current integrator and software provider provides support on a "best endeavours" basis but cannot commit to service levels, and has no legal authority to make changes to the software. To manage risks the Department has compartmentalised this software to minimise changes from other process changes until new software is acquired. This is clearly not sustainable.

13. The immediate consequences of a facial recognition system failure would be a growing backlog of adult passport renewals until the system is restored, or for longer term failure, until additional staff could be brought in to reduce the backlog. Another consequence would be that fraudulent passport applications could not be detected until facial recognition identification services were restored.

14. The key problem to be addressed is to reduce the risk of a facial recognition system failure.

Procurement

15. The Department has consulted with other government agencies that currently use facial recognition software, but have contracts that prevent the Department accessing their current services. Under procurement and probity rules the Department would have had to undertake a full Request for Proposal (RFP) process. Given the expansion of biometric services the Department decided to proceed with a new RFP. Other Departments have expressed interest in using a shared service once their current facial recognition contracts expire.

16. In February 2017 the Department approved the Stage One Business Case and for the Project to proceed with a RFP to procure a facial recognition capability that would be provided 'as a service' (including software and infrastructure upgrades and ongoing operational service support over the period of the contract).

17. Suppliers were required to meet three pre-conditions:

- Solution to be hosted onshore in NZ;

- Service must use NZ based facilities and personnel; and

- Service must utilise a commercially available facial recognition search engine.

18. 9(2)(b)(ii)

19. The procurement process took longer than originally planned as the initial pricing submitted by 9(2)(b)(ii)

20. The Evaluation Panel recommended DXC Technology as the preferred supplier as it best met the business requirements and the most suitable provider for Facial Recognition Services across New Zealand government. They represented the best value-for-money over the whole-of-life, demonstrated the best solution capability with

extremely high accuracy results over the other respondent, and represented the best organisational capability and capacity to deliver the services.

21. The Department also proceeded with an Open Syndicated Contract in recognition that other New Zealand Government agencies may wish to use a DIA led Facial Recognition Service. When other agencies are in a position to seek new facial recognition software this will mean that they can easily join the Department's negotiated contract and minimise costs.

Business Case

22. The attached Business Case details the case for change and the financial estimate for the project. Four short-listed options were considered (further detail from page 25 of the Business Case). The recommended option (Option 3) is to replace the current unsupported facial recognition software, with a modern and supported facial recognition capability provided as a managed service. This option meets the business requirements and fits with Te Ara Manaaki goals by creating a common capability. It was the best value for money option that reduces business risk to acceptable levels.

23. The WOLC of this business case is between $23.9m and $24.6m over the 10 year investment period. The costs reflect the middle and upper estimate forecasts for passport demand in New Zealand and the 85th percentile range of costs derived from the independent Quantitative Risk Analysis (QRA) carried out on the business case. This approach was also used for the Passports Pricing Review.

24. The QRA applies a statistically based framework to key cost components to determine a range of costs within given confidence levels and provides a sound basis for estimating the investment costs and contingency, consistent with the risks. This provides further assurance that the project will be successfully delivered within the forecast budget and timeframe outlined in the Business Case.

25. 9(2)(b)(ii)

26. The costs will be met from the Department's Capital Plan and the operating expenditure will be funded from the Passports Memorandum Account as these costs relate to the provision of the Passports service. Operating expenditure for this investment has been taken into account in the Passports Pricing Review which is due for Cabinet consideration in November 2018.

27. Treasury has been consulted on the WOLC calculations and the Risk Assessment Profile (medium risk rating), and is satisfied the Business Case can proceed for your approval as the upper limit for Ministerial approval is $25m.

28. The investment for the preferred option (between $23.9m and $24.6m) is within your delegated authority to approve but close to the level requiring Cabinet approval ($25m). There is always a risk that costs of implementation exceed our budget. We

have tried to minimise this risk as much as possible through strong project management, external advice on the amount of contingency we should include and engagement with All of Government advisors. We will actively monitor WOLC over the term of the project.

29. If the WOLC for the preferred option risks exceeding $25m the Department will inform Treasury immediately to seek an additional or revised authority. This may also occur if there is any change to the scope or cost of the final contract or the project, or nature and scale of the benefits, that are currently outlined in the Business Case.

30. Given the WOLC is very close to your delegated limit you may seek to have Cabinet endorse this business case. Current projections are clearly within your delegated authority but you may seek comfort from Cabinet approval in case costs do exceed your delegated authority. We will be guided by you whether you choose to approve the business case or refer the business case to Cabinet for approval.

Implementation

31. Subject to approvals, the project will proceed with the implementation of the Facial Recognition Service. Ensuring that the Facial Recognition capability remains available to support passport production is critical. The implementation approach (further detail from page 44 of the Business Case) will allow the opportunity for continuous risk management, incorporating of lessons learned at each phase, and off-ramps (the option for DIA to exit the contract) if significant issues that cannot be addressed are identified.

Next Steps

32. If you approve the business case the Department will complete negotiations with the preferred supplier and the Chief Executive will sign the contract.

33. In the event that the scope or cost of the final contract changes materially the contract will be referred back to the Department's Investment Governance Committee for endorsement prior to being resubmitted to you for your approval.

Recommendations

I recommend that you:

a) **Either**

   i.   **approve** the Facial Recognition Services Business Case; or   **Yes/No**

   ii.   **direct** officials to prepare a Cabinet paper seeking approval of   **Yes/No**
the Facial Recognition Services Business Case;

b) **note** Treasury, MBIE and GCDO have been consulted on the business **Yes/No**
case, the Whole of Life Cost calculations and the Risk Assessment
Profile, and are satisfied the Business Case can proceed for your
approval;

c) **approve** the total amount requested up to $24.6m;   **Yes/No**

d) **note** that the implementation cost will be met from the   **Yes/No**
Department's baseline and Capital Plan and the operating
expenditure will be funded from the Passports Memorandum
Account;

e) **endorse** the Department finalising the contract for the syndicated   **Yes/No**
procurement of Facial Recognition Services in line with the costs
approved above;

f) **note** that in the event the scope or cost of the final contract changes **Yes/No**
materially, we will submit the changes for your approval;

g) **authorise** the Chief Executive of Internal Affairs to approve the final **Yes/No**
contract.

Maria Robertson
Deputy Chief Executive Service Delivery and Operations

Hon Tracey Martin
Minister of Internal Affairs
23 / 10 / 18

Appendix A: Facial Recognition Whole of Life Cost Summary

9(2)(b)(ii)

Appendix B: Facial Recognition Services Business Case

Attached

**Te Tari Taiwhenua
Internal Affairs**

Internal Affairs briefing

**Hon Tracey Martin
Minister of Internal Affairs**

Copy to:

Title:	**Facial Recognition Services**
Date:	25 October 2018

Key issues
• As requested at the 23 October officials meeting, attached is a letter addressed from you to the Minister of Finance informing him of your plans to move forward with the approval of the Facial Recognition Services Business Case.
• The letter outlines the whole of life cost of the Business Case, of $24.6m, which is within your delegated authority to approve and the process that would be followed to seek your approval and Cabinet's should the project overrun the cost of $24.6m and your delegated limit.

Action sought	Timeframe
Sign and send the letter to Minister of Finance	At your convenience

Contact for telephone discussions (if required)

Name	Position	Direct phone line	After hours phone	Suggested 1st contact
Maria Robertson	Deputy Chief Executive, Service Delivery and Operations	04 494 0615	9(2)(a)	✓
Russell Burnard	General Manager Operations, Service Delivery and Operations	04 494 0681	9(2)(a)	

Return to	Daniel Anderson, Official Correspondence, SDO BDS, Level 10, 45 Pipitea Street
Cohesion reference	WHQPJXVXQWTM-320010367-197
Ministerial database reference	IA201800981

Purpose

1. As requested at the 23 October officials meeting, attached is a letter addressed from you to the Minister of Finance informing him of your plans to move forward with the approval of the Facial Recognition Services Business Case.

2. The letter outlines:

   - the purpose of the business case

   - the whole of life cost of $24.6m, which is within your delegated authority to approve, and

   - in that in the event the project exceeds these costs and your delegation limit, officials will advise you and Treasury immediately and resubmit the additional changes for your approval and Cabinet's.
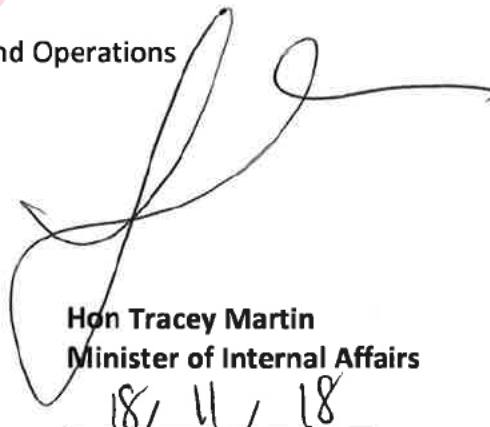
Recommendations

I recommend that you:

a) **Sign and send** the letter to the Minister of Finance   Yes/No

Maria Robertson

Maria Robertson
Deputy Chief Executive Service Delivery and Operations

Hon Tracey Martin
Minister of Internal Affairs
18 / 11 / 18

Appendix A: Letter to Minister of Finance

Attached.

Hon Tracey Martin

Minister for Children

Associate Minister of Education

Minister of Internal Affairs

Minister for Seniors

1 9 NOV 2018

Hon Grant Robertson
Minister of Finance
Parliament Buildings
Wellington

Dear Minister

I am writing to advise you that the Department of Internal Affairs has presented me with the Business Case for Facial Recognition Services for my consideration.

The business case requests approval to replace the current unsupported facial recognition system with a modern and supported facial recognition service. As the facial recognition system is a key component of the passports system, the project aims to reduce the risk of facial recognition system failure and therefore identity fraud.

The preferred investment option has a whole of life cost over the 10 year investment period of between $23.9m and $24.6m, which is within my delegation of $25m to approve. The costs will be met from the Department's Capital Plan and the operating expenditure will be funded from the Passports Memorandum Account.

Department officials have briefed me on how they intend to minimise the risk of these costs exceeding budget and my delegation limit. They have sought external advice on the amount of contingency to be included and engaged with All of Government advisors.

After considering the briefing from officials, I have given my approval of the Facial Recognition Services Business Case and the investment cost of up to $24.6m.

Officials have advised that in the event the project risks exceeding these costs, and my delegation limit, they will advise me and Treasury immediately and resubmit the additional changes for my and Cabinet's approval.

I have requested officials to advise me immediately if the costs may be likely to overrun.

I am happy to discuss this with you further if you wish.

Yours sincerely

Hon Tracey Martin
Minister of Internal Affairs