Memorandum

TO: Murray Breeze, Ben Smith, Emma Weston **DATE:** 11/09/2017

FROM: Julee Browning

SUBJECT: Advanced Imaging Technology (AIT) Trial Results

Good afternoon

The following report will provide an insight into the trial outcome as informed by the trial objectives and hypotheses provided by the Strategic Development Group. It should be noted that the complexity of the analysis is indicative of the questions posed by the hypotheses which in turn, demonstrates the importance of clear and concise desired outcomes for a trial such as this.

The key findings indicate that the time to process end to end through the screening process will take longer than the current state of operation. However, it should be noted that this is a different perspective to the notion of throughput. It will be important to have a clearer understanding of how the equipment is intended to be used to better inform how best to use the data and findings from this trial in any subsequent business case for equipment procurement.

It should also be noted that the application of using the simulation software of ArcPORT would greatly inform planning for deployment and this trial has resulted in significant data that would benefit informing such a simulation which in turn, would greatly benefit planning for implementation.

Feedback received from both the travelling public and staff was extremely positive and support the notion of an increase in the perception of safety through the use of the AIT approach. It is important to note, however, that in this trial environment, a lack of familiarity with the equipment, process and some application of the requirements cannot be disregarded as not having had a degree of impact on the trial findings. Nevertheless, the trial findings are robust and as empirical as possible to inform a strong business case with caution in the way in which the findings are applied to support such a case.

Best Regards

Julee Browning
National Manager: Continuous Improvement

Aviation Security Service

Kaiwhakamaru Rererangi

Will it FLY?

Briefing Paper

Advanced Imaging Technology (AIT)

Trial Report

WIF I.D. 0223

Prepared on behalf of Continuous Improvement by

George Copas,

National Lead Practitioner

Date: 08/09/17

EXECUTIVE SUMMARY

The following document has been prepared to support the work being undertaken and led by the AVSEC Strategic Development Group in determining the applicability of Advanced Imaging Technology (AIT) for the New Zealand context. This document, prepared by the Continuous Improvement (CI) team, outlines and analyses the data collected to inform and contribute to understanding answers for each hypothesis posed by the objectives of this initiative from Strategic Development Group.

Hypotheses:

a. Security Scanners will improve end to end processing time.
b. Staff are willing, able and engaged to uptake the technology.
c. An increase in staff numbers will be required in deploying AIT.
d. [redacted].
e. Passengers will report the same levels of satisfaction through WTMD [Walk-Through Metal Detector] as the Security Scanner.

A – Security Scanners will improve end to end processing time: The evidence outlined in this report refutes this hypothesis. The deployment of AIT scanners would slow average end to end processing times in most, if not all, deployment models. In trial 1, the trialled process was slower, on average, for 82% of participants. In trial 2, the trialled process was slower, on average, for 87% of participants. The full divest trial was slower for 100% of participants. A hypothetical rearrangement of process steps has been described which replicates a plug and play replacement of WTMDs with AIT scanners – this calculation also proves slower than the current system, in terms of end to end processing time. It must however be noted that a slowing of end to end processing times does not necessarily translate into a decrease in throughput. Throughput is dependent upon how many passengers we can have "in process" simultaneously. (Refer to section 2.1 and Appendix 1.)

The quality of the data collected for these trials, and the manner in which it was collected enable all possible deployment options to be effectively modelled and simulated via the ArcPORT process simulation platform.

B – Staff are willing, able and engaged to uptake the technology: The evidence outlined in this report supports this hypothesis. This result is dependent upon Wellington staff being an accurate reflection of AVSEC staff nationally. (Refer to section 2.2 of the report and Appendix 2.)

C – An increase in staff numbers will be required in deploying AIT: No evidence has been uncovered that refutes this hypothesis**.** Further assessment would be needed by the appropriate work group in order to fully comprehend the ramifications of this hypothesis when/if a finalised Concept of Operations (CONOPS) and deployment model is developed. (Refer to section 2.3 of the report.)

D – [redacted]**:** Ultimately, this is a decision for the regulator, however, evidence could be easily provided to the regulator in order to support such a recommendation. [redacted]

[redacted]

(Refer to section 2.4 of the report.)

E – Passengers will report the same levels of satisfaction through WTMD as the Security Scanner: The evidence provided suggests that passengers saw the AIT technology as preferable to the current system – the majority of passengers reported an increased perception of safety, thought AIT was good for New Zealand and gave positive responses when comparing AIT to the usual screening method. Positive responses outweighed the negative by 4:1 on the "Happy or Not" kiosk. (Refer to section 2.5 of the report and Appendix 3.)

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1.0 Introduction

The following document has been prepared to support the work being undertaken and led by the AVSEC Strategic Development Group in determining the applicability of Advanced Imaging Technology for the New Zealand context. It was agreed that a trial would be conducted at Wellington International Airport, at the domestic screening point in the Southern Pier, in the live operational environment to understand both quantitative and qualitative aspects that included measurable data captures to illustrate timeliness, customer and staff feedback for lessons learned.

This document, prepared by the CI team outlines and analyses the data collected to inform and contribute to understanding answers for each hypothesis posed by the objectives of this initiative from Strategic Development Group.

1.1 Background

The CI team worked collaboratively with the Strategic Development Group throughout the planning and development stages of the trial to ensure that both work groups had a clear understanding of both what was required and what would be produced. It was recognised by both groups, that the CI team would be well placed to provide evidence around a number of the proposed hypotheses and less well placed to provide evidence upon others. As such, CI committed to providing empirical evidence to support/refute hypotheses A, B and E from the below list and to provide observations to support/refute hypotheses C and D if pertinent information was uncovered in this process. Best efforts were applied to meet the data collection requirements in alignment with the proposed hypotheses, however, the importance of clarity of question is imperative to achieving good outcomes from data collected.

2.0 Hypotheses to be tested

The following lists a series of hypotheses developed by the Strategic Development Group representatives leading this project. A Data Collection Plan[1] was developed by the CI team to determine measurable and applicable trial parameters with a desire to provide empirical data to inform and/or contribute to answering the following, with particular emphasis on hypotheses A, B and E:

a. Security Scanners will improve end to end processing time.
b. Staff are willing, able and engaged to uptake the technology.
c. An increase in staff numbers will be required in deploying AIT.
d. [redacted]
e. Passengers will report same levels of satisfaction through WTMD as the Security Scanner.

[1] See "AIT Initiative Data Capture Timeline Planning v3" document.

2.1 Security Scanners will improve end to end processing time

Methodology: In order to provide evidence to prove/refute the above hypothesis, timings were taken of the current process as observed at the Wellington South Domestic screening point. These timings were captured using stopwatches and data capture sheets. Timings were taken of the divest process, the WTMD process and any subsequent Hand Held Metal Detector (HHMD – used interchangeably with the term wand) clearance process.

The same measurements were then taken, using the same method, during each trial. This provided timings for the divest process, the WTMD process, the security scanner process and timings for each of the four subsequent clearance processes (Wand, Wand & Targeted Pat Down, Targeted Pat Down and Full Pat Down in a booth). Wherever possible, the same staff were deployed to capture the data throughout, reducing the opportunity for variation within the measurement system.

Whilst the hypothesis refers to end to end processing time, all measurements for both the baseline and trials were stopped once the passenger had been cleared by the wand/security scanner officer. This was done deliberately so that any differences could be attributed to the differences in either divest behaviour or the equipment deployed – using a wider lens and incorporating the x-ray process in its entirety may have resulted in attribution problems and/or confounding variables.

The data does not necessarily follow the same passenger throughout all recorded processes in a linear fashion, although there may be instances of this within the data. The data was captured on a process by process basis, whereby a sample was collected on each process step separately. This methodology enables stratification of variables, allowing process differences to be visible at a greater level of granularity.

Result/Answer: The evidence outlined below refutes the hypothesis that security scanners will improve end to end processing time. The deployment of AIT scanners would slow average end to end processing times in most, if not all, deployment models. In trial 1, the trialled process was slower, on average, for 82% of participants[2]. In trial 2, the trialled process was slower, on average, for 87% of participants. The full divest trial was slower for 100% of participants. The sections below outline the differences in individual process steps. A hypothetical rearrangement of process steps has been described which replicates a plug and play replacement of WTMDs with AIT scanners – this calculation also proves slower than the current system, in terms of end to end processing time. It must however be noted that a slowing of end to end processing times does not necessarily lead to a decrease in throughput. Throughput is dependent upon how many passengers we can have "in process" simultaneously.

The quality of the data collected for these trials, and the manner in which it was collected enable all possible deployment options to be effectively modelled and simulated via the ArcPORT process simulation platform.

Notation: The results outlined above are based on the process determined by the Strategic Development Group and incorporates elements within the process that may or may not be applicable for the implementation of this or similar equipment. The impact of these potentially confounding variables does have an impact on the time to process and does not necessarily reflect a

[2] See Appendix 1 for further analysis of passenger journeys in the trialled processes.

true representation of the actual time taken for a business as usual format. Moreover, the lack of familiarity with the equipment and required process for staff, has had a direct impact on the time taken to process passengers through this trial.

Scanner vs WTMD – Part for part comparison

The baseline average for the WTMD process was 4.7 seconds whereas the average time observed (across all trials) for the scanner was 18.8 seconds. Whilst the time for the security scanner to complete a scan is very rapid, in order to do this the person being scanned must first be positioned in the required manner. Both timings followed identical operational definitions and are therefore directly comparable measurements. This data shows us that the security scanner process observed across all trials was, on average, 14.1 seconds (300%) slower than the WTMD process.

Average Scanner Time Comparisons	
Trial #	**Average Scanner Time**
1	19.8 seconds
2	17.8 seconds
Full Divest	18.4 seconds
Average	18.8 seconds

Alarm Rates Comparison

[redacted]

In the current (baseline) process, [redacted] of passengers require further processing in order to be cleared after completing the WTMD process. This further processing is primarily conducted with a HHMD (wand). The average alarm rate across trials 1 and 2 was [redacted] this relates to the number of passengers required to undergo further processing in order to be cleared after completing the security scanner process. In all the trial processes, four different methods were available to complete this subsequent clearance; targeted wand (when alarms were indicated in sensitive areas of the body), targeted pat down, a combination of targeted wand and pat down, and a full pat down (conducted in a private booth).

In the current process, all passengers are required to pass through the WTMD. In the trial processes, all passengers were still required to pass through the WTMD where upon they were selected for subsequent screening via the security scanner in two different ways. Firstly, passengers who alarmed the WTMD were selected to go through the scanner, if the scanner was available (not in use). Secondly, if the security scanner was not in use, passengers who had cleared the WTMD were

selected, at random, to go through the scanner[3]. The table below outlines the difference in alarm rates between these two selection types.

[redacted]

[redacted]

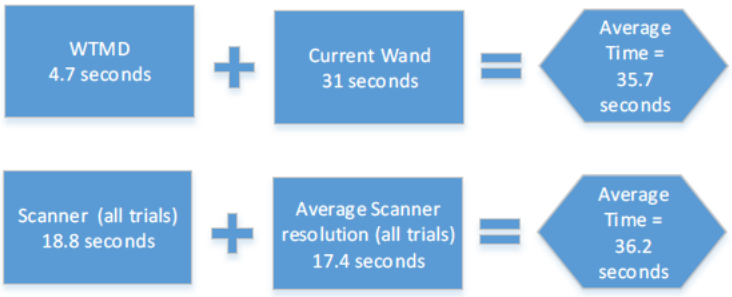
Volunteers in the full divest trial experienced a lower alarm rate when compared with other trial participants, however this must be considered alongside the considerably longer period of time they spent divesting.

Alarm Resolution Comparison

On average, the resolution for a security scanner alarm across all trials is 13.6 seconds (44%) faster than the baseline WTMD alarm resolution. An individual resolution, in isolation, was faster for scanner resolutions than WTMD resolutions. This should however, be read in conjunction with the alarm rate comparisons, [redacted] Further analysis of the four different resolution options trialled with the security scanner is available in Appendix 1.

[3] In the full divest trial, a queue comber sought out passengers willing to participate prior to screening, all volunteers in the full divest trial were selected for security scanner processing, regardless of whether or not they alarmed the WTMD.

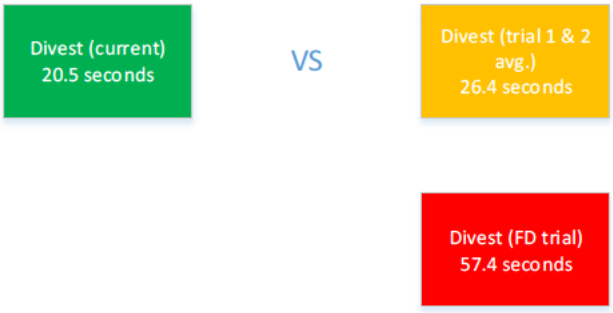
Combined Scanner/WTMD and Resolution Comparison



There is no real difference between the two process times when they are clumped together as above, however it must be noted that this only correlates to the passenger journeys of those that are subjected to a secondary form of personal search. These results should also be read in conjunction with the alarm rate data to assess the full impact/difference.

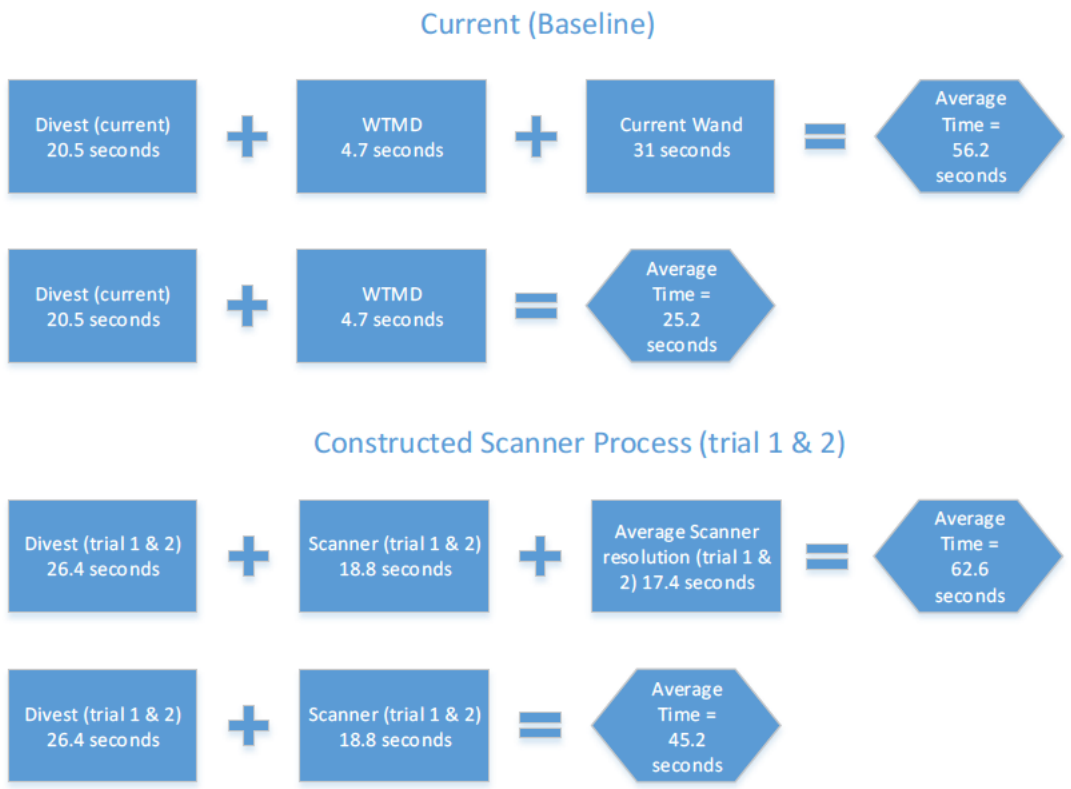
Impact on Divest

During the trials, passengers were asked to divest themselves of more items than in the current (baseline) process in order to minimise the number of unnecessary alarms through the security scanner. [redacted]. Passengers were asked to remove all items from their pockets and to remove outer jackets, coats and similar items of clothing. During the full divest trial, passengers were also asked to remove belts and shoes. This impacted the average time a passenger spent divesting themselves in preparation for screening.



The average time taken by passengers to divest across trial 1 and 2 was 5.9 seconds (29%) slower than the baseline. In the full divest trial the average time to divest was 36.9 seconds (180%) slower than the baseline.

Constructed Process Comparisons



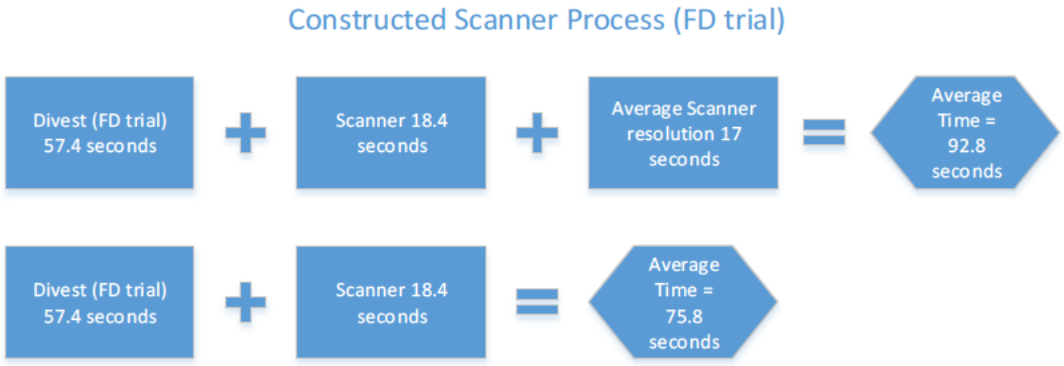
When the process steps are clumped together in the above manner, the constructed scanner process is, on average, 6.4 seconds (11%) slower than the baseline for those passengers that alarm the WTMD/Scanner. For those passengers that do not alarm the WTMD/Scanner, this constructed scanner process is, on average, 20 seconds (79%) slower than the baseline.

In the baseline process we can expect 82% of passengers to have a process time (to this point of the overall process) centring around an average time of 25.2 seconds. Whilst 18% will have a time centring around 56.2 seconds. In the constructed scanner process above, this is somewhat reversed, with 72% of passengers processed to this point in the longer average time of 62.6 seconds and 28% processed in 45.2 seconds.

If 1000 passengers were processed via each of the above processes in a linear and one at a time fashion whereby then the next person in the queue did not start to divest until the person in front of them had completed the final step of the process, then the constructed scanner process (trial 1 & 2) is 73% slower than the baseline. In the baseline process, 1000 passengers would be processed (in the above hypothetical manner[4]) in 513 minutes, whilst the constructed scanner process would take

[4] This is documented for illustrative purposes only. In reality, multiple passengers are "in process" at any given time.

886.8 minutes to process the same number[5]. If we apply this difference to our current optimal screening figure of 270 passengers per hour (per lane), the constructed scanner process above would screen 156 passengers in the same timeframe. Combining the individual process timings as above represents a 'plug and play' replacement comparison[6]. The major constraint in such a deployment model is the difference in alarm rates[7].



If the above calculations were applied to the above constructed (full divest) process, 1000 passengers would be processed in 1430.5 minutes, 179% slower than the baseline. If we apply this difference to our current optimal screening figure of 270 passengers per hour (per lane), the constructed full divest process above would screen 97 passengers in the same timeframe.

Model with least impact on end to end time:

As demonstrated above, the implementation of AIT scanners would have a negative impact on end to end processing time under most, if not all, deployment models. The model with potentially the least impact in this regard would be to deploy AIT scanners in parallel with the current WTMD technology. In this model, as deployed overseas, all passengers divest as though they will be processed via an AIT scanner, however only those passengers selected are processed by the scanner, with all others processing via WTMDs. In this model all passengers would still spend longer on average at divest (thus leading to an increased end to end processing time), however only those passengers selected for AIT scanning would be further impacted upon – in theory, leaving the WTMD process to continue unimpeded at close to 270 passengers per hour per lane. Thus, in theory, it is possible to have slower end to end processing times (as these relate to individual customers) without greatly affecting the overall throughput rate (as we can have multiple customers in process simultaneously).

[5] [redacted]

[6] This is a theoretical calculation based upon the average sub-process timings. The equipment was not trialled in this deployment sequence.

[7] These calculations are based on the staffing set-up deployed during the trials. Resource demand for scanner resolutions is driven by the alarm rate of the scanner. Deploying more staff to scanner resolutions would give different results. Various staffing deployment arrangements can be simulated via the ArcPORT platform.

Please Note: The quality of the data collected for these trials, and the manner in which it was collected enable all possible deployment options to be effectively modelled and simulated via the ArcPORT process simulation platform.

2.2 Staff are willing, able and engaged to uptake the technology

Methodology: Two methods were employed to provide evidence around this hypothesis. Firstly, staff feedback sessions were run after both trial one and trial two. These sessions were run as a facilitated discussion among those who attended, as small groups and some one on one sessions. Twenty-one staff provided feedback via this forum after trial one, with thirty-three staff providing feedback after trial two. During these sessions staff were asked the following questions:

- In your view, how does operating the AIT compare to our current process?
- Do you believe there are advantages to AIT?
- Do you believe there are disadvantages in the AIT process?
- How easy did you feel the AIT process was to operate?
- In your view, how do you think customers found the process?
- Do you see this technology as good for New Zealand?

Staff were also given the opportunity to give open feedback.

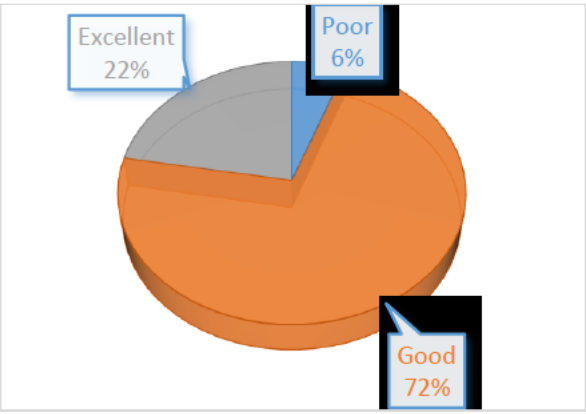
Secondly, a "Happy or Not" kiosk was placed in the staff ready room to capture anonymous feedback from staff. The kiosk asked staff to rate their experience of operating the AIT scanner in the recent trial. The kiosk was deployed for both trial one and two. Four response options were available on the kiosk - the dark green smiley face represents a very positive response to the question, light green represents a positive response, light red represents a negative response and dark red represents a very negative response.

The above approach resulted in a triangulated method involving three elements for data collection, namely: survey via kiosk, one on one interviews and focus groups. This approach ensured that an in-depth and rich data and verbatim commentary was solicited to uncover and understand the meaning given to survey answers which in turn, identified themes and trends from within the feedback.

Result/Answer: The evidence listed below supports the hypothesis that staff are willing, able and engaged to uptake the technology. However, this result is dependent upon Wellington staff being an accurate reflection of AVSEC staff nationally. (Refer to Appendix 2 for verbatim commentary from staff.)

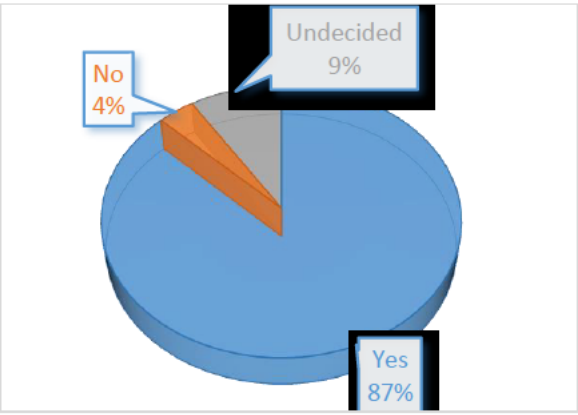
Staff Feedback Session Responses:

In your view, how does operating the AIT compare to our current process?



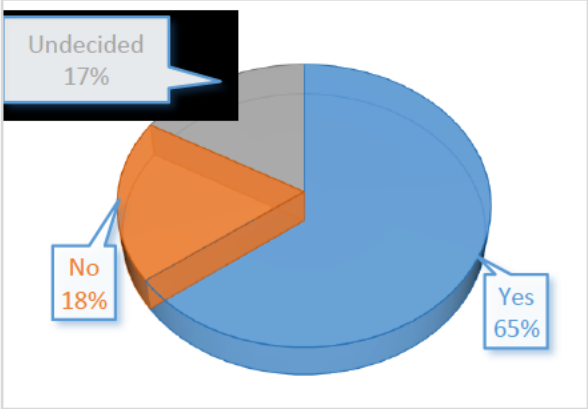
94% of staff viewed the AIT process positively when compared with our current process. The highest response category was "Good" with 72%.

Do you believe there are advantages in the AIT approach?



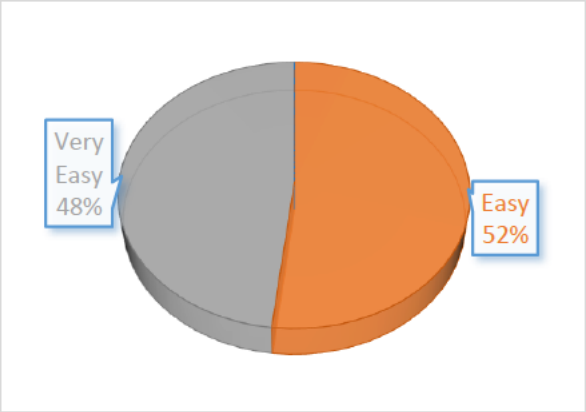
87% of respondents believed that there are advantages in the AIT approach.

Do you believe there are disadvantages in the AIT approach?



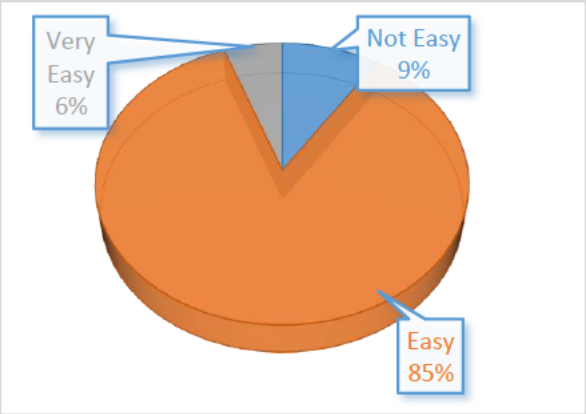
65% of respondents believed that there are disadvantages in the AIT approach.

How easy did you feel the AIT process was to operate?



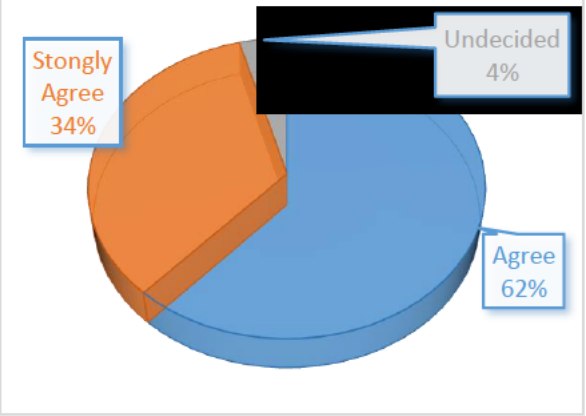
100% of respondents felt that the AIT process was either easy or very easy to operate. No respondents rated the process as 'Not Easy'.

In your view, how do you think customers found the process?



91% of staff respondents felt that customers found the process either easy or very easy.

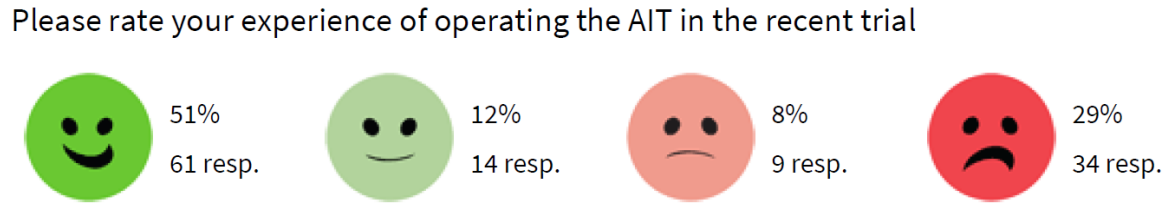
Do you see this technology as good for New Zealand?



96% of respondents either agreed or strongly agreed that AIT is good for New Zealand.

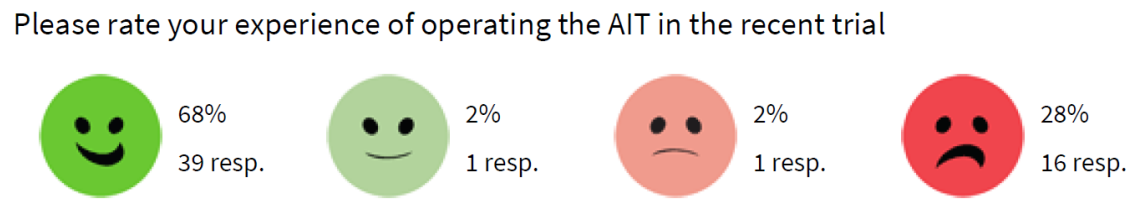
Happy or Not Kiosks – Staff

Trial 1



From a total of 118 responses, 51% rated very positive. Overall the positive response outweighed the negative 63% to 37%.

Trial 2



From a total of 57 responses, 68% rated very positive. Overall the positive response outweighed the negative 70% to 30%.

A total of 175 response were captured by the kiosks across both trials. Of these responses 100 (57%) were very positive, 15 (9%) positive, 10 (6%) negative and 50 (29%) very negative. Overall, the positive responses outweighed the negative 66% to 34% or approximately 2 to 1.

2.3 An increase in staff numbers will be required in deploying AIT

Methodology: The information gathered does not empirically inform an answer to this hypothesis based on the parameters of the trial determined by the Strategic Development Group, the CI team is not in a position to offer data or a view based on a quantifiable answer. This hypothesis falls outside of the scope of the CI team's data collection role. However, from an observational viewpoint, the following provides some insight in to, and may contribute to, the opinion and conclusions of the Strategic Development Group regarding this element.

Result/Answer: No evidence has been uncovered that refutes this hypothesis**.** Further assessment would be needed by the appropriate work group in order to fully comprehend the ramifications of this hypothesis when/if a finalised CONOPS was developed.

Commentary: The staffing numbers required to deploy AIT are dependent upon the CONOPS deployed – for instance, whether there is one AIT scanner per throat, one per lane, or some other arrangement. It is also dependent upon whether AIT scanners are deployed as the primary, secondary or parallel clearance mechanism.
If AIT scanners were deployed with the same CONOPS as the trial conditions then this would undoubtedly lead to an increase in staff positions on a lane. In the current (baseline) state there are four staff positions per lane (not including the supervisor)[8]. In the trial conditions, there were 5 staff positions on the trial lane (not including the supervisor).

Regardless of the deployment model, it is likely that the addition of AIT scanners would lead to an increase in staff positions at screening points. How these additional positions translate into FTE could be calculated by the appropriate work group once the deployment model was determined. There is likely to be a correlation between the number of staff deployed to clear scanner alarms and throughput rates as scanner resolution demand is driven by the alarm rate of the scanner.

[8] In a domestic screening set-up; load, wand and 2 x screeners.

2.4 [redacted]

Methodology: The information gathered does not empirically inform an answer to this hypothesis based on the parameters of the trial determined by the Strategic Development Group, the CI team is not in a position to offer data or a view based on a quantifiable answer. This hypothesis falls outside of the scope of the CI team's data collection role. However, from an observational viewpoint, the following provides some insight in to, and may contribute to, the opinion and conclusions of the Strategic Development Group regarding this element.

Result/Answer: Ultimately, this is a decision for the regulator, however, evidence could be easily provided to the regulator in order to support such a recommendation.

Commentary: [redacted]

[redacted].

2.5 Passengers will report the same levels of satisfaction through WTMD as the Security Scanner

Methodology: Two methods were employed to provide evidence around this hypothesis. Firstly, a staff member was deployed to conduct passenger survey questionnaires during the data capture periods of both trials. Participants were asked the following questions:

- Has your experience in this trial today increased your perception of safety?
- Do you see this technology as good for New Zealand?
- How does your experience in this trial today compare to the usual screening method you experience?

Participants were also given the opportunity to provide further comment if they so wished. In trial one, 122 surveys were completed. In trial two, 99 surveys were completed – providing a total sample of 221 surveys across both trials.

Secondly, a "Happy or Not" kiosk was deployed at the screening point during both trials. The kiosk asked passengers to rate their experience using the following question, "Does the use of body scanners increase your perception of safety?" Four response options were available on the kiosk - the dark green smiley face represents a very positive response to the question, light green represents a positive response, light red represents a negative response and dark red represents a very negative response.

This bi-lateral information gathering method involved two elements for data collection, namely: survey via kiosk and one on one interviews. This approach ensured that an in-depth and rich data and verbatim commentary was solicited to uncover and understand the meaning given to survey answers which in turn, identified themes and trends from within the feedback.

Result/Answer: The evidence provided below suggests that passengers saw the AIT technology as preferable to the current system – the majority of passengers reported an increased perception of safety, thought AIT was good for New Zealand and gave positive responses when comparing AIT to the usual screening method. Positive responses outweighed the negative by 4:1 on the "Happy or Not" kiosk. (Refer to Appendix 3 for verbatim commentary.)

Passenger Survey Questionnaire Responses:

Demographic Data:

82% of customers involved in the survey questionnaire self-identified as being regular flyers (those who flew at least monthly).

- Female: 48%
- Male: 52%
- 20-30 years: 20%
- 31 – 40 years: 23%
- 41 – 50 years: 16%
- 51+ years: 41%

Has your experience in this trial today increased your perception of safety?

Rating	Trial 1	Trial 2	Overall
Disagree	4.2%	27.3%	23%
Agree	75%	52.5%	57%
Strongly Agree	0	0	0
Undecided	20.8%	20.2%	20%

Do you see this technology as good for New Zealand?

Rating	Trial 1	Trial 2	Overall
Disagree	5%	6.1%	5%
Agree	67.8%	71.4%	69%
Strongly Agree	16.5%	4.1%	11%
Undecided	10.7%	18.4%	14%

How has your experience in this trial today compare to the usual screening method you experience?

Rating	Trial 1	Trial 2	Overall
Very Good	25.8%	6.1%	17%
Good	48.3%	46.9%	48%
Acceptable	24.2%	42.9%	33%
Poor	1.7%	4.1%	3%

A Summary of Additional Passengers Comments[9]:

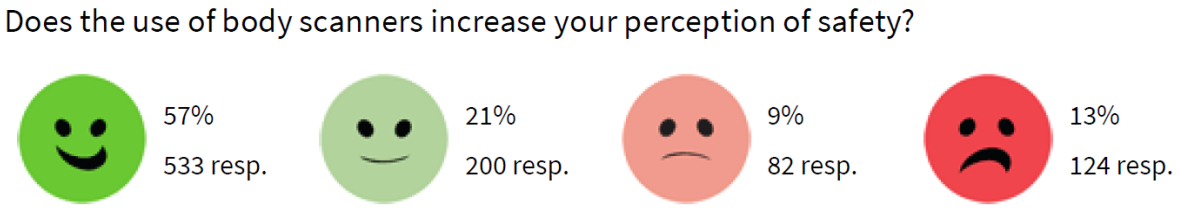
- Positive 72%
- Negative 16%

[9] Complete passenger feedback available in Appendix 2.

- Neutral 12%

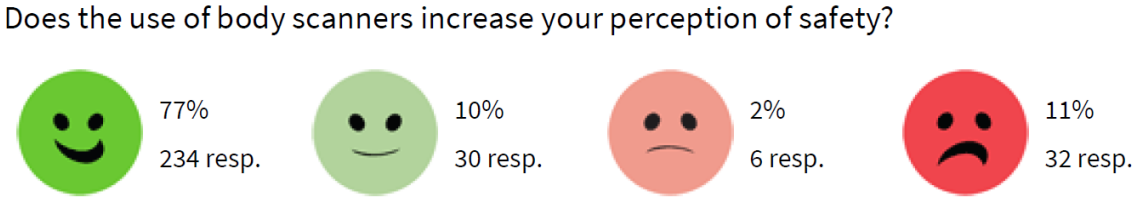
Happy or Not Kiosks – Passengers

Trial 1



From a total of 939 responses, 57% rated very positive. Overall the positive response outweighed the negative 78% to 22%.

Trial 2



From a total of 302 responses, 77% rated very positive. Overall the positive response outweighed the negative 87% to 13%.

A total of 1241 response were captured by the kiosks across both trials. Of these responses 767 (62%) were very positive, 230 (19%) positive, 88 (7%) negative and 156 (13%) very negative. Overall, the positive responses outweighed the negative 80% to 20% or 4 to 1.

Summary Key Findings

The deployment of AIT scanners would slow average end to end processing times in most, if not all, deployment models. It must however be noted that a slowing of end to end processing times does not necessarily translate into a decrease in throughput. Throughput is dependent upon how many passengers we can have "in process" simultaneously. (Refer to section 2.1 and Appendix 1.)

The quality of the data collected for these trials, and the manner in which it was collected enable all possible deployment options to be effectively modelled and simulated via the ArcPORT process simulation platform once this option is available in the near future.

Staff are willing, able and engaged to uptake the technology**:** This result is dependent upon Wellington staff being an accurate reflection of AVSEC staff nationally. (Refer to section 2.2 of the report and Appendix 2.)

An increase in staff numbers will most likely be required in deploying AIT: Further assessment would be needed by the appropriate work group in order to fully comprehend the ramifications of this hypothesis when/if a finalised CONOPS and deployment model is developed. (Refer to section 2.3 of the report.)

[redacted]. This may go some way to offsetting any additional staffing requirements necessitated by the introduction of AIT. [redacted]. (Refer to section 2.4 of the report.)

Evidence suggests that passengers saw the AIT technology as preferable to the current system – the majority of passengers reported an increased perception of safety, and perceived that AIT was good for New Zealand and gave positive responses when comparing AIT to the usual screening method. Positive responses outweighed the negative by 4:1 on the "Happy or Not" kiosk. (Refer to section 2.5 of the report and Appendix 3.)

Conclusion

A wealth of quality data was collected over the course of the AIT trials in order to support the work being undertaken and led by the AVSEC Strategic Development Group in determining the applicability of AIT for the New Zealand context. This report contributes to the organisations understanding of both quantitative and qualitative considerations of any future AIT deployment.

The quality of the data collected for these trials, and the manner in which it was collected enable all possible deployment options to be effectively modelled and simulated via the ArcPORT process simulation platform to better inform deployment decision. Such simulation would enable robust and empirical decision making around the ramifications of all options. However, whilst the software is operational, the expertise to facilitate is not currently available. This is a consideration in relation to time-frame to contribute – nevertheless, this approach would greatly inform an implementation plan.

APPENDIX 1 – Passenger Journeys

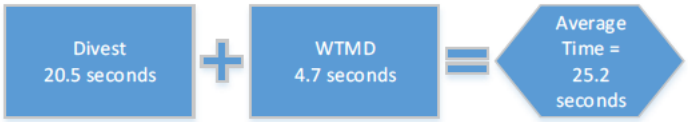
Trial 1 vs Baseline

The following section compares baseline passenger journeys with those actually experienced by passengers in trial 1.

Current process / baseline passenger journey:

Current		
Process Step	**Sample Size**	**Mean Time (seconds)**
Divest	230	20.5
WTMD	230	4.7
Wand	110	31

In the current process, all passengers must divest before passing through the WTMD.



[redacted] of passengers are cleared via the WTMD and do not undergo further search[10]. These passengers are cleared in an average time of 25.2 seconds.

[redacted] of passengers require a further search by HHMD (wand) due to alarming the WTMD. This step adds, on average, 31 seconds to the passenger journey. These passengers are cleared in an average time of 56.2 seconds.

Current Process Journeys		
Journey to clearance	**Time (seconds)**	**% of passengers cleared by this journey**
Divest + WTMD	25.2	[redacted]
Divest + WTMD + Wand	56.2	[redacted]

[10] Calculated from the WTMD data for Wellington South screening point across the month preceding the trials.

Trialled process (Trial 1) passenger journeys:

Trialled Process (Trial 1)		
Process Step	**Sample Size**	**Mean Time (seconds)**
Divest	315	30
WTMD	315	3.1
Scanner	383	19.8
Wand (targeted/sensitive area)	40	10.4
Targeted Pat Down	174	14.6
Wand & Targeted Pat Down	48	20.1
Full Pat Down (Booth)	3	123.7

In trial 1, all passengers must still divest before passing through the WTMD.

The average time for the WTMD process step was 1 second faster, however this may be attributed to the adjusted position of the WTMD, which was moved forward (closer to the front end of the screening point) in the trial condition.

Divest>WTMD

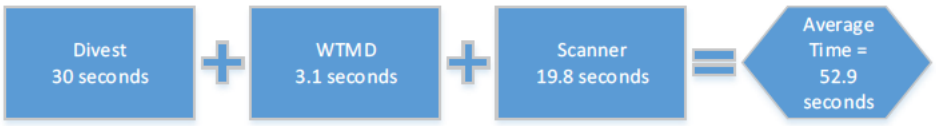
Passengers cleared by the WTMD, who were not subjected to further checks, were cleared in an average time of 33.1 seconds. This is, on average, **7.9 seconds (31%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Current Wand

Passengers not cleared by the WTMD who were then cleared using a HHMD would take an average of 64.1 seconds to be cleared[11]. This is, on average, **7.9 seconds (14%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

[11] The full wand process for WTMD alarm resolutions was not re-measured during the trial – hence the baseline metric for this sub process is used in this case.

Divest>WTMD>Scanner

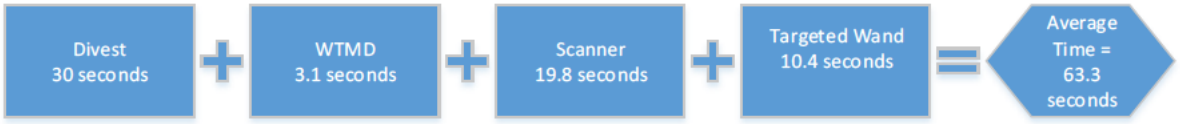


Passengers following the above passenger journey (whether or not they were subjected to the scanner due to WTMD alarm selection or random selection) who were subsequently cleared via the Scanner without further intervention ([redacted] of sample), took an average of 52.9 seconds.

For passengers that had failed the WTMD ([redacted] of sample[12]), this is, on average, **3.3 seconds (6%) faster** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

For passengers that were cleared by the WTMD and subsequently chosen by random selection for the Scanner ([redacted] of sample), this is, on average **27.7 seconds (110%) slower** than the comparable baseline journey (Divest+WTMD= 25.2 seconds).

Divest>WTMD>Scanner>Wand (targeted/sensitive area)

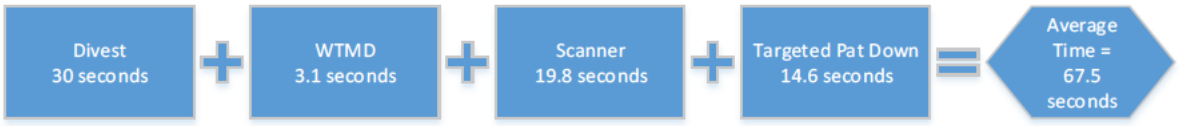


Passengers following the above journey, who were identified by the scanner as having areas of interest that were co-located with sensitive/private areas of the body and subsequently cleared using only the HHMD([redacted] of sample), took an average of 63.3 seconds.

For passengers who initially failed the WTMD ([redacted] of sample), this is, on average **7.1 seconds (13%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2).

For passengers who initially passed the WTMD (random selections – [redacted] of sample), this is, on **average 38.1 seconds (151%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Scanner>Targeted Pat Down



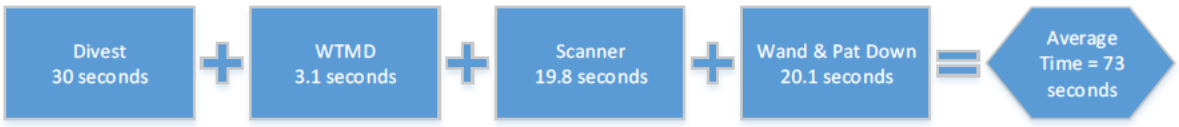
Passengers following the above journey, who were cleared via a targeted pat down in isolation ([redacted] of sample), took an average of 67.5 seconds.

For passengers who initially failed the WTMD ([redacted] of sample), this is, on average **11.3 seconds (20%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

[12] This result reinforces the accuracy of the baseline measurement for WTMD alarms, the baseline figure was [redacted].

For passengers who initially passed the WTMD (random selections – [redacted] of sample), this is, on average **42.3 seconds (168%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Scanner>Wand & Targeted Pat Down

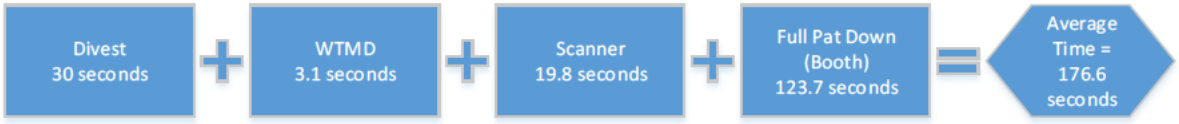


Passengers following the above journey ([redacted] of sample), who were cleared by a combination of wand and targeted pat down, took an average of 73 seconds.

For passengers who initially failed the WTMD ([redacted] of sample), this is, on average **16.8 seconds (30%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

For passengers who initially passed the WTMD (random selections – [redacted] of sample), this is, on average **47.8 seconds (190%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Scanner>Full Pat Down (Booth)



Passengers following the above journey, who were cleared via a full pat down in a private booth, took an average of 176.6 seconds[13].

For passengers who initially failed the WTMD ([redacted] passengers) this is, on average, **120.4 seconds (214%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

For passengers who initially passed the WTMD (1 passenger) this is, on average, **151.4 seconds (601%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

[13] There was only a very small sample of passengers cleared via this option, only [redacted] timings were recorded. This timing is therefore, at best, an indication of what an average time might be.

Trial 1 – Passenger Journeys		
Journey to clearance	**Time (seconds)**	**% of sample passengers cleared by this journey**
Divest + WTMD	33.1	N/A – Not captured
Divest + WTMD + Current Wand*	64.1	N/A – Not captured
Divest + WTMD + Scanner	52.9	[redacted]
Divest + WTMD + Scanner + Wand (targeted area/sensitive)	63.3	
Divest + WTMD + Scanner + Targeted Pat Down	67.5	
Divest + WTMD + Scanner + Wand & Targeted Pat Down combo	73	
Divest + WTMD + Scanner + Full Pat Down (booth)	176.6	

The table above shows that the most common journey to resolution, for those passengers processed through the security scanner, involved the use of a targeted pat down.

Trial 2 vs Baseline

The following section compares baseline passenger journeys with those actually experienced by passengers in trial 2.

Trialled process (Trial 2) passenger journeys:

Trialled Process (Trial 2)		
Process Step	**Sample Size**	**Mean Time (seconds)**
Divest	336	23.1
WTMD	337	3.3
Scanner	382	17.8
Wand (targeted/sensitive area)	15	12.7
Targeted Pat Down	208	17.5
Wand & Targeted Pat Down	64	23.4
Full Pat Down (Booth)	0	n/a

In trial 2, all passengers must still divest before passing through the WTMD.

The average time taken by passengers to divest in trial 2 was 2.6 seconds slower than the baseline. The average time for the WTMD process step was 1.4 seconds faster.

Divest>WTMD

Passengers cleared by the WTMD, who were not subjected to further checks, were cleared in an average time of 26.4 seconds. This is, on average, **1.2 seconds (5%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Current Wand

Passengers not cleared by the WTMD who were then cleared using a HHMD would take an average of 57.4 seconds to be cleared[14]. This is, on average, **1.2 seconds (2%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

[14] The full wand process for WTMD alarm resolutions was not re-measured during the trial – hence the baseline metric for this sub process is used in this case.

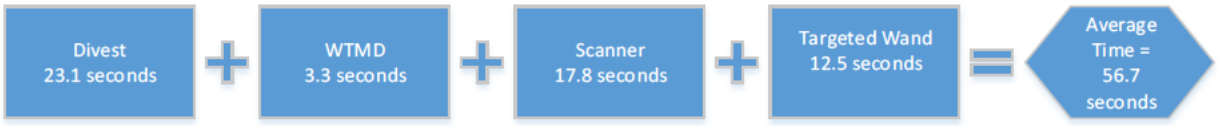
Divest>WTMD>Scanner

Passengers following the above passenger journey (whether or not they were subjected to the scanner due to WTMD alarm selection or random selection) who were subsequently cleared via the Scanner without further intervention ([redacted] of sample), took an average of 44.2 seconds.

For passengers that had failed the WTMD ([redacted] of sample), this is, on average, **12 seconds (21%) faster** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

For passengers that were cleared by the WTMD and subsequently chosen by random selection for the Scanner ([redacted] of sample), this is, on average **19 seconds (75%) slower** than the comparable baseline journey (Divest+WTMD= 25.2 seconds).

Divest>WTMD>Scanner>Wand (targeted/sensitive area)

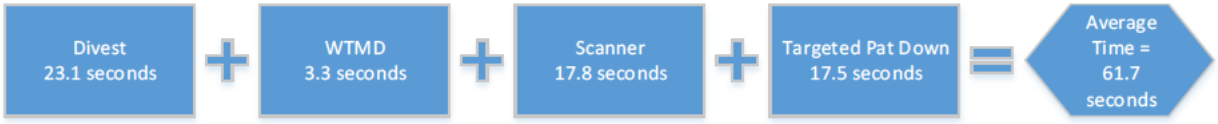


Passengers following the above journey, who were identified by the scanner as having areas of interest that were co-located with sensitive/private areas of the body and subsequently cleared using only the HHMD([redacted] of sample), took an average of 56.7 seconds.

For passengers who initially failed the WTMD ([redacted] of sample), this is, on average **0.5 seconds (0.9%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2).

For passengers who initially passed the WTMD (random selections – [redacted] of sample), this is, on **average 31.5 seconds (125%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Scanner>Targeted Pat Down

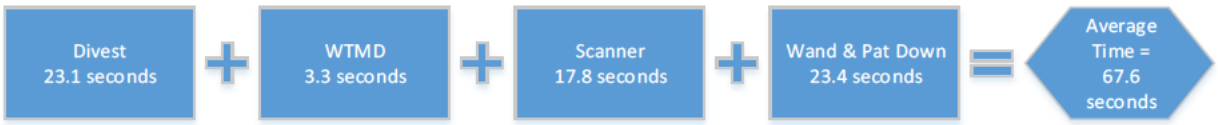


Passengers following the above journey, who were cleared via a targeted pat down in isolation ([redacted] of sample), took an average of 61.7 seconds.

For passengers who initially failed the WTMD ([redacted] of sample), this is, on average **5.5 seconds (10%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

For passengers who initially passed the WTMD (random selections – [redacted] of sample), this is, on average **36.5 seconds (145%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Scanner>Wand & Targeted Pat Down



Passengers following the above journey ([redacted] of sample), who were cleared by a combination of wand and targeted pat down, took an average of 67.6 seconds.

For passengers who initially failed the WTMD ([redacted] of sample), this is, on average **11.4 seconds (20%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

For passengers who initially passed the WTMD (random selections – [redacted] of sample), this is, on average **42.4 seconds (168%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Scanner>Full Pat Down (Booth)

No passengers were searched in the booth in trial during the data capture period 2.

Trial 2 – Passenger Journeys		
Journey to clearance	**Time (seconds)**	**% of sample passengers cleared by this journey**
Divest + WTMD	26.4	N/A – Not captured
Divest + WTMD + Current Wand	57.4	N/A – Not captured
Divest + WTMD + Scanner	44.2	[redacted]
Divest + WTMD + Scanner + Wand (targeted area/sensitive)	56.7	
Divest + WTMD + Scanner + Targeted Pat Down	61.7	
Divest + WTMD + Scanner + Wand & Targeted Pat Down combo	67.6	
Divest + WTMD + Scanner + Full Pat Down (booth)	-	

The table above shows that the most common journey to resolution, for those passengers processed through the security scanner, involved the use of a targeted pat down.

Full Divest vs Baseline

The following section compares baseline passenger journeys with those actually experienced by passengers in the full divest trial.

For a short period during trial two, the conditions of the trial were deliberately changed to mimic a higher threat situation whereby trial participants removed their belts and shoes as part of the divest process. Participation in this trial was on a voluntary basis, with passengers having the choice whether to participate, or not. The same scanner was used for both trial two and the full divest trial.

Trialled process (Trial 3 – Full Divest) passenger journeys:

Trialled Process (Trial 3 – Full Divest)		
Process Step	**Sample Size**	**Mean Time (seconds)**
Divest	86	57.4 seconds
WTMD	86	3.7 seconds
Scanner	86	18.4 seconds
Wand (targeted/sensitive area)	0	n/a
Targeted Pat Down	42	16.7 seconds
Wand & Targeted Pat Down	8	18.8 seconds
Full Pat Down (Booth)	0	n/a

In the full divest trial, all participating passengers must divest (including all belts and shoes) before passing through the WTMD.

The average time taken by passengers to divest in this trial was 36.9 seconds (180%) slower than the baseline. The average time for the WTMD process step was 1 second faster.

Divest>WTMD

All volunteers in the full divest trial were directed to the body scanner after the WTMD. Theoretically however, if this CONOPS were deployed for a longer period without directing all volunteers to the scanner, we would expect to see some passengers cleared by the WTMD alone. We can expect these passengers to match the below journey.

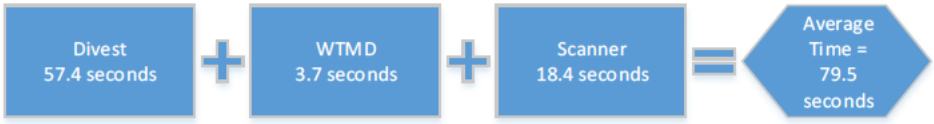
Passengers cleared by this method, who were not subjected to further checks, would take an average time of 61.1 seconds. This is, on average, **35.9 seconds (142%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Current Wand

As above, no volunteers were cleared using this method during the data capture period of this trial. Theoretically, passengers following this journey (in a full divest situation) would match the below.

Passengers cleared by this method would take an average time of 92.1 seconds. This is, on average, **35.9 seconds (164%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

Divest>WTMD>Scanner

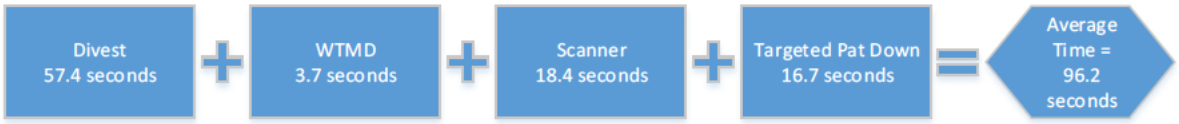


Passengers following the above passenger journey who were subsequently cleared via the Scanner without further intervention ([redacted] of sample), took an average of 79.5 seconds.

For passengers that had failed the WTMD, this is, on average, **23.3 seconds (41%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

For passengers that were cleared by the WTMD this is, on average **54.3 seconds (215%) slower** than the comparable baseline journey (Divest+WTMD= 25.2 seconds).

Divest>WTMD>Scanner>Targeted Pat Down

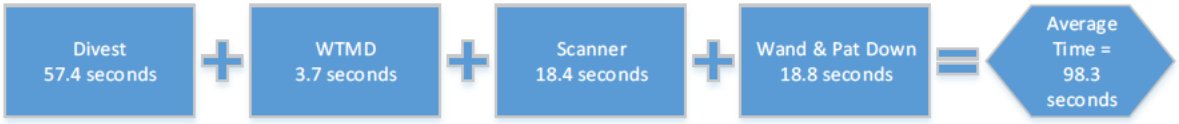


Passengers following the above journey, who were cleared via a targeted pat down in isolation ([redacted] of sample), took an average of 96.2 seconds.

For passengers who initially failed the WTMD, this is, on average **40 seconds (71%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

For passengers who initially passed the WTMD this is, on average **71 seconds (282%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Divest>WTMD>Scanner>Wand & Targeted Pat Down



Passengers following the above journey ([redacted] of sample), who were cleared by a combination of wand and targeted pat down, took an average of 98.3 seconds.

For passengers who initially failed the WTMD, this is, on average **42.1 seconds (75%) slower** than the comparable baseline journey (Divest+WTMD+Wand=56.2 seconds).

For passengers who initially passed the WTMD, this is, on average **73.1 seconds (290%) slower** than the comparable baseline journey (Divest+WTMD=25.2 seconds).

Trial 3 (Full Divest) – Passenger Journeys		
Journey to clearance	**Time (seconds)**	**% of sample passengers cleared by this journey**
Divest + WTMD	61.1	n/a – theoretical
Divest + WTMD + Current Wand	92.1	n/a – theoretical
Divest + WTMD + Scanner	79.5	[redacted]
Divest + WTMD + Scanner + Wand (targeted area/sensitive)	-	
Divest + WTMD + Scanner + Targeted Pat Down	96.2	
Divest + WTMD + Scanner + Wand & Targeted Pat Down combo	98.3	
Divest + WTMD + Scanner + Full Pat Down (booth)	-	

Alarm Rate

Total	Clear	Alarm
86	[redacted]	[redacted]

The table above shows that the most common journey to resolution, for those passengers processed through the security scanner, involved the use of a targeted pat down.

APPENDIX 2 – Feedback from staff

Trial 1

The staff feedback sessions were run as a discussion among those who attended, as small groups with some one on one capture. 21 people total.

Temper the below feedback, as it was felt by facilitators that the team were mainly sharing events that stood out to them as opposed to the many non-eventful events.

We asked the following questions with the responses below:

In your view, how does operating the AIT compare to our current process?

Poor	0	Good	13	Excellent 8

- [redacted].
- [redacted]
- Found it easier and quicker with the highlighted area to identify specific search area

Do you believe there are advantages in the AIT approach?

Yes	21	No	0	Undecided 1

- Less intimate/intrusive for the customers
- The scanner was easy to operate and the training was good in preparation for the trial.
- It was quicker than wanding
- If divest/load is quick and correct, it can be a very quick process
- It gave me more confidence because of the accuracy of the image

Do you believe there are disadvantages in the AIT approach?

Yes	12	No	6	Undecided 3

- Got more grumpy customers with the scanner than the magnetometer.
- Having to ask passengers to remove outer clothing more often than the normal process.
- That many of the customers wilfully ignored instructions to divest hats, coats and jackets despite being advised by the Queue Comber or requested by Load.
- Customers concerned about radiation from the scanner
- [redacted]
- If a full pat-down is required in the cabin, it takes extra time and staff

How easy did you feel that AIT process was to operate?

Not Easy 0	Easy 5	Very Easy 16

- The training was good enough for the ease of use of a scanner.
- Easy to operate – just a push of the button.
- No chances of human error.
- When asked if they woke up tomorrow and the new scanner was permanently in place – and how they would feel about that, the team unanimously agreed that that would be good, as long as they didn't have to perform random continuous screening. There was feedback that some customers didn't like being screened when they didn't set of the metal detector.
- Diagram of person on the wall of the scanner was easy for the passenger to follow

In your view, how do you think customers found the process?

Not Easy	2	Easy	16	Very Easy	3

- Non-frequent flyers felt intimidated
- Customers will find it easier as the process becomes the norm – much of the issues were because it was new
- Some customers commented on it be a hindrance being an extra step in the process
- Customers asking why they needed to be scanned when they didn't set off the magnetometer

Do you see this technology as good for New Zealand?

Disagree	0	Agree	6	Strongly Agree	8	Undecided 0

- We need to move with the cutting edge of technology – so AIT in that regards is moving forward.
- It's high time that we move forward as other advanced airports

Open feedback:

That we need to be precise in the placement of Wand to help the customers, both advance through the WTMD when ready, and to make sure they don't collect their bags after walking through the WTMD and prior to the bags being screened.

There was confusion about whether or not they (as a Wand) were able to offer the Cabin or if that was only an option if the customer asked for it.

That the number of AVSEC staff around the customers purely to observe the process at any time was intimidating or overwhelming for the customers.

Because of staff shortages, we had to shut down the AIT and it would have been better if it was a continued process

[redacted]

The team wanted to know where to from here in terms of the screening process

The team want to know more information about the process – [redacted]?

The staff commented (many) on the following changes to the process that happened in the first days, and clarity before the next trial would be helpful:

- Whether or not we start with continuous random customer selection for the scanner
- Whether the pat down process is to be done with or without the wand
- The change in the threshold of the full pat-down process
- The extent that the Loader needs to have the customers divest hats, scarfs, coats, jackets and hoodies.
- Determining and being clear on whether or not we are divesting belts and shoes before communicating to the staff

Session 1:

Staff Member identifies as: Male 13 / Female 8

Age range: 20-30 7 31-40 6 Over 41 8

Trial 2

The staff feedback sessions were run as a discussion among those who attended, as small groups totalling 33 people.

Temper the below feedback, as it was felt by facilitators that the team were mainly sharing events that stood out to them as opposed to the many non-eventful events.

We asked the following questions with the responses below:

In your view, how does operating the AIT compare to our current process?

Poor	3	Good	26	Excellent 4

- [redacted]
- A more involved (comprehensive) process [redacted]
- [redacted]
- [redacted]

Do you believe there are advantages in the AIT approach?

Yes	27	No	2	Undecided 4

- [redacted]
- Found it easier and quicker with the highlighted area to identify specific search area
- It was quicker than wanding
- It gave me more confidence because of the accuracy of the image
- Hips and knees where scanned quicker and we didn't need to find a male/female officer to resolve
- [redacted]
- [redacted]

Do you believe there are disadvantages in the AIT approach?

Yes	23	No	4	Undecided 6

- Got more grumpy customers with the scanner than the magnetometer.
- Customers concerned about radiation from the scanner and other health issues, but not significant
- Uses more staff to operate than a normal lane
- Staff were often patting down the wrong side of the customers body – getting the scan alerts on the image mixed up

- [redacted]

How easy did you feel that AIT process was to operate?

Not Easy 0	Easy 23	Very Easy 10

- Easy to operate – just a push of the button
- No chances of human error
- Less exhausting than wanding – so easier to perform properly
- Training should have been more comprehensive – including a session with the scanner itself before being rostered on with the scanner
- Better signage and information for the customers to prepare them for process, both to speed up the process and to inform them of the steps in the process

In your view, how do you think customers found the process?

Not Easy	3	Easy	30	Very Easy	0

- Staff communication was great, but passenger understanding of instructions was limited
- Customers will find it easier as the process becomes the norm – much of the issues were because it was new
- Some customers commented on it being a hindrance - being an extra step in the process
- Customers asking why they needed to be scanned when they didn't set off the magnetometer / Random continuous selection was confusing for some customers
- Not easy for passengers to turn on the spot
- Many passengers couldn't comprehend and follow the instructions, especially around arm positioning and 360 degree spin, and especially so for older passengers
- Passengers with knee and hip replacements were cleared quicker with the scanner
- Passengers overwhelmed by extra things to do – this scanner being an extra step
- The mat moved a lot and had to be re-positioned and sometimes posed as a tripping hazard
- For full divest – provide the customers with a well-equipped area for them to put their clothes and shoes back on.

Do you see this technology as good for New Zealand?

Disagree	0	Agree	23	Strongly Agree	8	Undecided 2

- We need to move with the cutting edge of technology – so AIT in that regard is moving forward / Technology needs to be embraced
- It's high time that we move forward as other advanced airports
- Anything we do needs to be consistent screening point to screening point, and airport to airport
- Technology is good, but with current set up, this is taking much longer

Open feedback:

Time spent on the trial too short, needed a longer trial and time with the machine.

Is the cost worth it? Could the money for these scanners be better spent elsewhere / we have resources that could be better used, such as dogs rather than AIT

[redacted]

The team wanted to know where to from here in terms of the screening process

The team want to know more information about the process – for example why the magnetometer indicates something and then the customer is all clear through the scanner. How does this happen?

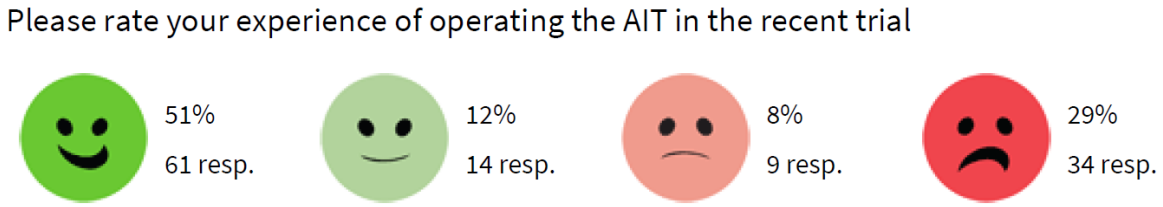
We also asked the teams preference between the scanners used in trial one verses that of trial two. The results, in terms of preference, were: Trial one: 9 Trial two: 18 Undecided: 4 (2 abstained as they didn't have enough experience in one trial or the other).
In the main, trial one was preferred for the speed and experiencing less errors in setting the customers up for the scan, and trial two was preferred [redacted]

Staff Member identifies as: Male 20 / Female 13

Age range: 20-30 9 31-40 6 Over 41 18

Happy or Not Kiosks – Staff (Trial 1)

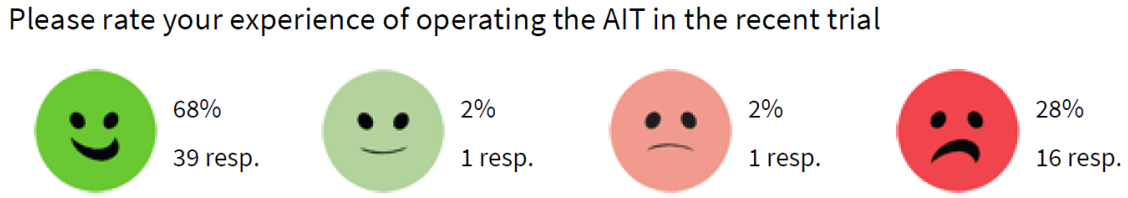
A happy or not kiosk was placed in the staff ready room to capture anonymous feedback from staff. The kiosk asked staff to rate their experience of operating the AIT scanner in the recent trial. The dark green smiley face represents a very positive response to the question, light green represents a positive response, light red represents a negative response and dark red represents a very negative response.



The results of the kiosk survey are displayed above. From a total of 118 responses, 51% rated very positive. Overall the positive response outweighed the negative 63% to 37%.

Happy or Not Kiosks – Staff (Trial 2)

A happy or not kiosk was again placed in the staff ready room to capture anonymous feedback from staff during trial 2. The kiosk asked staff to rate their experience of operating the AIT scanner in the recent trial. The dark green smiley face represents a very positive response to the question, light green represents a positive response, light red represents a negative response and dark red represents a very negative response.



The results of the kiosk survey are displayed above. From a total of 57 responses, 68% rated very positive. Overall the positive response outweighed the negative 70% to 30%.

A total of 175 response were captured by the kiosks across both trials. Of these responses 100 (57%) were very positive, 15 (9%) positive, 10 (6%) negative and 50 (29%) very negative. Overall, the positive responses outweighed the negative 66% to 34% or approximately 2 to 1.

APPENDIX 3 – Customer Survey Data

Trial 1

These are the results of our survey questionnaire carried out between the 26th to the 29th of June.

Completed 122 surveys.

90.2% of customer involved in the surveys identified themselves as regular flyers (those who flew at least monthly).

Here is the summary of responses from the survey questions:

Has your experience in this trial today increased your perception of safety?

- Disagree: 4.2%
- Agree: 75%
- Strongly agree: 0
- Undecided: 20.8%
- *Note*: This question only had 30 responses as was replaced by the operation of the kiosk.

Do you see this technology as good for New Zealand?

- Disagree: 5.0%
- Agree: 67.8%
- Strongly agree: 16.5%
- Undecided: 10.7%

How does your experience in this trial today compare to the usual screening method you experience?

- Very good: 25.8%
- Good: 48.3%
- Acceptable: 24.2%
- Poor: 1.7%

Demographic data:

- Male: 45.8%
- Female: 54.2%
- 20-30 years: 19.7%
- 31-40 years: 31.6%
- 41-50 years: 15.4%
- 51+ years: 33.3%

A Summary of Passengers Comments Who Passed through the Scanner:

- Positive 72%
- Negative 16%
- Neutral 12%

Positive Examples;

- Quicker (11)
- Less invasive (7)
- Friendly and polite staff (5)
- Better method (4)
- Safety important
- Like new technology
- Nice and easy

Negative Examples;

- Prefers usual method
- Feels invasive
- A bit scary
- It takes too long
- Slower
- Having to remove jacket

Neutral Examples;

- Don't want to get like the USA (2)
- As long as no delays
- Be warned, scan is in operation
- As long as we keep safe

Trial 2

These are the results of our survey questionnaire carried out between the 1st to the 4th of August.

Completed 99 surveys.

71.7% of customer involved in the surveys identified themselves as regular flyers (those who flew at least monthly).

Here is the summary of responses from the survey questions:

Has your experience in this trial today increased your perception of safety?

- Disagree: 27.3%
- Agree: 52.5%
- Strongly agree: 0
- Undecided: 20.2%

Do you see this technology as good for New Zealand?

- Disagree: 6.1%
- Agree: 71.4%
- Strongly agree: 4.1%
- Undecided: 18.4%

How has your experience in this trial today compare to the usual screening method you experience?

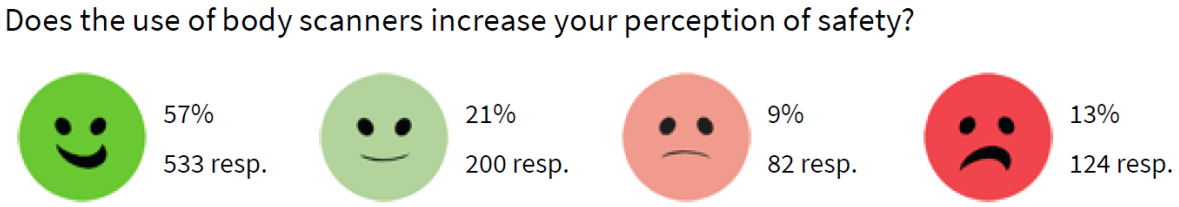
- Very good: 6.1%
- Good: 46.9%
- Acceptable: 42.9%
- Poor: 4.1%

Demographic data:

- Male: 59.2%
- Female: 40.8%
- 20-30 years: 20.2%
- 31-40 years: 12.1%
- 41-50 years: 17.2%
- 51+ years: 50.5%

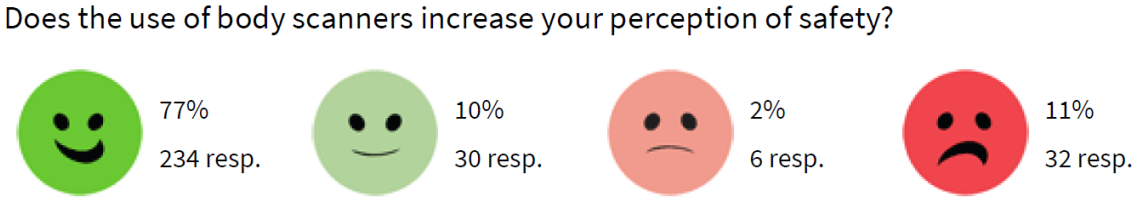
Happy or Not Kiosks – Passengers

Trial 1



From a total of 939 responses, 57% rated very positive. Overall the positive response outweighed the negative 78% to 22%.

Trial 2



From a total of 302 responses, 77% rated very positive. Overall the positive response outweighed the negative 87% to 13%.

A total of 1241 response were captured by the kiosks across both trials. Of these responses 767 (62%) were very positive, 230 (19%) positive, 88 (7%) negative and 156 (13%) very negative. Overall, the positive responses outweighed the negative 80% to 20% or 4 to 1.