

Privacy Impact Assessment

PART I – Overview

1. Contact Information

(This should be the name of the person responsible for the initiative)

Name: Terry Towns
Title: VP Corporate Security and Compliance
Department: Corporate Security and Compliance
Phone Number: 604- 225-6408
E-mail: ttowns@bclc.com

2. Description of the Program or System being assessed

The system being tested is a Facial Recognition Computer program which has been developed by s 15(1)(l). This FR system has been utilized by BCLC with limited results in the past and this is another test phase using a more advance program and s 15(1), s 17(1)

This FR system has been developed over a period of time, with tests also being conducted by OLG.

Components of the test Facial Recognition system are as follows:

s 15(1)(l)

Trial Start Date: January 12th 2011

Trail Completion Date: March 31st 2011

The test phase will run for just over 60 business days completing on March 31st 2011. For the duration of the test phase the s 15(1), s 17(1) staff will continue to enrol additional staff and patrons and track the performance by accepting/rejecting the alerts.

Alerts are generated when s 15(1), s 17(1)

The alert is generated and the photographs are viewed, if there is a positive match to a subject in the data base the alert is accepted and if not it is rejected. If there is an alert that is not accepted in most cases the photograph will be that of a totally unknown subject. **The overall majority of photographs are**

never viewed because they do not generate an alert. There is nothing attached to these photographs that would identify the subject.

Once the trial is complete the data will be forwarded to s 15(1)(l) who will provide a full audit, including statistics and metrics.

- Approximately s 15(1)(l) that were already in the BCLC s 15(1)(l) System were suitable to be converted into the new s 15(1)(l) system.
- As of January 12th 2011 an additional 114 staff and patrons had been enrolled into the system

An overview of the results of the test phase will be completed and forwarded to BCLC for review and consideration.

3. Purpose/objective of the initiative

BCLC and our Service Providers are committed to assisting Voluntary Self Excluded subjects to be successful in fulfilling their obligation of not attending Gaming Establishments as per the terms of their Voluntary Self Exclusion Agreement which they have endorsed. BCLC and our Service Providers are also committed to preventing Banned or Prohibited Patrons from attending Gaming Establishments in the province of British Columbia. The purpose of this initiative is to provide another tool to BCLC and our Service Providers that will enhance their abilities to identify VSE, Banned or Prohibited subjects at the point of entry and prevent them from gaining access to the Gaming Establishment.

This innovative technology is being pursued with s 15(1)(l) as there is an urgency to do a better job at identifying VSE, Banned and Prohibited subjects attempting to gain access to the Gaming Establishments. There is a social responsibility to the citizens of British Columbia to do all we can to assist them in succeeding during their VSE period.

Currently BCLC and Service Providers are facing a myriad of civil law suits by subjects related to repeated violations of their VSE agreements. BCLC is taking a proactive approach in attempting to identify a program which will enhance the abilities of the Service Providers to intercept and prevent even more violators from gaining access than they are already.

The efforts being taken to enhance our abilities to identify and intercept VSE, Banned and Prohibited subjects from Gaming Establishments further demonstrates to the citizens of British Columbia that BCLC and the Government of BC, hear the concerns that have been raised regarding our Voluntary Self Exclusion Program.

4. If this is a change to an existing program or system, describe the current system or program and the proposed changes

A test project was completed in 2010 at s 15(1), s 17(1) with different equipment and the results were disappointing which has resulted in further research and development by s 15(1), s 17(1) in consultation with BCLC. Thus this updated version is being tested. OLG has been successful in their efforts due to the fact they own and operate the Casinos and have been able to control the s 21

system. In British Columbia the Service Providers own the properties and it is not feasible to have a one size fits all FR system. This is another reason for further testing of the FR system ensuring that

we achieve the results that we expect and at the end of the day BCLC will have a FR system that we'll have confidence in and be able to be roll out to other Gaming Establishments.

5. Provide details of any previous Privacy Impact Assessment or other form of personal information assessment done on this initiative (in whole or in part).

None

6. "Personal Information" is recorded information about an identifiable individual other than contact information. "Contact Information" is the name, title, telephone or facsimile number, email address etc., which enables an individual at a place of business to be contacted. Describe the types of personal information that will be collected, used and/or disclosed and the nature and sensitivity of the personal information.

During the test phase of this project facial images of subjects are obtained through the use s 15(1)(l)

s 15(1)(l) There is no information other than a facial image that is recorded on a server.

The photographs are from current and expired VSE, Banned and Prohibited subjects. These photographs contain limited information that identifies the individual and the reason they were s 15(1)(l) There is also a group of approximately two hundred subjects that frequent the Casino regularly that have been enrolled into the data base as test subjects. These are mainly Casino Staff or BCLC employees. There is no information attached to these facial images that would associate a name or other personnel information to the photo.

7. Provide a description (either a narrative or flow chart) of the linkages and flows of personal information collected, used and/or disclosed. Include ALL groups that will use the personal information (for example, GPEB, BCLC Casino Marketing, Equifax, a third party consultant etc.).

Disclosure of the information during this Facial Recognition test project will be strictly controlled and limited to the following individuals or groups:

- The recorded facial images will only be viewed by s 15(1) that has been assigned to this project.
- Should a VSE, Banned or Prohibited subject be identified in real time the information will be passed onto s 15(1) but they do not have access or the ability to view any photographs other than what is already in the s 15(1)(l) system.
- s 15(1)(l)
- Limited BCLC Personnel attached to s 15(1) who will be involved with the roll out and evaluation of the test phase.
- s 15(1)(l) staff involved with the development of the Facial Recognition system for testing and evaluation of the results of the test phase.

8. What are the potential privacy risks of this proposal?
9. How are these risks being managed?

1. s 15(1), s 17(1)

- a. The s 15(1) is currently working on addressing this issue by adding s 15(1)(l)

This is a low risk item because someone would have to know s 15(1)(l) to be able to gain access. It should be noted that no one at s 15(1)(l) has and they are only known to s 15(1)(l) and s 15(1)(l) does not have the ability to s 15(1)(l)

- b. There is limited access to s 15(1)(l) and s 15(1)(l) needed to gain access, so any attempts to s 15(1)(l)

- c. Worst case scenario if s 15(1)(l)

They would not be able to s 15(1)(l) They would only be able to s 15(1)(l) all they would have is s 15(1)(l) This could be achieved by s 15(1)(l)

2. Pictures taken by FR are currently stored for an indefinite amount of time.

- a. This issue has been addressed with s 15(1)(l) and once the test phase is completed the program would be changed to remove the pictures from s 15(1)(l)

The retaining of the pictures currently is a benefit during the test phase for evaluation of the FR program.

- b. The photographs that are s 15(1)(l)

3. Access to the s 15(1)(l) test system

- a. Currently s 15(1)(l) is operating from s 15(1)(l), s 17(1)

The server is located in s 15(1)(l) The access is handled s 15(1)(l), however to improve security all s 15(1)(l)

s 15(1)(l) is currently working to resolve this and add another layer of security. The only s 15(1)(l) is located in s 15(1)(l). The risk is minimal as there are only s 15(1)(l) and none of these s 15(1)(l)

4. s 15(1), s 17(1)

5. If you s 15(1)(l) system and didn't have s 15(1)(l) ?

If you get s 15(1)(l) would be of no value.

The following information was supplied by s 15(1)(l). This information is being included as part of our further research that has been ongoing regarding Facial Recognition and may receive further consideration if this phase of the FR test phase meets with our expectations:

1. Does the use for s 15(1)(l) ultimately prevent anyone from using s 15(1)(l) ? Is there any other reason we would need s 15(1)(l) ?

s 15(1)(l) more secure (In order to better protect personnel data). s 15(1)(l)

The main focus of the s 15(1)(l) and the personnel identification information that you have on an individual.

2. Is there anything internally BCLC could do to mitigate the risk of someone using s 15(1)(l) ?

Using s 15(1)(l) would allow you to s 15(1)(l) that is already s 15(1)(l) This would s 15(1)(l) even further, you could also s 15(1)(l) which would secure s 15(1)(l)

3. If you s 15(1)(l) system and didn't have s 15(1)(l) ?

If you get s 15(1)(l) would be of no value.

4. How many sites s 15(1)(l), s 21 ? How many users (approx.) would have access to such records?

This is a s 15(1)(l) and therefore sites are using s 15(1)(l)

5. s 15(1), s 21

6. For the use of this current test phase, how much would be required to add the s 15(1)(l) to our test product? In time? Cost? Resources?

The cost for s 15(1), s 21 to implement which would probably be about s 21 This is standard cost that was also paid by s 21

s 21

The above-described system architecture uses several techniques to increase the privacy and security s 15(1)(l) throughout the system (as shown in Figure 4). s 15(1)(l)

s 15(1)(l)

s 15(1)(l)

Figure 4: *Privacy by Design: A multi-layered approach to privacy*

One of the principal privacy protections of this system, though, is that s 15(1)(l) can only be determined by s 15(1)(l) In order to reveal s 15(1)(l)

To achieve this, the s 15(1)(l) is required – control, thus, rests with the individual. This control also makes it much more difficult for the information to be s 15(1)(l) without s 15(1)(l) The system further uses s 15(1)(l) to ensure that the s 15(1)(l)

This prevents the possibility that the s 15(1)(l)

Part II – Personal Information Collection

1. Is new personal information being collected?

If there is no new personal information being collected, go to Part III, Use of Personal Information.

2. If new personal information is being collected, please provide the legal authority for collecting that information:

How will the personal information be collected?

As a public body BCLC must collect personal information or cause personal information to be collected directly from the individual the information is about, with certain specific exceptions.

Will the personal information be collected directly from the individual that the information is about? Y / N

Notification to collect information

BCLC must ensure that an individual from whom it collects personal information or causes personal information to be collected is notified of the collection as outlined below.

		Yes	No	n/a
i.	Has the individual whose personal information is being collected, been informed of:			
	(a) the purpose for collection?			
	(b) the legal authority for collection?			
	(c) the contact information of the person who can answer questions regarding the collection?			

Please provide the text of the Privacy Notice below:

If no Privacy Notice will be provided please state reason (including relevant FIPPA section) below

Part III – Use of Personal Information

	Yes	No	n/a
Is personal information being used for BCLC's business purposes?			

If there is no personal information being used, go to Part IV, Disclosure of Personal Information.
If personal information is being used, one or more of the authorities listed below must be checked:

		Yes	No	n/a
1.	Has the individual the personal information is about consented to the use?			
2.	Will the information be used only for the purpose for which it was obtained or compiled or for a use consistent with the original purposes?			

Please explain how this information will be used and who will have access to it

Part IV – Disclosure of Personal Information

	Yes	No	n/a
Is personal information being disclosed outside BCLC?			

If there is no personal information being disclosed, go to Part V, Accuracy and Correction of Personal Information.

If personal information is being disclosed outside BCLC, please list the sections of FIPPA that will be relied upon to support the disclosure:

Systematic or Repetitious Disclosure/Exchanges

		Yes	No	n/a
i.	Do the disclosures of personal information to this party occur on a regular basis?			
ii.	Has an Information Sharing Agreement or Privacy Protection Schedule been completed for these disclosures/exchanges?			
iii.	Has information related to the Information Sharing Agreement(s) or Privacy Protection Schedule been entered into the Personal Information Bank ?			

Please attach a copy of the Information Sharing Agreement or the Privacy Protection Schedule

Part V – Accuracy and correction of Personal Information

If the individual's personal information will be used by BCLC to make a decision that directly affects the individual BCLC must make every reasonable effort to ensure that the information is accurate and complete. An individual must also have the ability to access, or have corrected or annotated, their personal information for a period of one year after a decision has been made based upon the personal information.

		Yes	No	n/a
1.	Are there procedures in place to enable an individual to request/review a copy of their own personal information?			
2.	Are there procedures in place to correct or annotate an individual's personal information if requested, including what source was used to update the file?			
3.	If personal information is corrected are there procedures in place to notify other holders of this information?			
	If yes, please provide the name of the policy and/or procedures, a contact persona and phone number.			
	Policy/procedure:			
	Contact person:			
	Phone number:			
	Additional details as required			

Part VI – Security and Storage for the Protection of Personal Information

What technical security measures will be used to protect against unauthorized access and disclosure?

What physical security measures will be use to protect against unauthorized access and disclosure?

Who is responsible for implementing these measures?

1.	Are there policies and procedures in place for the security of personal information during routine collection, use and disclosure of the information?			
	If yes, please provide the name of the policy and/or procedures, a contact person and phone number. Policy/procedure: Contact person: Phone number:			
	Additional details as required			
2.	Have user access profiles been assigned on a need-to-know basis?			
3.	Do controls and procedures exist for the authority to add, change or delete personal information?			
4.	Does your system security include any ongoing audit process that can track use of the system (e.g. when and who accessed and updated the system)?			
	Please explain the audit process and indicate how frequently audits are under taken and under what circumstances			
5.	Does the audit identify inappropriate accesses to the system?			
	Additional details			

Part VII – Storage in Canada

		Yes	No	n/a
	Will the information be stored or accessed only in Canada?			

If "no", does one of the following apply?:

		Yes	No	n/a
1.	Has the individual the personal information is about identified it and consented, in the prescribed manner, to it being stored in or accessed from another jurisdiction?			
	Please explain			
2.	Will the personal information be stored in or accessed from another jurisdiction for the purpose of a disclosure that is authorized under FIPPA?			
	Please explain			
3.	Will the personal information be disclosed under section 33.1(1)(i.1)?			

Part VIII – Retention of Personal Information

		Yes	No	n/a
1.	Do you have an approved records retention and disposition schedule?			
2.	Is there a records retention schedule to ensure information used to make a decision that directly affects an individual is retained for at least one year after use?			

If you answered 'no' to the above questions, your procedures may need to be revised. Please contact your Records Administrator.

Note: Records of provincial bodies cannot be destroyed unless approval is granted under the authority of the *Document Disposal Act*. Please consult with your Records Administrator to initiate the records scheduling process.

Part IX – Recommendations and Approval

Recommendation of Director of Privacy:

Recommendation of Director, Information System Security:

Approval:

Vice President

Date



FACIAL RECOGNITION PROGRAM

(Biometric Surveillance Software System)

Business Case
2011-2012

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playing it right

FACIAL RECOGNITION PROGRAM

Business Case

This Opportunity is:

- ☒ Key to achieving Corporate Strategy
- ☐ Required to sustain Business Operations

This Opportunity Requires:

- ☒ Capital Budget
- ☐ Operating Budget

- ☐ New FTE and associated budget only
(Complete SECTION 3 – ANALYSIS, FTE and
Contract Resource Needs)

Are elements of this business case included in any other business case?

- ☐ Yes Name other business case _____
- ☒ No

Prepared by: Kevin Sweeney

Date Prepared: 2011-April 13

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SECTION 1 – EXECUTIVE SUMMARY

The Executive Summary should be written when all other sections of the Business Case have been completed. This summary provides a high level overview in the following areas and generally would be one page in length.

Since December 2010 Corporate Security and Compliance initiated a 'pilot' testing project dedicated to assessing the viability of an automated system that identifies individuals who attempt to enter a Casino and/or Community Gaming Centre while enrolled in the Voluntary Self Exclusion (VSE) Program. This program utilizes s 15(1)(l)

to identify VSE subjects violating the terms of their self exclusion by attempting to enter a Casino or Community Gaming Centre. This technology is able to s 15(1)

staff who are able to avert VSE subjects from entering a Casino or Community Gaming Centre. This pilot took place at the s 15(1), s 17(1) The success experienced thus far with this program pilot has set the stage for a further roll-out and testing to s 15(1), s 17(1) It is anticipated that BCLC will experience further success with the program and roll it out to other designated Casinos and Community Gaming Centers throughout the Province.

The capital requested to facilitate the acquisition of the equipment, software, operating licenses and installation costs is \$400,000.00 dollars. Corporate Security will utilize this funding to install Facial Recognition into Casino and Community Gaming Centers in three phases, commencing with the lower mainland. These will include s 15(1), s 17(1)

s 15(1), s 17(1) The next phase will involve the Phase three will include s 15(1), s 17(1)

Facial recognition technology can provide an accurate tool in detecting self-excluded persons in real time as those persons attempt to enter a Casino or Community Gaming Center. Facial recognition systems have thus far proven to be very accurate and would provide useful early warnings that a self-excluded person was attempting to enter a facility. Once the system is installed into a property it will s 15(1)

SECTION 2 – OPPORTUNITY & SOLUTION

OPPORTUNITY

This program will help develop and promote BCLC's commitment to our corporate initiative of Responsible Gaming within the province of British Columbia. The value of this program to the Responsible Gaming initiative is of a significant strategic consequence to the overall Responsible Gaming commitment. It is a tremendous additional component in support of initiatives that Corporate Security and Compliance and Responsible Gaming have already developed and implemented. Once fully operational and functional, this program will greatly enhance the ability for Casinos and Community Gaming Centers to identify and thus reduce the number of VSE individuals from gaining access to our gaming facilities. This program, coupled with the successful implementation of s 15(1)(l) should place BCLC in a very solid position to reduce this ever growing problem.

- s 15(1)
-

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- Demonstrates another leading edge tool in dealing with self-excluded patrons and from entering our gaming facilities.

DESCRIPTION OF SOLUTION

The s 15(1)(l) system provides a s 15(1)(l) used with s 15(1)(l) platforms. It is the ultimate solution for real time ID matching on searches against the s 15(1)(l) database. s 15(1)(l) are used to s 15(1)(l)

STRATEGIC ALIGNMENT

Strategic Vision	Alignment*
World Class Gambling Entertainment Experience	HIGH
Customer Understanding	MED
Innovative Design	HIGH
Innovative Technology	HIGH
Innovative Social Responsibility	HIGH
Customer Understanding (why is this good for the player?)	HIGH

Corporate Goals 2011/12	Alignment*
1. Build public trust and support for BCLC gambling Demonstrate a high level of corporate citizenship and social responsibility in all of our activities	HIGH
2. Create a player-centric company Improve the organizational capacity to hear, anticipate and act on customer expectations and desires Offer exceptional entertainment through innovating and engaging facilities and games	MED HIGH
3. Invest in infrastructure and technology innovation that enables our company growth Design processes and implement technology that improves operational effectiveness and prepares for the future Create an integrated multi-channel player community	HIGH HIGH
4. Have a workforce passionately driving the success of our business Make BCLC a great place to work	LOW

* Alignment:

High = critical to achievement
Medium = directly impacts but not critical to achievement
Low = indirect impact

QUALITATIVE OUTCOMES/BENEFITS

The pilot project that was undertaken for 4 months at the s 15(1), s 17(1) and has demonstrated to BCLC Corporate Security and Compliance that it is a successful technological tool in identifying individuals utilizing facial recognition software. It is scheduled to be rolled out and further tested in the s 15(1), s 17(1) in support of these findings. Potential liabilities with VSE subjects entering our facilities remain high. This is particularly evident with the number of individual law suits BCLC

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and service providers are presently experiencing that hold BCLC responsible and liable for individual financial losses and a perceived lack of 'duty of care.

Facial recognition, aligned with the s 15(1)(l) will provide a significant opportunity in limiting our liability and risk in preventing VSE subjects violating the terms of the exclusion agreement and subsequently re-offending. In addition it will allow us BCLC:

- To gain confidence in player relations and focus and confidence in gaming relations with the people of British Columbia.
- Reduce the negative effects of individuals who have entered the VSE program from violating the terms of the VSE or re-offending
- Reduce FTE and man-hours allotted to these programs and dealing with re-offenders of these programs
- Illustrate BCLC's commitment to responsible gaming and our commitment to ensure BCLC has value-added capabilities to ensure that BCLC strives to enhance our commitment in our VSE program and its merits

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**BCLC FISCAL 2009/10 BUSINESS OPPORTUNITY
REQUEST FOR OPERATING AND/OR CAPITAL BUDGET**

Program Name	Facial Recognition Program
Division	Corporate Security and Compliance
Executive Sponsor	Terry Towns – VP Corporate Security and Compliance
Person Responsible	Kevin SWEENEY

<input checked="" type="checkbox"/> Request for Capital Budget	<input type="checkbox"/> Request for new Operating Budget
--	---

Mark one or both boxes with an X to indicate financial requirements

Opportunity Definition

Background

Since December 2010 Corporate Security and Compliance initiated a 'pilot' testing project dedicated to assessing the viability of an automated system that identifies individuals who attempt to enter a Casino and/or Community Gaming Centre while enrolled in the Voluntary Self Exclusion (VSE) Program. This program utilizes s 15(1)(l)

to identify VSE subjects violating the

terms of their self exclusion by attempting to enter a Casino or Community Gaming Centre. This technology is able to s 15(1)(l)

staff who are able to avert VSE subjects from

entering a Casino or Community Gaming Centre. This pilot took place at the s 15(1), s 17(1)

The success experienced thus far with this program pilot has set the

stage for a further roll-out and testing to s 15(1), s 17(1)

It is anticipated that BCLC will experience further success with the program and roll it out to other designated Casinos and Community Gaming Centers throughout the Province.

The capital requested to facilitate the acquisition of the equipment, software, operating licenses and installation costs is \$400,000.00 dollars. Corporate Security will utilize this funding to install Facial Recognition into Casino and Community Gaming Centers in three phases, commencing with s 15(1), s 17(1) These will include s 15(1), s 17(1)

The next phase will involve s 15(1), s 17(1)

Phase three will include s 15(1), s 17(1)

Facial recognition technology can provide an accurate tool in detecting self-excluded persons in real time as those persons attempt to enter a Casino or Community Gaming Center. Facial recognition systems have thus far proven to be very accurate and would provide useful early warnings that a self-excluded person was attempting to enter a facility. Once the system is installed into a property it will s 15(1)

**BCLC FISCAL 2009/10 BUSINESS OPPORTUNITY
REQUEST FOR OPERATING AND/OR CAPITAL BUDGET**

Key Deliverables

This program will help develop and promote BCLC's commitment to our corporate initiative of Responsible Gaming within the province of British Columbia. The value of this program to the Responsible Gaming initiative is of a significant strategic consequence to the overall Responsible Gaming commitment. It is a tremendous additional component in support of initiatives that Corporate Security and Compliance and Responsible Gaming have already developed and implemented. Once fully operational and functional, this program will greatly enhance the ability for Casinos and Community Gaming Centers to identify and thus reduce the number of VSE individuals from gaining access to our gaming facilities. This program, coupled with the successful implementation of s 15(1)(l) should place BCLC in a very solid position to reduce this ever growing problem.

Goal Alignment

Corporate Goal	Build public trust and support for BCLC gaming
Corporate Strategy	Demonstrate a high level of corporate citizenship and social responsibility in all of our activities: <ul style="list-style-type: none">- Community Relations- Government Relations- Responsible Play- Voluntary Self Exclusion

Outcomes

- Social responsibility is demonstrated by having systems in place to support self-exclusion programs
- Self-excluded persons are detected by the system before gaining entrance to the gaming floor

Risk Identification

Critical Enterprise Risks

Business Opportunity Risks

**BCLC FISCAL 2009/10 BUSINESS OPPORTUNITY
REQUEST FOR OPERATING AND/OR CAPITAL BUDGET**

Lack of player focus	-gain confidence in player relations and focus and confidence in gaming relations with the people of British Columbia
System/data integrity breach	-Reduce the negative effects of individuals who have entered the VSE program from violating the terms of the VSE or re-offending
Service Provider/Channel Partners	- Reduce FTE and man-hours allotted to these programs and dealing with re-offenders of these programs
Crisis management	
Insufficient skills & capacity	
Unauthorized sales	
Other risks affecting your business opportunity	Illustrate BCLC's commitment to responsible gaming and our commitment to ensure BCLC has value-added capabilities to ensure that BCLC strives to enhance our commitment in our VSE program and its merits

Qualitative Analysis

- s 15(1)
-
- Demonstrates another leading edge tool in dealing with self-excluded patrons and from entering our gaming facilities.

Risk Identification and Assessment

There are a number of risk areas that have surfaced and been impacted without the use of this technology.

Most VSE subjects within the BC gaming community frequent our facilities on numerous occasions following their commitment to the VSE program. The problem has grown to epidemic levels with one individual having violated^{s 22} VSE commitment^{s 22}

Public opinion indicates that Casinos and Community Gaming Centers are not doing enough to ensure these violators are refused entry.

Currently, BCLC has in access of over 6000 subjects alone in the VSE program making it difficult for security and surveillance staff at these gaming locations to observe, locate and remove all violators. This issue has not been reduced by any sound enforcement measures. This dictates that additional tools are required in an attempt to reduce VSE subjects from violating. BCLC's risk tolerance is extremely high.

Budget Request

.

**BCLC FISCAL 2009/10 BUSINESS OPPORTUNITY
REQUEST FOR OPERATING AND/OR CAPITAL BUDGET**

<i>Year</i>	<i>2011/12</i>	<i>2012/2013</i>	<i>2013/14</i>
Estimated Revenue	\$	\$	\$
Total Cost	\$	\$	\$
Operating Costs	\$	\$	\$
- Total # FTEs			
Capital Costs	\$400,000.00	\$	\$
Net Benefit (Revenue – Cost)	\$	\$	\$

Recommendation

FTE Detail

<i>Division</i>	<i># FTE</i>
Audit Services	
Business Transformation	
Casino and Community Gaming	
Corporate Affairs	
Customer Strategy and Corporate Marketing	
Finance	
Human Resources	
Information Technology	
Lottery Gaming	
Security and Compliance	N/A

Operating Cost Detail

<i>Year</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>
1. Salaries and Benefits	\$	\$	\$

**BCLC FISCAL 2009/10 BUSINESS OPPORTUNITY
REQUEST FOR OPERATING AND/OR CAPITAL BUDGET**

<i>Year</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>
2. Transportation & Accommodation	\$	\$	\$
3. Employee Relations	\$	\$	\$
4. Professional Fees	\$	\$	\$
5. Cost of Premises	\$	\$	\$
6. Equipment	\$	\$	\$
7. Supplies	\$	\$	\$
8. Product Delivery	\$	\$	\$
9. Network Communications	\$	\$	\$
10. Systems Support	\$	\$	\$
11. Advertising	\$	\$	\$
12. Marketing & Promotions	\$	\$	\$
13. Corp. Communications & Public Affairs	\$	\$	\$
14. Insurance & Banking	\$	\$	\$
Total	\$	\$	\$

Recommendation

The pilot project that was undertaken for 4 months at s 15(1), s 17(1) and has demonstrated to BCLC Corporate Security and Compliance that it is a successful technological tool in identifying individuals utilizing facial recognition software. It is scheduled to be rolled out and further tested in the s 15(1), s 17(1) in support of these findings. Potential liabilities with VSE subjects entering our facilities remain high. This is particularly evident with the number of individual law suits BCLC and service providers are presently experiencing that hold BCLC responsible and liable for individual financial losses and a perceived lack of 'duty of care.

Facial recognition, aligned with s 15(1)(l) will provide a significant opportunity in limiting our liability and risk in preventing VSE subjects violating the terms of the exclusion agreement and subsequently re-offending.

Summary Facial Recognition Pilots

PURPOSE

Summarize acceptance rate results of all Facial Recognition Pilots.

RELATED DOCUMENTATION

Operational Gaming Audit – s 15(1)(l) Test Summary 2007

s 15(1)(l) Pilot II Results s 15(1), s 17(1) May 22 – June 11 2009

s 15(1)(l) Pilot III Results s 15(1), s 17(1) Jan 1 2011 – Feb 28 2011

s 15(1)(l) Pilot IV Results s 15(1), s 17(1) May 18 – July 21 2011

SECTION 1 Summary of Acceptance Rate

s 15(1)(l) Pilot Projects	Pilot 1	Pilot 2	Pilot 3	Pilot 4
Acceptance Rate	30%	50% - 88%	82%	11%

SECTION 2 Description

1. s 15(1), s 17(1) – September 2007

Reference: Operational Gaming Audit – s 15(1)(l) Test Summary 2007

This first pilot was an overall review of the facial recognition system with the average acceptance rate at 30%. The test summary shows that there were many false positive alerts generated and included a number of matches being made on s 15(1)(l) also appeared to be the most significant issue.

Test subjects were enrolled as part of this pilot.

2. s 15(1), s 17(1) pilot – May 22 – June 11 2009

Reference: s 15(1)(l) Pilot II Results s 15(1), s 17(1) May 22 – June 11 2009

The acceptance rate ranged between 50% - 88%. The variance is due to different locations as well as the confidence level that was set. A low confidence level will have a higher number of correct identified rate but the false alerts will also be higher. If the confidence level is set to high, the correct identification rate drops but the false alert rate drops as well.

Key issues identified were the need for s 15(1)(l)

Test subjects were enrolled as part of this pilot.

3. s 15(1), s 17(1) pilot - Jan 1 2011 – Feb 28 2011

Reference: s 15(1)(l) Pilot III Results s 15(1), s 17(1) Jan 1 2011 – Feb 28 2011

The average acceptance rate was 82%. s 15(1)(l) and the results were 85% correct identification. s 15(1)(l) achieved 66% accept rate. The overall accept rate is 85% due to the higher volume of traffic s 15(1)(l)

Continuous improvements to s 15(1)(l) are suggested to improve the accept rate.

Test subjects were enrolled as part of this pilot.

4. s 15(1), s 17(1) trial – May 18 – July 21 2011

Reference: s 15(1)(l) Pilot IV Results s 15(1), s 17(1) May 18 – July 21 2011

There was an 11% acceptance rate (total number of alerts was 3647 with 3255 rejected and 387 accepted). Out of the 387 accepted, only 26 were confirmed alerts. Two key issues were s 15(1)(l)

No test subjects were enrolled as part of this pilot.

4a. s 15(1), s 17(1) trial continues

s 15(1), s 17(1) and the pilot resumed on August 25. The pilot will run for a further 3 months to determine if s 15(1)(l) are able to make an impact on the low accept rates.

Results are only interim at this point and need to be further analyzed:

- Accepted 178
- Rejected 1715
- Unhandled 16
- Total 1909

Summary Facial Recognition Pilots

PURPOSE

Summarize acceptance rate results of all Facial Recognition Pilots.

RELATED DOCUMENTATION

Operational Gaming Audit – s 15(1)(l) Test Summary 2007

s 15(1)(l) Pilot II Results s 15(1), s 17(1) May 22 – June 11 2009

s 15(1)(l) Pilot III Results s 15(1), s 17(1) Jan 1 2011 – Feb 28 2011

s 15(1)(l) Pilot IV Results s 15(1), s 17(1) May 18 – July 21 2011, August 24 – November 23 2011.

DEFINITIONS:

Alerts are generated by the Facial Recognition System as a recognized match to a person enrolled in the system.

Accepted alerts are accepted by the Surveillance Operator as the person depicted and is a recognized match to a person enrolled in the Facial Recognition System.

Rejected alerts are rejected by the Surveillance Operator as the person depicted and is not a recognized match to a person enrolled in the Facial Recognition System.

A false positive is a match the Facial Recognition System generates that turns out to be false. False positives were a main concern a few years ago when the system was generating matches to individuals on s 15(1)(l) that were obviously false.

SECTION 1 Summary of Acceptance Rate

s 15(1)(l) Pilot Projects	Pilot 1	Pilot 2	Pilot 3	Pilot 4
Acceptance Rate	30%	50% - 88%	82%	11%

Note: For Pilots 2-4, the confidence level set within the Facial Recognition System was *medium* (the match has to have a confidence level of at least 65% before it will generate an alert).

Total number of VSE violations	2 months prior to start of pilot	1 month after start of pilot
Pilot 1 - s 15(1), s 17(1)	123	48
Pilot 2 - s 15(1), s 17(1)	13	4
Pilot 3 - s 15(1), s 17(1)	16	3
Pilot 4 - s 15(1), s 17(1)	282	185

SECTION 2 Description

1. s 15(1), s 17(1) – September 2007

Reference: Operational Gaming Audit – s 15(1)(l) Test Summary 2007

This first pilot was an overall review of the facial recognition system with the average acceptance rate at 30%. The test summary shows that there were many false positive alerts generated and included a number of matches being made on s 15(1)(l) also appeared to be the most significant issue.

Test subjects were enrolled as part of this pilot.

2. s 15(1), s 17(1) pilot – May 22 – June 11 2009

Reference: s 15(1)(l) Pilot II Results s 15(1), s 17(1) May 22 – June 11 2009

The acceptance rate ranged between 50% - 88%. The variance is due to different locations as well as the confidence level that was set. A low confidence level will have a higher number of correct identified rate but the false alerts will also be higher. If the confidence level is set to high, the correct identification rate drops but the false alert rate drops as well.

Key issues identified were the need for s 15(1)(l)

Test subjects were enrolled as part of this pilot.

3. s 15(1), s 17(1) pilot - Jan 1 2011 – Feb 28 2011

Reference: s 15(1)(l) Pilot III Results s 15(1), s 17(1) Jan 1 2011 – Feb 28 2011

The average acceptance rate was 82%. s 15(1)(l) and the results were 85% correct identification. s 15(1)(l) achieved 66% accept rate. The overall accept rate is 85% due to the higher volume of traffic that entered s 15(1)(l)

Continuous improvements to s 15(1)(l) are suggested to improve the accept rate.

Test subjects were enrolled as part of this pilot.

4. s 15(1), s 17(1) trial – May 18 – July 21 2011

Reference: s 15(1)(l) Pilot IV Results s 15(1), s 17(1) May 18 – July 21 2011

There was an 11% acceptance rate (total number of alerts was 3647 with 3255 rejected and 387 accepted). Out of the 387 accepted, only 26 were confirmed alerts. Two key issues were s 15(1)(l)

No test subjects were enrolled as part of this pilot.

4a. s 15(1), s 17(1) trial August 24 – November 23

s 15(1), s 17(1) and the pilot resumed on August 25. The pilot will run for a further 3 months to determine if s 15(1)(l) would have an impact the low accept rates.

The final total data resulted in an acceptance rate of 10% (total number of alerts was 5234 with 4555 rejected and 539 accepted).

A portion of this pilot also included test subjects. The test subjects had s 15(1)(l) and were comprised of BCLC and Casino staff. Their s 15(1)(l) were all manually tracked so that facial recognition acceptance rates could be compared. The test data resulted in an acceptance rate of 23% (27 out of 116 possible entries were recognized by the system).

Facial Recognition in the Kamloops Goof Room – The Results

Thank you to all of those who volunteered in helping Corporate Security test out a new facial recognition program. Congratulations to our phase one winner of the iPad, Jeff Filek and our phase two winner Lisa Redman who selected to 50' TV.

Over the course of eight weeks we had 2936 "tests" to the system. There was a 62% positive hit rate, 11% mismatch rate, and 27% miss rate.

Week #	Hit	Mismatch	Miss
1	200	17	208
2	239	9	109
3	89	6	54
4	229	18	155
5	97	35	57
6	292	69	57
7	413	89	76
8	268	77	73
Totals	1827	320	789

Over the course of the eight weeks there were adjustments made to s 15(1)(l) and an additional 1000 "faces" added to the database.

The most common results of a "miss" were:

Main Issues	
s 15(1)(l)	106
	74
	421
	21
?	105

68% of reasons due to s 15(1)(l)
15% due to s 15(1)(l)
17% due to reasons unknown

At week 5 of the trial we added an additional "faces" to the database to see if the increase in enrollees affected the response time of finding a match and the capabilities to have a positive match. There was an increase in the number of mismatches during those three weeks with the additional faces, and the mismatch rate increased from an average of 3.5% in the first 4 weeks to an average of 17%. The common mismatch findings were:

s 15(1)(l)	3
	8
	6
	12
	20
	12

If you would like to know your specific results for the trial please contact Amy Byrne at albyrne@bcllc.com

A second trail is being conducted in a live casino environment at the s 15(1), s 17(1) to see how the system functions in its required environment. If you would like additional information on the s 15(1), s 17(1) trial please contact Amy Byrne at albyrne@bcllc.com

From reviewing the results the following scenarios would be good to test out to see what the results are in another trial:

- s 15(1)(l)
-
-
-
-
-
-
-

OPPORTUNITY CASE

Fiscal 2014/15

s 15(1)(i)

Facial Recognition

DIVISION: Corporate Security and Compliance

DATE: July 10, 2014

Prepared by:	Kevin Sweeney
Primary contributors:	Kevin Sweeney
Divisional VP sponsor:	Brad Desmerais

INSTRUCTIONS:

This opportunity case template should be kept to a maximum of one page. Please do not delete any fields or change the formatting. If certain fields are not applicable, indicate as such.

Corporate goals have been included as reference at the end of this document.

OPPORTUNITY CASE

Fiscal 2014/15

DESCRIPTION

Opportunity

The Corporate Security and Compliance division wishes to pilot a ^{s 15(1)(i)} Facial Recognition System designed to assist with efforts to identify patrons who attempt to gain access to our gambling facilities that have been involuntarily or voluntarily excluded. In addition the solution has other applications that could support the business unit and allow a better understanding of who our player is, the demographic of the player and their overall behaviour.

The ^{s 15(1)(i)} Facial Recognition system captures an image of individuals entering a gambling facility, s 15(1)

may take appropriate action. This system would be part of the multiple layers of security and surveillance in place at B.C. casinos and will comply with the *Freedom of Information and Protection of Privacy Act* and BCLC's policies and technology standards.

Alternatives to Execute on this Opportunity

The purpose of the pilot program is to validate the technology (that was successfully identified through an approved RFP process) within our environment and look at possible future implementation of ^{s 15(1)(i)} Facial Recognition System throughout our properties. The pilot program will consist of the required system installed in ^{s 15(1)(i)} within one BCLC casino location for a period of up to six months.

If, at BCLC's sole determination, the pilot program is successful the pilot may be followed by a phased installation of the selected system in some BCLC casinos and community gaming centers (CGCs) as outlined in the recommendations below:

1. s 13(1)
- 2.
- 3.

OBJECTIVES

Alignment with Corporate Goals

Corporate Goal	Corporate Objective	Corporate Strategy
Public	Demonstrate Integrity in what we deliver and how we deliver it so that the public has confidence our business is fair, safe and well-managed	Co-ordinate the many activities which contribute to our corporate reputation, with a focus on key operating communities
Player	Encourage responsible play so that players make informed choices about their gambling	Provide education and tools supporting informed gambling choices and responsible play behaviours

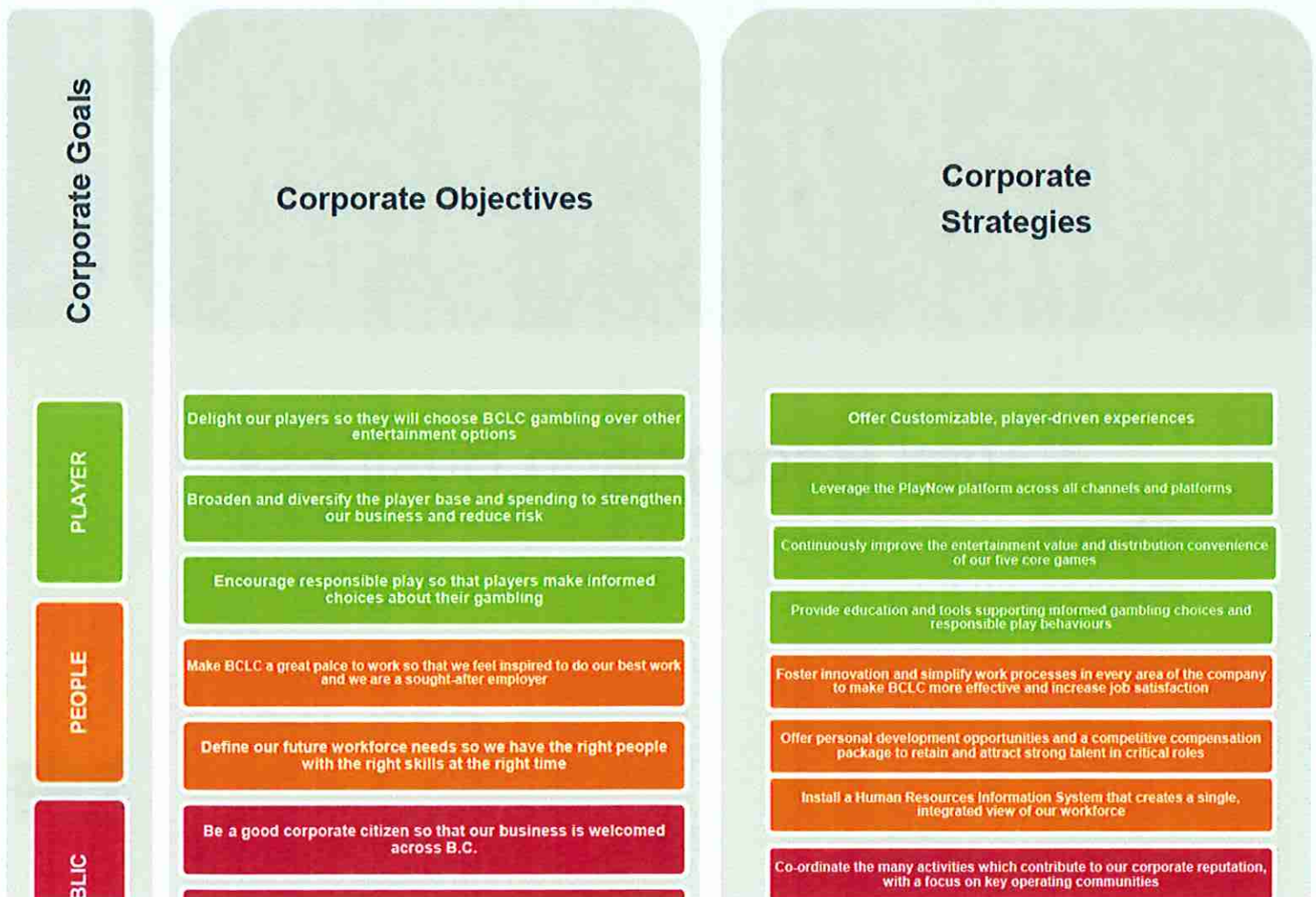
Financial Estimates

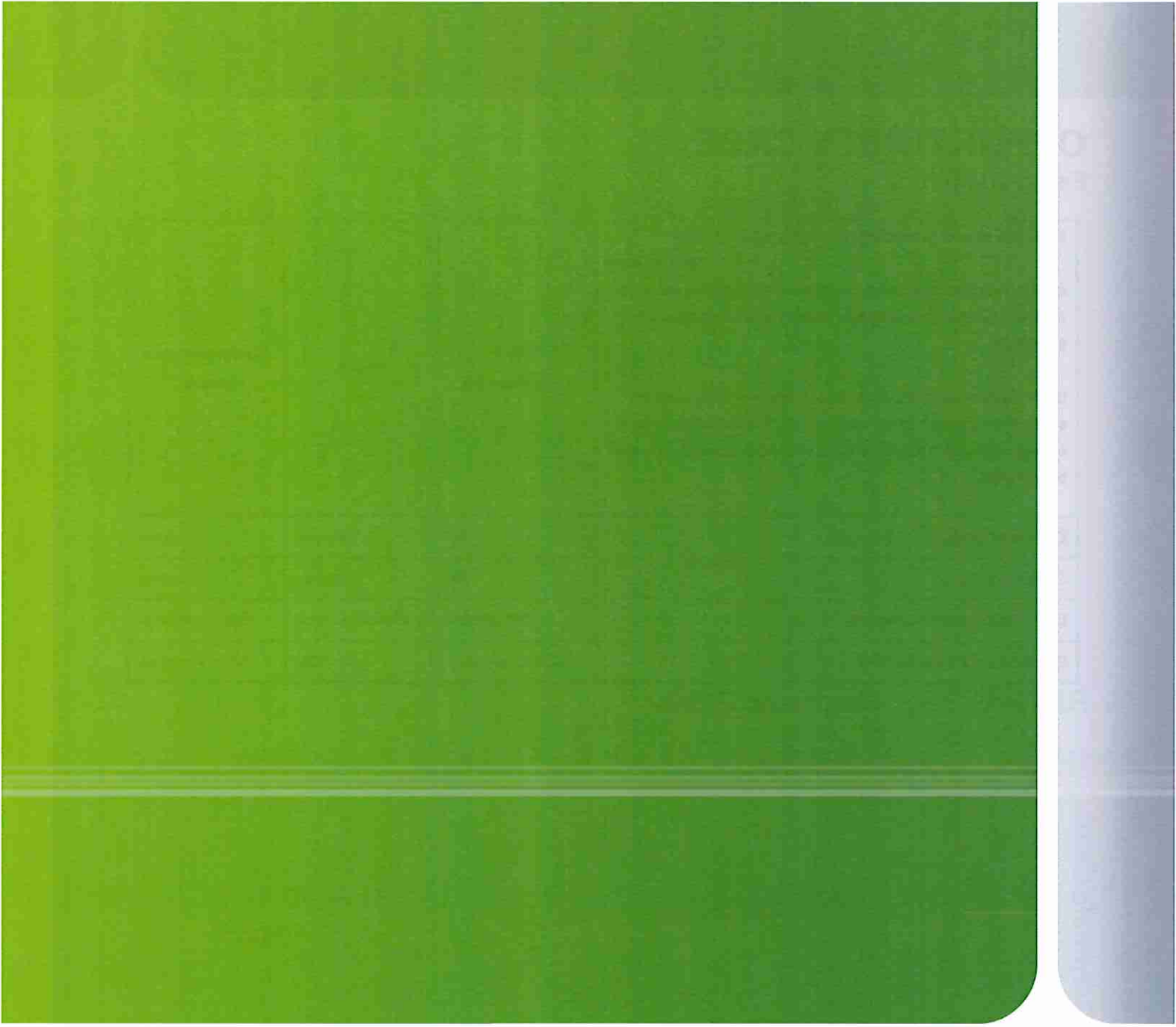
OPPORTUNITY CASE

Fiscal 2014/15

<p>Note: The vendor is prepared to provide s 17(1), s 21 BCLC would however pay for consulting, installation and training services to implement the pilot program. These costs are estimated at \$30,000.00.</p> <p>Upon completion of the pilot, the full implementation of the solution throughout all our current CGC's and Casinos would be approximately 2 million dollars. Annual license costs would be \$136,000.</p>	Year 0 (Prior to launch)	Year 1	Subsequent years (annual)
	Estimated Revenue	Nil	Unknown
	Estimated Net win	Nil	Unknown
	Estimated Incremental operating	\$0 - \$500K	Choose an item.
	Estimated Capital requirement	Choose an item.	\$1M - \$2M

REFERENCE: Corporate Goals





s 15(1)(l)

Facial Recognition Business Case

Fiscal 2015/16

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Section 1 – Executive Summary

Facial Recognition ^{s 15(1)(i)}

Type of Capital (check box)

☐ Refine ☐ Sustain ☐ Enable ☐ Grow ☒ Compliance/Regulatory ☐ Non-Capital Project

Submission Date: August 21, 2014

Objective and Recommended Option:

The Corporate Security and Compliance division wishes to pilot a ^{s 15(1)(i)} Facial Recognition System designed to assist with efforts to identify patrons who attempt to gain access to our gambling facilities that have been involuntarily or voluntarily excluded. In addition the solution has other applications that could support the business unit and allow a better understanding of who our player is the demographic of the player and their overall behavior.

The ^{s 15(1)(i)} Facial Recognition system captures an image of individuals entering a gambling facility, ^{s 15(1)}

may take appropriate action. This system would be part of the multiple layers of security and surveillance in place at B.C. casinos and will comply with the *Freedom of Information and Protection of Privacy Act* and BCLC's policies and technology standards.

This business case aligns with our Corporate Goals and Objectives around demonstrating Integrity in what we deliver and how we deliver it so that the public has confidence our business is fair, safe and well-managed as well as encouraging responsible play so that players make informed choices about their gambling.

Major Considerations

The purpose of the pilot program is to validate the technology (that was already successfully identified through an approved RFP process) within our environment and look at possible future implementation of ^{s 15(1)(i)} Facial Recognition System throughout our properties. The pilot program will consist of the required system installed ^{s 15(1)(i)} within one BCLC casino location for a period of up to six months.

Section 2 – Business Case Need and Options

Business Case Requirement:

The intention of the business case is to document the need to pursue the s 15(1)(l) facial recognition technology in our gaming facilities that was trialed at BCLC's office in Fall of 2013. Although historically we have seen issues/concerns around facial recognition technology that has been deployed in our casinos in 2006 and 2007, the new technology s 15(1)(l) addresses the concerns around s 15(1)(l)

that plagued the previous systems considered in the past. In addition the new technology has other modules that address s 15(1)(l)

BCLC has already conducted their due diligence and have completed an RFP for the purpose of trialing a facial recognition solution in our casino environment. The RFP was to be awarded last year however a decision was made to put the project on hold at that time. As it stands now, if the business case is approved to begin testing the facial recognition solution that we have sourced, we can begin the pilot in one of our properties immediately.

Section 3 - Option Evaluation

For the purpose of evaluating the various options discussed in the next segment of the business case, we have provided a set of advantages for pursuing the technology.

Advantages of Facial Recognition

- Age detection: s 15(1)

This will lead to a reduction of minors attempting to gain access.

- More VSE, Barred persons stopped at entry will avoid the additional time that is currently required to deal with and process a VSE or Barred person after they have entered and have been detected.
- A reduction of instances of verbal and sometimes physical confrontations with VSE and Barred persons that can occur on occasion while evicting.
- Less reliance on s 15(1) to detect VSE or Barred persons.
- With less time spent by GSO's dealing with VSE and Barred persons, more time spent on s 15(1)
- A reduction in repeated attempts by VSE or Barred persons to enter.
- Less reliance on s 15(1) of persons entering for, VSE, Barred, and allow for the ability to focus more on s 15(1)
- If the system fails or malfunctions can fall back on s 15(1)
- No change to Service Provider manpower hours

- Approximately a 92% success rate of capturing barred, VSE and minors as well as identifying individuals that may be of special interest (example, s 15(1) .)
- Non-intrusive to our patrons resulting in virtually no impact to revenue
- Could be utilized to help us comply with FINTRAC patron ID requirements

s 15(1)(l)

s 15(1)(l)

Section 4 – Recommendation

If, at BCLC's sole determination, the pilot program is successful the pilot may be followed by a phased installation of the selected system in some BCLC casinos and community gaming centers (CGCs) as outlined in the recommendations below:

1. s 13(1)
- 2.
- 3.

Section 5 – Impact Assessment & Mitigation for Recommended Option

Section 6 – Sign Off and Approval

Signature confirms that all due diligence has been completed to support this business case. Due diligence includes confirmation that all known impacted stakeholders have been consulted (including but not limited to those listed), any impacts and mitigation strategies are identified and addressed where applicable.

Kevin Sweeney

Business Case Owner

September 16, 2014

Date Submitted

Brad Desmarais

Division Vice President

September 16, 2014

Date Approved

Appendix 1 – Assumptions and Financial Summary

Option 1


Item	Quantity	Cost	Extended cost
Cameras	s 15(1), s 21		\$15,132.60
Camera license			\$54,900.00
s 15(1)(l) license - site			\$33,264.00
s 15(1)(l) license (s 15(1)(l) registrants per license)			\$36,960.00
s 15(1)(l) license			\$11,085.00
Installation – site			\$150,000.00
Training			\$6,000.00
TOTAL – initial set up			\$307,341.60
Ongoing annual costs (licenses)			\$136,209.00

(Limited rollout of the technology at s 15(1), s 17(1))

)

Item	Quantity	Cost	Extended cost
Cameras	s 15(1), s 21		\$90,795.60
Camera license			\$329,400.00
s 15(1)(l) license - site			\$239,500.80
s 15(1)(l) license (s 15(1)(l) registrants per license)			\$36,960.00
s 15(1)(l) license			\$79,812.00
Installation – site			\$1,080,000.00
Training			\$43,200.00
TOTAL – initial set up			\$1,899,668.40
Ongoing annual costs (licenses)			\$136,209.00

(Rollout at s 15(1), s 17(1))



FACIAL RECOGNITION PILOT RESULTS

BCLC Corporate Security
27 March 2017

Summary of Pilot

- Enrollment based on 30 site employees with
as well as VSE images

s 15(1)(i)

s 15(1)(i)

•

- 360 confirmed
Jan 10th - Feb 28th
used for analysis between

s 15(1)(i)

Provided Results


- **Adjusted “Hit Rate”:** 91.5%
 - Only includes ^{s 15(1)(l)} and does not include blocked attempts
- **False Positives:** 4 – 5%
 - Showing ^{s 15(1)(l)} and incorrectly matching ^{s 15(1)(l)} based on pilot and not able to be referenced to ^{s 15(1)(l)}
- **Pilot Limitations**
 - There was no reference to show impact that ^{s 15(1)(l)} made on these results

Provided Results Cont'd

- **System Potential**
 - False Positives can be reduced by $s^{15(1)(l)}$
- **Considerations**
 - The current $s^{15(1)(l)}$ will drive a higher false positive rate if utilized, but can be phased by using $s^{15(1)(l)}$
 - Higher false positive rate is key driver of $s^{15(1)}, s^{17(1)}$ buy-in to system use

Next Steps

- Determine the corporate value of capturing 91.5% of VSE patrons
 - Use of system for other purposes is not viable based on the $s^{15(1)(l)}$, aside from marketing/demographic
- Balance success requirements through assessment of the balance of two factors:
 - $s^{15(1)(l)}$ (Scope Restrictions)
 - Resources allocated to site system adjustments



Conclusion: System can provide strong results with the use of a controlled VSE database with clear standards for enrollment process and governance, but will otherwise provide too high a false positive rate for the required buy-in from BCLC and Service Provider staff. Based on the high resource requirements for this level of performance and lack of ability to remove other technology in favor of this solution, the resulting costs will likely be too high to justify the return. However, additional stakeholder input is recommended prior to final decisions are made, due to multi-faceted impact on the gaming environment.

Facial Recognition Update

- Phase 2 is currently in planning stages to be deployed at
§ 15(1), § 17(1)
 - Pilot timeframe of 1 year
 - Aimed at detection of VSE enrolled patrons

§ 15(1)



- Maximize the capabilities of the system
- Gain buy-in from our SP by limiting false positives
- Database § 15(1)(l) by end of testing period

Facial Recognition Update

s 15(1)(l) Integration

— s 15(1)(l)

— s 15(1)(l)

- Integration is currently under development with both BT and Paladin resources

Estimated initiation of site deployment of October 27, 2017

Current Situation

BCLC Corporate Security is prepared to operationalize the Face Rec system at s 15(1), s 17(1) however BT's position is that we cannot proceed due to s 15(1)(l) implications. It is Paladin's position that the proposed s 15(1)(l) was previously discussed with BT personnel subsequent to the initial s 15(1)(l) and there did not appear to be any problems with moving forward as currently proposed. The simplicity and expedience of the s 15(1)(l) processes are critical to the success of this initiative.

Challenges

Having completed what was deemed to be a successful initial testing phase at s 15(1), s 17(1) the determination was made by BCLC LCS to proceed with a second testing phase at s 15(1), s 17(1) wherein the Facial Recognition system would be integrated with s 15(1)(l) in order for it to provide s 15(1)(l)

As a result of the lack of available resources from BCLC Project Management, we attempted to embark upon Phase 2 of this initiative without this support. A series of setbacks with unanticipated technical complications and delays with s 15(1)(l), s 21 along with the lack of a continuous project leader, has led to the current situation.

s 17(1)(c)(e), s 21

Initial SOW

The following clause within the Initial SOW appears to delineate the requirement for the level of integration that is the current subject of concern:

SERVICES

A) Configuration and Integration

The Vendor shall provide technical services to ensure the facial recognition product and system provided is effective to support the s 15(1), s 17(1)

Vendor will:

- Prepare for and participate in a project requirements workshop with BCLC to ensure all required project requirements (including all system requirements) are documented;
- Complete an assessment of the Site;

- sell to BCLC required facial recognition camera hardware and license software for the Site as set out in the Products section below (the “Pilot Equipment”);
- Configure, integrate and set up the Pilot Equipment, including:
 - a. s 15(1), s 17(1)
 - b.
 - c.
 - d.
 - e.
 - f.
 - g. troubleshooting and resolving issues as required;
 - h. provide an interface to the s 15(1)(l) that meets the requirements of the s 15(1)(l) s 15(1)(l) can be processed by the s 15(1)(l)
 - i. providing any required support/troubleshooting applications;
 - j. provide and support documentation; and
 - k. provide ongoing integration support.
- Create and deliver the pilot reports to BCLC, including confirmation of success indicators and identified issues, using pre-approved volume and mechanisms for reporting metrics;
 - a. System testing shall include various environmental factors, not dissimilar to standard casino entrance and patron activities.
 - b. Monitor performance metrics and provide support to BCLC as required, including being available for support via telephone; and
- Ensure all servers meet the system security requirements as provided by BCLC.
- All servers shall be cleared of pilot information at the end of the pilot, and provided a destruction certificate by the Vendor.
- Provide training as reasonably required by BCLC for the use of the provided software to applicable personnel. Staff required to be trained include the s 15(1), s 17(1) surveillance supervisors, surveillance operators, security personnel, and BCLC security representatives.

Communication from Paladin

From: s 19, s 21, s 22

Sent: Wednesday, September 05, 2018 5:21 PM

To: Joe Morris; Ilan Arnon; 'Ferents Taptich'; 'Chris Pasceri'; 'Richard Fraser'

Cc: 'Bob Bell'

Subject: Re: FLS - s 15(1)(l) Client

Joe,

We should have a conversation with Laird and Kevin about this. I suspect another trip would be required to get s 15(1)(l) done if we can't do it next week.

The entire purpose of this pilot is to test s 15(1)(l)

s 15(1)(l)

There appears to have been a communication breakdown at some point. All we are looking to do at this point is put this initiative back on track, finalize and sign the SOW, and commence testing.

Thanks,

LR

s 15(1)(l)

Pilot II Results

s 15(1)(l)

Facial Recognition System
for the Platform

s 15(1)(l)

Pilot Project

s 15(1), s 17(1)

May 22th – June 11th 2009

Pilot Overview

- The intent of the pilot was to determine the accuracy and effectiveness of the new ^{s 15(1)(l)} System using ^{s 15(1)(l)}

^{s 15(1)(l)}

Pilot Overview

Start Date:

May 22nd, 2009

End Date :

June 11th, 2009

Days used for results analysis:

May 22nd – 26th 2009

Total # of days analyzed:

4

Camera Locations:

s 15(1)(i)



of Cameras:

Pilot Summary

s 15(1)(i)

- [REDACTED]

- Patrons entering the facility were tracked and their face images stored s 15(1)(i) These results were then analyzed by s 15(1)(i) to produce the results.

- In order to provide accurate data, s 15(1)(i) manually went through all entries and marked the entries found of the individuals that were enrolled as part of the test group. These results were then used to determine the accuracy of the system identification.

Pilot Summary Cont'd

- The results were achieved using § 15(1)(f) improved § 15(1)(f) platform. This included new built in § 15(1)(f) § 15(1)(f) to use for facial recognition analysis. This feature eliminates § 15(1)(f) and reduces the number of false alerts produced.
- After analysis of the results it was determined that the § 15(1)(f) were not suitable for facial recognition due to § 15(1)(f) § 15(1)(f)

Pilot Results

- The results that follow are based on the § 15(1)(i)
- The images of the security officers have been removed from the results in order to ensure accurate data. This is due to the fact that they did not enter the casino but § 15(1)(i)

Pilot Results Cont'd

Item	Total Number
Enrolled Subjects	39
All ^{s 15(1)(i)} Entries	26,864
Known ^{s 15(1)(i)} Entries*	24
All ^{s 15(1)(i)} Entries	11,388
^{s 15(1)(i)} Known Entries*	8

*Known entries were when an enrolled individual entered and was manually marked by ^{s 15(1)(i)} as entering the facility.

Pilot Results Cont'd

Confidence Level	Low	Medium	High
Enrolled Subjects Identified s 15(1)(l)	17	15	14
Correct Identification Rate s 15(1)(l)	71%	63%	58%
False Alerts Per Day s 15(1)(l)	48	14	4
Enrolled Subjects Identified s 15(1)(l)	7	4	4
Correct Identification Rate s 15(1)(l)	88%	50%	50%
False Alerts Per Day s 15(1)(l)	13	2	1

Pilot Results Cont'd

- With the confidence level set to **LOW** we found **71%** of the known individuals that entered using the § 15(1)(f) and **88%** of the individuals that entered using the § 15(1)(f). In this case we would have produced 61 false alerts per day and 6 correct alerts for a total of 67 alerts per day for the property (§ 15(1)(f)).
- With the confidence level set to **MEDIUM** we found **63%** of the known individuals that entered using the § 15(1)(f) and **50%** of the individuals that entered using the § 15(1)(f). In this case we would have produced 16 false alerts per day and 5 correct alerts for a total of 21 alerts per day for the property (§ 15(1)(f)).
- With the confidence level set to **HIGH** we found **58%** of the known individuals that entered using the § 15(1)(f) and **50%** of the individuals that entered using the § 15(1)(f). In this case we would have produced 5 false alerts per day and 5 correct alerts for a total of 10 alerts per day for the property (§ 15(1)(f)).

Results Explained

- With improved s 15(1)(i), the results can be dramatically improved as shown.
- The previous test results showed around a 30% accuracy rating while this test showed a 50 – 88% accuracy.
- Based on these results s 15(1)(i) recommends s 15(1), s 17(1) it can be configured at a site level to ensure that the number of hits they receive is manageable. The results show that the more alerts that can be handled the higher the probability of capturing an individual however this needs to be weighed against the site's ability and time to manage them.

Results Explained Cont'd

s 15(1)(i)

•

s 15(1)(i)

Further Improvements

- s 15(1)(l) [redacted]
- s 15(1)(l) [redacted]
- Use of s 15(1)(l) [redacted] for enrollment and identification of patrons into the s 15(1)(l) System.
- s 15(1)(l) [redacted]

s 15(1)(i)

Pilot IV Results

s 15(1)(i)

Facial Recognition System
for the [redacted] Platform

s 15(1)(i)

Pilot Project

s 15(1), s 17(1)

May 18th 2011 – July 21st 2011

Pilot Overview

- The intent of the pilot was to build upon the previous pilot and run another test at the ^{s 15(1), s 17(1)} [redacted] to confirm the results from the phase III trial at

^{s 15(1), s 17(1)} [redacted]

Pilot Overview Cont'd

Data Start Date:

May 18th, 2011

Data End Date :

July 21st, 2011

Total # of days analyzed:

65

Camera Locations:

s 15(1)(i)

of Cameras:

s 15(1)(l)

Pilot Overview Cont'd

s 15(1)(l)

s 15(1)(l)

Pilot Overview Cont'd

s 15(1)(i)

Pilot Results - Subjects

- A conversion tool was used to [REDACTED] s 15(1)(l)
- Banned, watched, and regular subjects were all imported for this trial.

Pilot Results – Subjects Cont'd

Item	Total Number
------	--------------

Total Subjects in the Database	93,274
--------------------------------	--------

Enrolled Subjects from database (Total number of subjects that had s 15(1)(i))	14,532
---	--------

Banned Subjects (Total number of banned subjects in the database during the conversion)	8,827
--	-------

Banned and Enrolled (Total number of banned subjects that had s 15(1)(i))	2,453
--	-------

Pilot Results - Alerts

Item	Total Number
Total Number of alerts	3,647
Accepted Alerts (alerts confirmed to be correct by users)	387
Rejected Alerts (alerts confirmed to be wrong by users)	3255
Unhandled Alerts (not accepted or rejected)	5

Pilot Results - Hits

- During the course of the trial the following statistics were obtained and confirmed:

Item	Total Number of Alerts
Banned Subject Alerts <small>(Alerts from subjects that are currently banned in the BCLC s 15(1)(i))</small>	26 <small>(26 total alerts on 20 different subjects)</small>
Total Number of Days for the Trial	65
Banned Subject Alerts per Day	0.4 (or an average of 1 correct banned subject alert every 3 days)

Pilot Results - Summary

- During the course of the trial there were **26 confirmed correct alerts on subjects that were banned** from the live BCLC s 15(1)(i)
- An average of **1 correct alert** was generated **every 3 days**

Pilot Results – Summary Cont'd

- These alerts were generated on the following subjects

Note: Details on these subjects are not available in the test database but can be referenced by BCLC using

s 15(1)(i)

s 15(1)(i), s 22

Count

3

2

2

2

2

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1



Paladin Security

Kevin Sweeney, CRM
Director, Security, Privacy and Compliance
Corporate Security and Compliance Division, BCLC

March 10, 2017

REPORT: FACIAL RECOGNITION PROJECT

Joe Morris, Account Executive
jmorris@paladinsecurity.com

Paladin Security Systems Ltd.
1277 East Georgia Street
Vancouver, BC V6A 2A9
t: 604-676-0136
f: 604-222-8575
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Demonstration of the extent and ability of the data able to be pulled from the software system	7



Paladin Security



Letter of Introduction

March 10, 2017

Kevin Sweeney, CRM

Director, Security, Privacy and Compliance

Corporate Security and Compliance Division, BCLC

RE: Facial Recognition Report on System Success

Dear Mr. Sweeney,

Please find the enclosed Facial Recognition Report on System Success.

Sincerely,

Joe Morris, Account Executive

Paladin Security Systems Ltd. (formerly BMS Integrated Services Inc.)

1277 East Georgia Street

Vancouver, BC V6A 2A9

Tel: 604-307-2070

Fax: 604-222-8575

Email: jmorris@paladinsecurity.com



Project Methodology and Test Subject Procedures

- s 15(1)(l)
- Volunteers signed up for the pilot project with their name and s 15(1)(l) information.
- Volunteers were instructed to s 15(1)(l) and proceed to enter the gaming facility as a normal patron(s) would.
- BCLC Corporate Security provided additional, more specific, direction on how they wanted the volunteers to enter onto the gaming floor.

s 15(1)(l)

- For each entry and s 15(1)(l) by a volunteer, we were able to confirm the presence of a person at the entry and match the time of that entry on the s 15(1)(l) system, to a face match event on the facial recognition system. This is how we were able to determine the hit/miss ratio and how accurate the system was working.



- BCLC also incentivized the volunteers and offered a prize to the person that scanned the most, which happened to introduce a level of error in the testing. Participants would scan without entering or scan multiple times in a row and enter only once. This skewed the data somewhat. In most cases, we were able to prune the irrelevant duplicate s 15(1)(l) and count only one s 15(1)(l) per entry.

Unedited and Adjusted Hit Rate Percentages

In reference to the s 15(1)(l) where no person presented themselves to a camera: 81.2% of the time a person s 15(1)(l) and presented themselves, they were correctly matched to a gallery. People were not matched to a gallery (i.e., were missed) 18.8% of the time.

Breakdown of general reasoning for the Missed Events

The majority of the missed events show that the person did not, in fact, enter the facility as a patron would; they did not s 15(1)(l) Other reasons include s 15(1)(l) As with any facial recognition software, if there is no s 15(1)(l)

We are able to show that during Jan 10 – Feb 28, out of 360 s 15(1)(l), there was a total of 69 s 15(1)(l) not matched to a person in the gallery. Of the 69 missed scans, 61% of them can be attributed to the factors listed above. Events that were missed outright with no cause, attributed for 7.5% of the total scans for that period.

Jan 10 – Feb 28	Total	Rate
Total s 15(1)(l)	360	-
Facial Recognition EVENT(YES)	291	80.8%
Facial Recognition MISS (NO)	69	19.2%
Missed with cause	42	11.7%
Missed	27	7.5%
Percent of Misses without cause	39%	
Percent of Missed with cause	61%	

False Positives

Identification and removal of false positives

Each of the false positive events captured has an image that is included in the accompanying documentation. The total number of Face Matching events captured by the system was between 200 and 250 events per day. Upon review, we found that on average across 49 of the 75 days of



the pilot (Jan 10 – Feb 28; some false positive data was not available from early in the project), the total proportion of false positive matches were 4–5% (using 200–250 as the daily event total).

Break down of general reasoning for the false positive

As can be seen in the images below, the majority of the false positives are due to s 15(1), s 22

s 15(1)(l), s 22

s 15(1)(l), s 22

Advisory on limitation of these occurrences based on reasoning

Following testing, ways to mitigate these false positives include s 15(1)(l)

Data-driven estimates for changes in ratings based on implemented controls (environmental or system removal of issues)

As discussed throughout the pilot project, we intentionally limited the s 15(1)(l)

to see what the system could produce. As shown in the false positive data, s 15(1)(l)

and decrease the number of false positives.

One other area of improvement would be s 15(1)(l)

This may include s 15(1)(l)

Accuracy of demographics, age, gender etc. (if known)

Total numbers not available, as this info was not tracked or gathered as part of the original pilot intent. The capability for the system to capture this data was demonstrated as a feature only, and no data were tracked nor was this information documented for each volunteer.

Clear procedures and sample images for ideal enrolment methods

Overall, the procedure used to capture images as used by the onsite security staff at s 15(1), s 17(1) was quite good. I would only suggest a few minor changes to improve s 15(1)(l)

as well as suggest s 15(1)(l)

Enroll



each photo as a separate enrollment entry. Three (3) enrollment photos per person are suggested, one photo for each of 15° left, 15° right and head-on.

Demonstration of the extent and ability of the data able to be pulled from the software system

s 19, s 21, s 22 will provide a demonstration, using the systems on site, of which data can be accessed. Any and all data can be searched in the s 15(1)(l) database used by s 15(1)(l)

Report from
s 15(1), s 17(1) Facial Recognition Pilot
February 20th – March 25th, 2012

Overview

Phase 2 pilot test of the VSE facial recognition system was to demonstrate our facial recognition solution operating at s 15(1), s 17(1) For this phase, our sensors were installed on s 15(1)(l)

at the s 15(1), s 17(1) The positioning of the sensors replicated the view of a facial recognition system previously tested by BCLC. The intent was to replicate the test environment for BCLC for comparison purposes.

We monitored the data over a period of 5 weeks. As the weeks progressed, adjustments were made to s 15(1)(l) and optimize the systems performance. In week four (4) and five (5), no changes were made as the system setup provided on average a >90% hit rate.

Week 1 System installation & set up. (base-line data.)
Volunteers through biometric checkpoint: 84
• Hit Percentage: 61.18%

Week 2 Volunteers through biometric checkpoint: 57
• Hit Percentage: 55.74%

Adjustments

- s 15(1)
-

- Week 3** Volunteers through biometric checkpoint: 50
- Hit Percentage: 60%

Adjustments

- s 15(1)
-
-

- Week 4** Volunteers through biometric checkpoint: 48
- Hit Percentage: 91.67
 - Entrance is optimized for VSE detection.

- Week 5** Volunteers through biometric checkpoint: 39
- Hit Percentage: 89.74%
 - Duplicate setup to Week
 - No changes were made to confirm the data from Week 4.

Conclusion

Each casino environment presents unique challenges. This pilot study proves that a high rate of VSE identification is possible in challenging environments with our biometric solution.

During the first week, we learned that two individuals out of the total pool of candidates did not hit a total of 14 times which suggests that s 15(1)(l) However, we also learned as we fine tuned s 15(1)(l) one individual in particular, who had consistently participated had a low hit rate during the first week, however the rate improved noticeable by the final week due to adjustments made.

The Facial Recognition platform provides BCLC an enterprise-wide solution to consistently track and report on VSE activity throughout the province. Our site design provides BCLC the highest level of VSE detection possible.

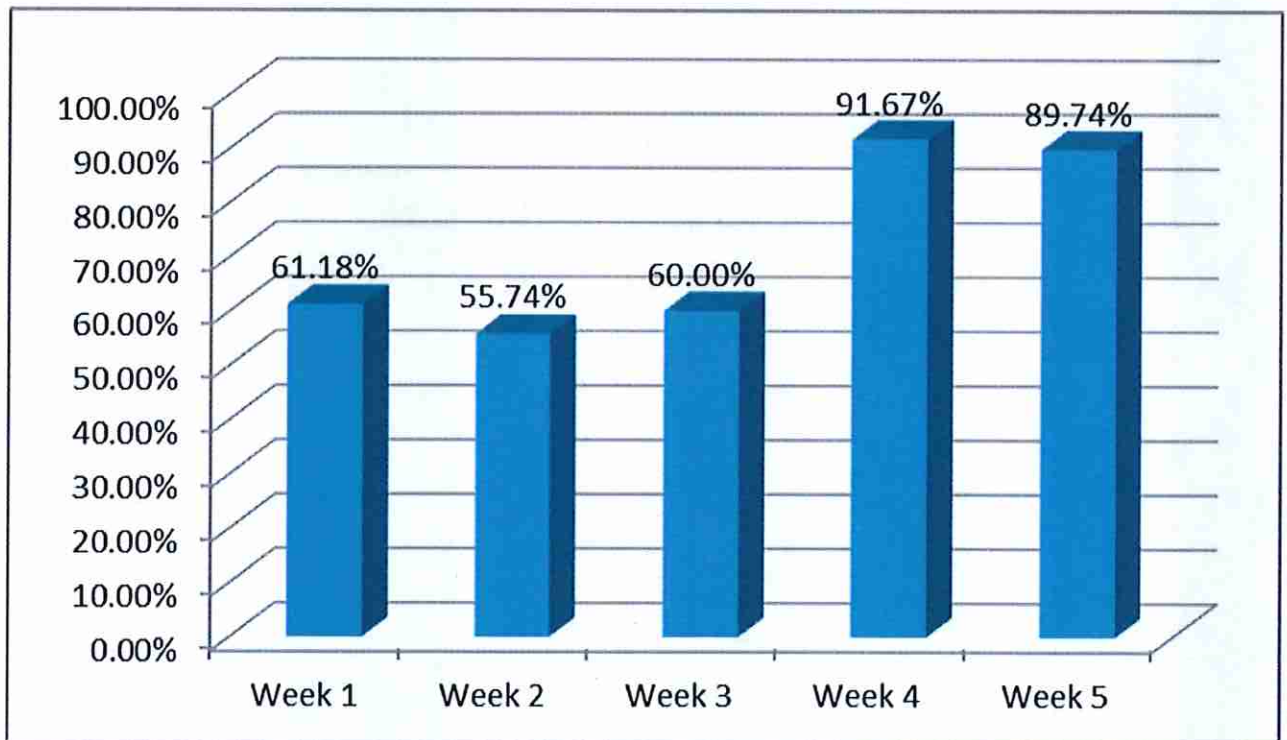
Our solution is designed to provide layers of biometric detection to protect BCLC from VSE individuals. Each casino installation will have biometric detection at the s 15(1)(l)

The design strategy insures a very high likelihood of detecting and alerting to BCLC any on premise VSE individuals.

Our software will be designed to interact with your existing reporting and tracking software.

APPENDIX 1 Hit Percentage Graph

USI Facial Recognition Pilot - s 15(1), s 17(1)



APPENDIX 2

Hit Vs Miss

Full Name	Date	Time	HIT	MISS
s 22	16-Feb-12	6:15 AM	x	
	16-Feb-12	4:42 PM	x	
	17-Feb-12	5:37 AM	x	
	17-Feb-12	11:30 AM	x	
	17-Feb-12	1:15 PM	x	
	17-Feb-12	1:34 PM	x	
	17-Feb-12	3:25 PM		x
	18-Feb-12	4:14 AM		x
	18-Feb-12	5:22 AM		x
	18-Feb-12	8:29 AM	x	
	18-Feb-12	8:29 AM		x
	18-Feb-12	12:41 PM	x	
	18-Feb-12	12:41 PM	x	
	18-Feb-12	1:55 PM		x
	19-Feb-12	5:58 AM	x	
	19-Feb-12	2:17 PM	x	
	19-Feb-12	2:17 PM	x	
	20-Feb-12	6:11 AM		x
	20-Feb-12	6:30 AM	x	
	20-Feb-12	7:10 AM		x
	20-Feb-12	11:10 AM	x	
	20-Feb-12	11:55 AM	x	
	20-Feb-12	2:05 PM		x
	20-Feb-12	3:19 PM	x	
	20-Feb-12	3:35 PM		x
	20-Feb-12	9:21 PM	x	
	21-Feb-12	12:56 AM	x	
	21-Feb-12	6:15 AM	x	
	21-Feb-12	6:28 AM	x	
	21-Feb-12	7:05 AM		x
	21-Feb-12	9:30 AM	x	
	21-Feb-12	10:15 AM		x
	21-Feb-12	1:15 PM	x	
	21-Feb-12	2:00 PM		x
	21-Feb-12	2:30 PM		x



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P: 604.945.0222
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s 22

21-Feb-12	3:00 PM	x	
21-Feb-12	3:25 PM	x	
21-Feb-12	3:30 PM		x
21-Feb-12	3:40 PM	x	
21-Feb-12	3:50 PM		x
21-Feb-12	3:55 PM	x	
21-Feb-12	4:00 PM	x	
22-Feb-12	1:05 AM	x	
22-Feb-12	4:20 AM	x	
22-Feb-12	5:26 AM		x
22-Feb-12	6:14 AM	x	
22-Feb-12	6:35 AM		x
22-Feb-12	6:43 AM	x	
22-Feb-12	6:43 AM	x	
22-Feb-12	6:43 AM	x	
22-Feb-12	12:41 PM		x
22-Feb-12	12:41 PM		x
22-Feb-12	1:44 PM	x	
22-Feb-12	2:15 PM		x
22-Feb-12	3:05 PM	x	
22-Feb-12	3:25 PM	x	
22-Feb-12	1:05 AM		x
23-Feb-12	4:30 AM	x	
23-Feb-12	5:28 AM		x
23-Feb-12	6:13 AM	x	
23-Feb-12	6:35 AM		x
23-Feb-12	7:17 AM	x	
23-Feb-12	7:17 AM		x
23-Feb-12	7:17 AM		x
23-Feb-12	7:36 AM	x	
23-Feb-12	7:36 AM	x	
23-Feb-12	11:00 AM	x	
23-Feb-12	12:38 PM	x	
23-Feb-12	12:38 PM		x
23-Feb-12	2:00 PM	x	
23-Feb-12	3:15 PM	x	
24-Feb-12	4:40 AM		x
24-Feb-12	11:00 AM		x
24-Feb-12	1:57 PM	x	
24-Feb-12	3:25 PM		x
25-Feb-12	3:07 PM	x	



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s 22	26-Feb-12	6:02 AM	x	
	26-Feb-12	7:30 AM	x	
	26-Feb-12	2:00 PM		x
	26-Feb-12	3:29 PM		x
	27-Feb-12	12:51 AM	x	
	27-Feb-12	6:00 AM	x	
	27-Feb-12	6:17 AM	x	
	27-Feb-12	7:11 AM		x
	27-Feb-12	7:27 AM	x	
			52	
			Week 1	61.18%

Full Name	Date	Time	HIT	MISS
s 22	27-Feb-12	8:25 AM	x	
	27-Feb-12	9:58 AM		x
	27-Feb-12	10:45 AM		x
	27-Feb-12	11:45 AM	x	
	27-Feb-12	2:18 PM	x	
	27-Feb-12	3:29 PM		x
	27-Feb-12	3:38 PM		x
	27-Feb-12	4:23 PM	x	
	27-Feb-12	6:15 PM	x	
	28-Feb-12	2:15 AM	x	
	28-Feb-12	5:35 AM		x
	28-Feb-12	6:01 AM		x
	28-Feb-12	6:08 AM	x	
	28-Feb-12	6:25 AM		x
	28-Feb-12	7:30 AM	x	
	28-Feb-12	9:45 AM		x
	28-Feb-12	11:00 AM		x
	28-Feb-12	1:50 PM	x	
	28-Feb-12	1:50 PM	x	
	28-Feb-12	2:50 PM	x	
	28-Feb-12	3:25 PM	x	
	28-Feb-12	4:20 PM	x	
	29-Feb-12	1:00 AM		x
	29-Feb-12	6:02 AM		x
	29-Feb-12	6:13 AM		x
	29-Feb-12	7:31 AM	x	
	29-Feb-12	10:50 AM	x	
	29-Feb-12	12:20 PM	x	



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s 22	29-Feb-12	12:50 PM		x
	29-Feb-12	1:00 PM	x	
	29-Feb-12	1:00 PM	x	
	29-Feb-12	2:00 PM	x	
	01-Mar-12	1:45 AM		x
	01-Mar-12	4:29 AM		x
	01-Mar-12	5:30 AM		x
	01-Mar-12	5:55 AM		x
	01-Mar-12	6:18 AM	x	
	01-Mar-12	9:55 AM	x	
	01-Mar-12	10:10 AM		x
	01-Mar-12	12:45 PM	x	
	01-Mar-12	12:45 PM	x	
	01-Mar-12	12:45 PM		x
	02-Mar-12	4:40 AM		x
	02-Mar-12	5:30 AM		x
	02-Mar-12	11:30 AM		x
	02-Mar-12	12:50 PM	x	
	02-Mar-12	1:30 PM	x	
	02-Mar-12	1:55 PM	x	
	03-Mar-12	4:29 AM	x	
	03-Mar-12	5:31 AM	x	
	03-Mar-12	8:53 AM		x
	03-Mar-12	8:53 AM	x	
	03-Mar-12	3:32 PM	x	
	04-Mar-12	5:58 AM	x	
	04-Mar-12	7:32 AM	x	
	04-Mar-12	2:05 PM	x	
	04-Mar-12	4:19 PM	x	
	04-Mar-12	7:05 PM		x
			34	
		Week 2	55.74%	

Full Name	Date	Time	HIT	MISS
s 22	05-Mar-12	12:45 AM	x	
	05-Mar-12	6:00 AM		x
	05-Mar-12	6:48 AM		x
	05-Mar-12	9:23 AM		x
	05-Mar-12	11:00 AM		x
	05-Mar-12	12:20 PM	x	
	05-Mar-12	1:45 PM		x



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P: 604.945.0222
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s 22	05-Mar-12	1:50 PM		x
	05-Mar-12	2:18 PM	x	
	05-Mar-12	3:22 PM		x
	05-Mar-12	6:15 AM	x	
	06-Mar-12	7:11 AM	x	
	06-Mar-12	7:27 AM	x	
	06-Mar-12	10:45 AM	x	
	06-Mar-12	11:00 AM	x	
	06-Mar-12	1:23 PM	x	
	06-Mar-12	2:05 PM		x
	06-Mar-12	3:00 PM		x
	06-Mar-12	3:45 PM		x
	06-Mar-12	3:26 PM		x
	07-Mar-12	1:10 AM	x	
	07-Mar-12	4:06 AM	x	
	07-Mar-12	5:25 AM	x	
	07-Mar-12	5:32 AM	x	
	07-Mar-12	6:16 AM	x	
	07-Mar-12	9:45 AM		x
	07-Mar-12	10:02 AM		x
	07-Mar-12	12:34 PM		x
	07-Mar-12	1:57 PM	x	
	07-Mar-12	3:25 PM	x	
	08-Mar-12	4:42 AM	x	
	08-Mar-12	5:25 AM	x	
	08-Mar-12	6:25 AM	x	
	08-Mar-12	6:35 AM	x	
	08-Mar-12	10:45 AM	x	
	08-Mar-12	3:03 PM		x
	08-Mar-12	3:25 PM		x
	09-Mar-12	4:25 AM	x	
	09-Mar-12	5:29 AM	x	
	09-Mar-12	2:01 PM	x	
	09-Mar-12	3:22 PM	x	
	10-Mar-12	4:30 AM		x
	10-Mar-12	5:30 AM	x	
	10-Mar-12	8:34 AM		x
	10-Mar-12	8:34 AM		x
	10-Mar-12	12:40 PM	x	
	10-Mar-12	12:40 PM	x	
	10-Mar-12	2:01 PM	x	



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s 22	10-Mar-12	3:20 PM	x	
	11-Mar-12	5:58 AM		x
	12-Mar-12	6:55 AM		x
			30	
		Week 3	60.00%	

Full Name	Date	Time	HIT	MISS
s 22	12-Mar	7:12 AM	x	
	12-Mar	8:07 AM	x	
	12-Mar	11:00 AM	x	
	12-Mar	12:25 PM	x	
	12-Mar	2:00 PM	x	
	12-Mar	3:28 PM	x	
	13-Mar	6:23 AM	x	
	13-Mar	6:48 AM	x	
	13-Mar	8:35 AM	x	
	13-Mar	11:00 AM	x	
	13-Mar	11:14 AM	x	
	13-Mar	12:04 PM	x	
	13-Mar	3:26 PM	x	
	13-Mar	4:54 PM		x
	14-Mar	6:19 AM	x	
	14-Mar	7:27 AM	x	
	14-Mar	11:00 AM	x	
	14-Mar	11:30 AM	x	
	14-Mar	1:45 PM	x	
	14-Mar	2:30 PM	x	
	14-Mar	3:25 PM	x	
	15-Mar	4:29 AM	x	
	15-Mar	5:30 AM	x	
	15-Mar	5:48 AM		x
	15-Mar	6:19 AM	x	
	15-Mar	7:19 AM	x	
	15-Mar	7:19 AM		x
	15-Mar	7:19 AM	x	
	15-Mar	7:49 AM	x	
	15-Mar	7:49 AM	x	
	15-Mar	8:43 AM	x	
	15-Mar	10:04 AM	x	
	15-Mar	11:30 AM	x	
	15-Mar	12:50 PM	x	



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s 22	15-Mar	1:39 PM	x	
	15-Mar	3:28 PM		x
	16-Mar	4:37 AM	x	
	16-Mar	5:30 AM	x	
	16-Mar	6:52 AM	x	
	16-Mar	6:52 AM	x	
	16-Mar	1:58 PM	x	
	16-Mar	3:29 PM	x	
	17-Mar	4:40 AM	x	
	17-Mar	1:59 PM	x	
	17-Mar	3:30 PM		x
	18-Mar	6:03 AM	x	
	18-Mar	7:34 AM	x	
	18-Mar	3:25 PM	x	
	19-Mar	6:05 AM	x	
			44	
			Week 4	91.67%

Full Name	Date	Time	HIT	MISS
s 22	19-Mar	7:05 AM	x	
	19-Mar	7:30 AM	x	
	19-Mar	7:35 AM	x	
	19-Mar	8:33 AM		x
	19-Mar	10:22 AM	x	
	19-Mar	11:10 AM	x	
	19-Mar	2:03 PM	x	
	19-Mar	3:25 PM	x	
	20-Mar	5:58 AM	x	
	20-Mar	7:05 AM	x	
	20-Mar	8:06 AM	x	
	20-Mar	1:26 PM	x	
	20-Mar	3:28 PM	x	
	21-Mar	4:45 AM	x	
	21-Mar	5:30 AM	x	
	21-Mar	6:33 AM	x	
	21-Mar	7:19 AM	x	
	21-Mar	7:40 AM	x	
	21-Mar	7:40 AM	x	
	21-Mar	8:26 AM	x	
	21-Mar	10:45 AM	x	
	21-Mar	10:50 AM	x	



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s 22	21-Mar	12:30 PM	x	
	21-Mar	2:02 PM	x	
	21-Mar	3:15 PM	x	
	22-Mar	4:25 AM	x	
	22-Mar	5:31 AM	x	
	22-Mar	7:17 AM	x	
	22-Mar	8:30 AM	x	
	22-Mar	12:30 PM	x	
	22-Mar	2:04 PM	x	
	23-Mar	4:30 AM	x	
	23-Mar	5:34 AM	x	
	23-Mar	3:09 PM		x
	24-Mar	4:35 AM		x
	24-Mar	5:32 AM		x
	25-Mar	7:29 AM	x	
	25-Mar	3:36 PM	x	
	26-Mar	5:58 AM	x	
	26-Mar	6:04 AM	x	
			35	
		Week 5	89.74%	
BONUS DATA FROM WEEK 6				
s 22	26-Mar	6:30 AM	x	
	26-Mar	7:15 AM	x	
	26-Mar	10:40 AM	x	
	26-Mar	10:50 AM	x	
	26-Mar	3:28 PM	x	
	27-Mar	5:57 AM	x	
	27-Mar	10:25 AM	x	
	27-Mar	3:25 PM	x	
	28-Mar	6:02 AM	x	
	28-Mar	7:10 AM	x	
	28-Mar	8:08 AM	x	
	28-Mar	12:55 PM	x	
	29-Mar	4:34 AM		x
	29-Mar	5:33 AM	x	
	29-Mar	10:45 AM	x	
	29-Mar	1:58 PM	x	
			15	
	Bonus	Week 6	88.24%	