Immigration, Refugees and Citizenship Canada (IRCC)

Smart Immigration Assessment and Matching System (SIAMS)

Data Requirements

by

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Software Requirements Analysis

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DISCLAIMER: This report is not affiliated in any way with IRCC, nor does it intend to provide an accurate view of how IRCC conducts their business activities. This is a mock document based on unfounded assumptions and “best guesses” made by the author. The author has no inside knowledge of how IRCC’s software or business practices work. The objective is to simulate how requirements analysis might have been documented during the development of an information system similar to IRCC’s.

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1. Introduction

This document provides the conceptual data requirements for IRCC's Smart Immigration Assessment and Matching System (SIAMS).

SIAMS is designed to streamline the immigration process by integrating advanced AI-driven functionalities such as real-time eligibility assessments, document verification, and automated matching of applicants to provinces based on labor market needs. The scope of this document includes defining the data architecture, identifying key entities, and establishing relationships required to support these functionalities. This includes capturing data about applicants, applications, documents, provinces, labor market needs and feedback functionality.

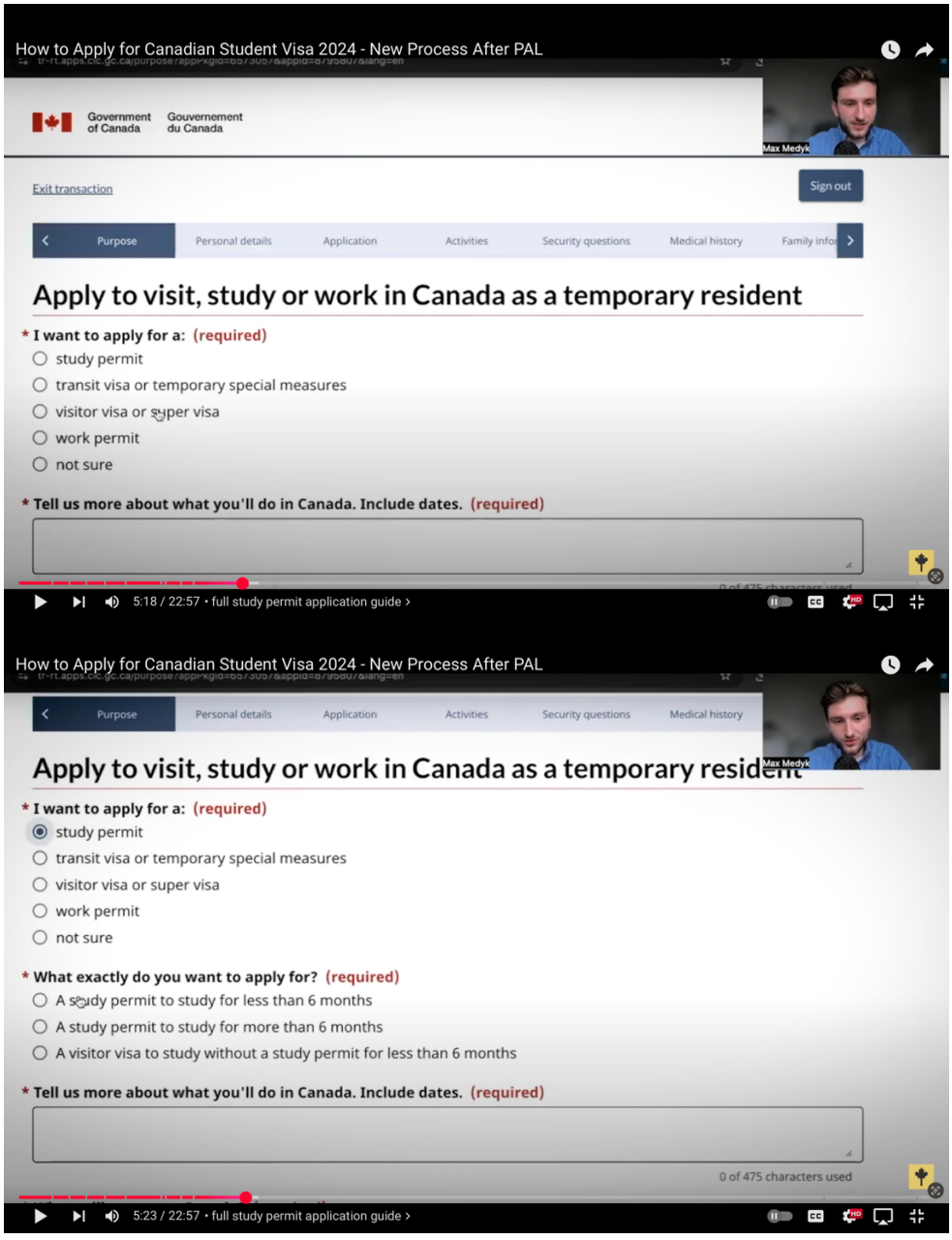
This document presents the data requirements divided into two data areas, as follows:

Immigration Applications concerns data related to the front-end of the SIAMS functionalities, mostly pertaining to the applicant functionalities.

IRCC Operations concerns data related to the back-end of the SIAMS functionalities, highlighting key functionalities catering towards the needs of IRCC officers and provincial representatives.

2. Research Description and Screenshots

I began by watching YouTube tutorials that demonstrated how to complete various IRCC immigration applications, including study permits, work permits, and setting up Express Entry profiles. Initially, these tutorials helped me identify relevant entities and attributes for my data model. However, I soon realized they did not show all the possible options for each attribute. I decided to create my own IRCC account to explore all the available options. In the screenshot below, you can see how selecting a transit visa or visitor visa, rather than a study permit, generated an entirely different set of follow-up options.

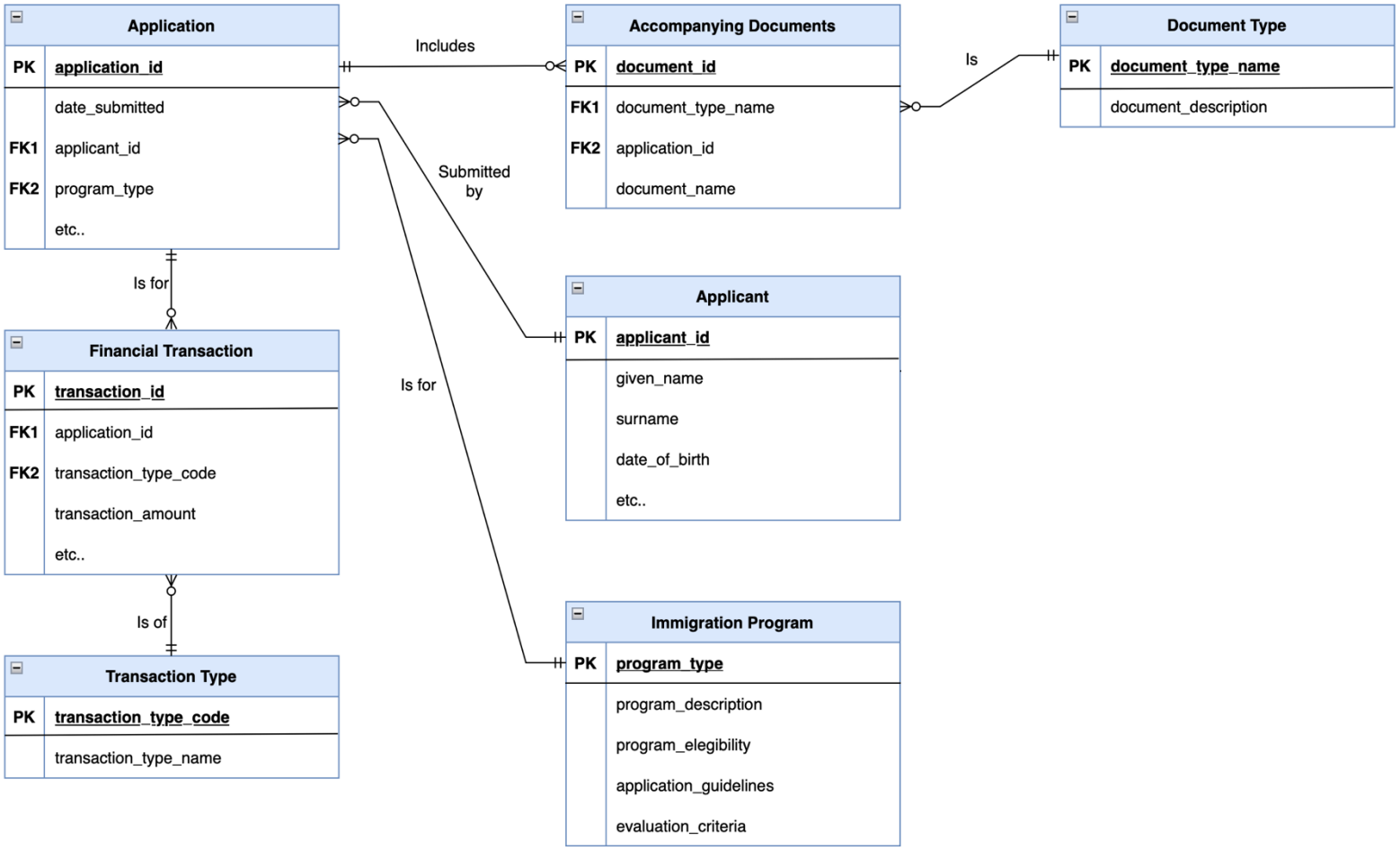


3. Data Area #1 – Immigration Applications

Data Area Description

This data area represents the data captured when an applicant applies for an immigration pathway through IRCC.

Entity Relationship Model



Entity & Attribute Descriptions (including sample entity instances)

Application

IRCC requires the client to complete an application on their online application portal. The application collects a broad range of details about the applicant including their personal information, financial capabilities, medical history and many more.

This "**Application**" entity represents various fields of data pertaining to a particular application.

Attributes for: **Application**

Attribute Name	**Description** (where the meaning is not obvious)
application_id	A unique number to identify each application
applicant_id **(FK)**	A unique number to identify each applicant
date_submitted	DD-MM-YYYY
program_type **(FK)**	The type of program the applicant is interested in: Study Permit (SP), Visitor Visa (VV), Express Entry (EE)
application_status	Draft, Submitted, Reviewing, Decision made
last_update_date	Date when the last update was made
decision_id **(FK)**	References a **Decision** entity
decision_date	Date on which the decision was made
feedback_type_name **(FK)**	General feedback from the officer or the AI software

List of entity instances for: **Application**

Attribute Name	**Instance-1**	**Instance-2**	**Insatance-3**
application_id	SP425-423-675	VV312-234-657	EE764-986-582
applicant_id **(FK)**	65324567	36475982	86705645
date_submitted	26-04-2021	02-11-2023	04-10-2024
program_type **(FK)**	SP	VV	EE
application_status	Draft	Decision made	Reviewing
last_update_date	05-06-2021	12-01-2024	19-12-2024
decision_id **(FK)**	NULL	D7465382	NULL
decision_date	NULL	12-01-2024	NULL

feedback_type_name **(FK)**	A_LOW_POF	O_APPRV	O_ADD_DOCS

Applicant

This entity represents the data of an applicant that is looking to use IRCC's online portal to access immigration application.

Attributes for: **Applicant**

Attribute Name	**Description** (where the meaning is not obvious)
applicant_id	A unique number to identify each applicant
given_name	
surname	
date_of_birth	DD-MM-YYYY
gender	
marital_status	
children	Input number of children of the applicant
mother_tongue	
citizenship_type	Acquired or by-birth
citizenship_country	
address_street	
address_apt_number	
address_city	
contact_number	
passport_number	
dependents	Is the applicant bringing any other family member along with them? (Parents, Spouse, Children)
visa_history	Does the applicant hold visa to any other countries?
travel_history	Has the applicant travelled to any other countries?
education	Highest level of education
job_experience_years	
job_experience_domain	The field in which the applicant holds job experience (IT, Management, Economics)

proof_of_funds_amount	The amount (in CAD) applicant has in savings in order to guarantee basic sustenance
medical_history	History of any infectious disease the applicant has contracted withing the last 6 months (Yes/No)
criminal_history	Has the applicant committed any offences in the past? (Yes/No)
current_legal_proceedings	Does the applicant have any ongoing legal proceedings?
legal_proceeding_description	Description of the current and past legal offences/proceedings
English_language_test	CELPIP, IELTS, PTE, Duolingo
language_test_scores	Scores obtained in the language test

List of entity instances for: **Applicant**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
applicant_id	65324567	36475982	86705645
given_name	Sam	Robert	Shruti
surname	Zane	Payne	Patel
date_of_birth	12-03-1996	26-03-1990	26-03-1997
gender	Male	Male	Female
marital_status	Single	Married	Single
children	0	2	0
mother_tongue	Spanish	English	Hindi
citizenship_type	by_birth	acquired	by_birth
citizenship_country	Spain	Antigua and Barbuda	India
address_street	Av. De Lemos	Connaught St	Tirupati Nagar
address_apt_number	45	270	20/21
address_city	Madrid	Codrington	Surat
contact_number	123-456-654	567-456-123	123-987-654
passport_number	JUH678775	OY987456	YYA871235
dependents	2	3	0
visa_history	US, AUS	NULL	US, UAE

travel_history	AUS	NULL	US, UAE
education	GRAD	PHD	UND_GRAD
job_experience_years	2	8	5
job_experience_domain	Management	Economics	IT
proof_of_funds_amount	$ 6500	$ 67,000	$ 20,000
medical_history	No	Malaria	No
criminal_history	Yes	No	No
current_legal_proceedings	No	No	No
legal_proceeding_description	Traffic offence	NULL	NULL
English_language_test	CELPIP	IELTS	IELTS
language_test_scores	7	8	8

Immigration Program

This entity represents data related to the type of immigration program that the applicant is interested in, and the information related to each program.

Attributes for: **Immigration Program**

Attribute Name	**Description** (where the meaning is not obvious)
program_type	The type of program the applicant is applying under
program_description	Written description about the general information about the program
program_eligibility	Written description of eligibility requirements for the program including minimum proof of funds amount, education level, language test scores, years of job exerience
application_guidelines	Guidelines to be followed during the application process
evaluation_criteria	Description of criteria on which the applicantion will be evaluated

List of entity instances for: **Immigration Program**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
program_type	SP	VV	BV

program_description	For applicants interested in Study Permit….*more content….*	For applicants interested in Visitor Visa….*more content…*	For applicants interested in Business Visa…*more content*
program_eligibility	*Description of eligibility criteria 1*	*Description of eligibility criteria 2*	*Description of eligibility criteria 3*
application_guidelines	*Description of application guidelines 1*	*Description of application guidelines 2*	*Description of application guidelines 3*
evaluation_criteria	*Description of evaluation criteria 1*	*Description of evaluation criteria 2*	*Description of evaluation criteria 3*

Accompanying Documents

The application form captures information about documents that are required to accompany an application for assistance, as follows:

Attributes for: **Accompanying Documents**

Attribute Name	**Description** (where the meaning is not obvious)
document_id	A unique way to identify each accompanying document
document_type_name**(FK)**	The type of document: EDU (educational), FUNDS (proof of funds), MED (medical)
application_id **(FK)**	The application this document accompanies
document_name	The title or name of the individual document

List of entity instances for: **Accompanying Documents**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
document_id	doc1786	doc976	doc547
document_type_name**(FK)**	EDU	MED	FUNDS
application_id **(FK)**	SP425-423-675	VV312-234-657	EE764-986-582
document_name	Sam_transcripts.pdf	Robert_med.pdf	Shruti_POF.pdf

Document Type

This entity is a static list of the types of documents that can accompany an application for assistance.

Attributes for: **Document Type**

Attribute Name	**Description** (where the meaning is not obvious)
document_type_name	A unique way to identify each document type
document_type_description	If needed, a way to clarify the meaning of each document type name

List of entity instances for: **Document Type**

Attribute Name	Instance-1	Instance-2	Instance-3
document_type_name	EDU	MED	FUNDS
document_type_description	Document to provide details about educational qualifications of the applicant such as degrees, transcripts, LOR, etc.	Document to provide details about medical history of the applicant including past diseases, vaccinations, current medical condition, etc.	Documents to prove financial proficiency claims made by the applicant including bank letters, account statements, property evaluations, etc.

Financial Transaction

This entity represents records of the financial transactions associated with applications.

Attributes for: **Financial Transaction**

Attribute Name	**Description** (where the meaning is not obvious)
transaction_id	A unique way to identify each financial transaction
transaction_type_code **(FK)**	A unique way to identify each transaction type
application_id **(FK)**	The application this transaction is for
transaction_amount	
transaction_currency	
transaction_date_time	When the transaction takes place DD-MM-YYY
payment_method	Credit card, debit card, PayPal, etc.
payment_details	Credit card number, etc.

payee	Identifies which department receives the payment (Study Permit dept., Visitor Visa dept., Business Visa dept., etc..)

List of entity instances for: **Financial Transaction**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
transaction_id	9736482	2387262	8973621
transaction_type_code **(FK)**	BIO	APP	PASS_HANDLE
application_id **(FK)**	SP425-423-675	VV312-234-657	EE764-986-582
transaction_amount	90	839.27	4200
transaction_currency	EUR	XCD	INR
transaction_date_time	12-08-2023	15-03-2022	18-09-2023
payment_method	Credit Card	Debit Card	Credit Card
payment_details	Card No.-324233xx	Card No.-245623xx	Card No.-564562xx
payee	IRCC_SP_DEPT	IRCC_EE_DEPT	IRCC_BV_DEPT

Transaction Type

This entity is a static list of the types of financial transactions that can be associated with a booking.

Attributes for: **Transaction Type**

Attribute Name	**Description** (where the meaning is not obvious)
transaction_type_code	A unique way to identify each transaction type
transaction_type_name	A brief name for each type of transaction, such as, for example, “Application Fees” (APP), “Biometrics Fees” (BIO), “Passport Stamping Pick-up Delivery” (PASS_HANDLE)

List of entity instances for: **Transaction Type**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
transaction_type_code	BIO	APP	PASS_HANDLE

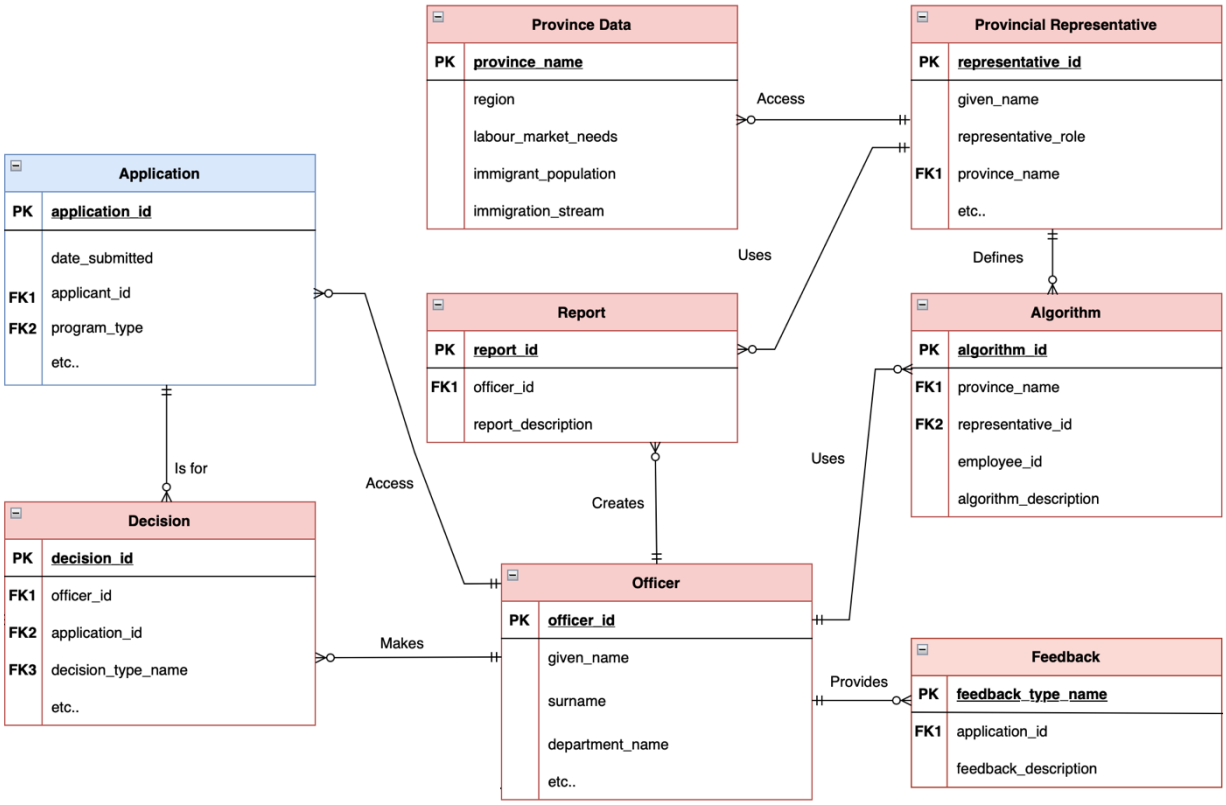
transaction_type_name	Biometrics Fees	Application Fees	Passport pickup/delivery Fees

4. Data Area #2 – IRCC Operations

Data Area Description

This data area represents the data captured during the application decision making and various other processes.

Entity Relationship Model



Entity & Attribute Descriptions (including sample entity instances)

Officer

This entity represents data related to the IRCC officers responsible for evaluating the application submitted on the IRCC online portal.

Attributes for: **Officer**

Attribute Name	**Description** (where the meaning is not obvious)
officer_id	A unique way to identify the IRCC officer
given_name	
surname	
gender	
date_of_birth	DD-MM-YYY
department_name	What department does the officer works in? (application processing (AP), case management (CM), customer services (CS), policy and regulations (PR), etc..)
case_processing_centre	Which IRCC office does the officer works from? (Edmonton (ED), Mississauga (MI), Sydney (SY), Ottawa (OT))
contact_email	
contact_phone	

List of entity instances for: **Officer**

Attribute Name	**Instance-1**	**Instance-1**	**Instance-3**
officer_id	3984756271	5364828736	0983563526
given_name	Marshal	Danny	Maddy
surname	Mathers	McGathey	Miller
gender	Male	Male	Female
date_of_birth	12-06-1986	04-03-1988	11-05-1990
department_name	AP	PR	CS
case_processing_centre	ED	MI	MI
contact_email	mmather@xyz.com	mcg78@abc.com	maddy31@pqr.com
contact_phone	324-654-435	234-987-667	123-456-345

Provincial Representative

This entity represents the data related to various provincial representatives. Provincial representatives act on behalf of their respective provinces, facilitating and coordinating immigration processes and requirements at the provincial level while also providing inputs on criteria used to develop AI algorithms and models for evaluating the applications based on each provincial needs.

Attributes for: **Provincial Representative**

Attribute Name	**Description** (where the meaning is not obvious)
representative_id	A unique way to identify the provincial representative
given_name	
surname	
date_of_birth	
gender	
province_name **(FK)**	What province does the representative works for?
representative_role	Role of the representative (Provincial Liaison Officer, Nominee Program Officer, Provincial Policy Specialist, etc..)
contact_email	
contact_phone	

List of entity instances for: **Provincial Representatives**

Attribute Name			
representative_id	**234453457**	**654765876**	**432456876**
given_name	Katy	Ariana	Chris
surname	Patty	Grand	Blue
date_of_birth	04-07-1990	05-05-1987	12-02-1995
gender	Female	Female	Male
province_name **(FK)**	NB	BC	NS
representative_role	PLO	NPO	PPS
contact_email	katpat@xyz.com	ag98@abc.com	cblue@efg.com
contact_phone	234-123-456	456-678-567	234-345-543

Province Data

This entity represents the data related to a particular province.

Attributes for: **Province Data**

Attribute Name	**Description** (where the meaning is not obvious)
province_name	Name of the province
region	Atlantic, Central, Prairie, West Coast
labour_market_needs	List of fields that are experiencing labour shortage
immigrant_population	Total number of immigrants in that province
immigration_stream	List of active immigration streams

List of entity instances for: **Province Data**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
province_name	BC	NS	ON
region	West Coast	Atlantic	Central
labour_market_needs	*List 1*	*List 2*	*List 3*
immigrant_population	39,674	26,837	30,198
immigration_stream	*List 1*	*List 2*	*List 3*

Algorithm

This entity represents the data related to the Machine Learning algorithms, integrated within the SIAMS software, that are designed to evaluate various parameters of an application. The algorithm processes a large set of features predefined by ML Engineer in collaboration with the provincial representatives to generate a feedback. This functionality can be used by both, IRCC officer and the client, to gather feedback on an application.

Attributes for: **Algorithm**

Attribute Name	**Description** (where the meaning is not obvious)
algorithm_id	Unique way to identify an algorithm
province_name **(FK)**	Name of the province for which the algorithm was designed for
employee_id	Who was the engineer?

representative_id **(FK)**	Who worked on the algorithm?
algorithm_description	Description of the algorithm

List of entity instances for: **Algorithm**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
algorithm_id	SP32	BV12	EE03
province_name **(FK)**	BC	BC	NB
employee_id	45354	56766	45322
representative_id **(FK)**	983746537	983674562	763465364
algorithm_description	*description 1*	*description 2*	*description 3*

Feedback

An applicant can receive feedback either from the AI driven algorithm before submitting the application or from the IRCC officer after receiving the application decision. These feedbacks are predefined set of labels which were used to feed the algorithm during its training.

Attributes for: **Feedback**

Attribute Name	**Description** (where the meaning is not obvious)
feedback_type_name	A unique way to identify each feedback type
application_id **(FK)**	The application this feedback accompanies
feedback_description	

List of entity instances for: **Feedback**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
feedback_type_name	A_LOW_POF	O_APPRV	O_ADD_DOCS
application_id **(FK)**	SP425-423-675	VV312-234-657	EE764-986-582
feedback_description	Low proof funds	Officer has approved the application	Officer is requesting additional documents

Decision

This entity represents the data related to the decision made on an application by an IRCC officer.

Attributes for: **Decision**

Attribute Name	**Description** (where the meaning is not obvious)
decision_id	Unique way to identify a decision
officer_id **(FK)**	Officer who made the decision
application_id **(FK)**	What application was the decision made for?
decision_type_name **(FK)**	What type of decision was made? (Approved (AP), Rejected (RE), On hold (HLD))
decision_date	DD-MM-YYY
flagged	'Yes' or 'No'
remarks	

List of entity instances for: **Decision**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
decision_id	D76567865	D56754567	D98345434
officer_id **(FK)**	3984756271	5364828736	0983563526
application_id **(FK)**	SP425-423-675	VV312-234-657	EE764-986-582
decision_type_name **(FK)**	AP	RE	HLD
decision_date	12-03-2023	18-11-2023	26-09-2023
flagged	No	No	Yes
remarks	*remark 1*	*remark 2*	*remark 3*

Report

This entity represents any data related to the reports on various immigration subjects generated by the IRCC officer. Provincial representatives can access these reports and perform further analysis.

Attributes for: **Report**

Attribute Name	**Description** (where the meaning is not obvious)
report_id	A unique way to identify a report
officer_id **(FK)**	Officer that generated the report
report_description	Description of the report

List of entity instances for: **Report**

Attribute Name	**Instance-1**	**Instance-2**	**Instance-3**
report_id	**2423423**	**2342354**	**546476**
officer_id **(FK)**	3984756271	5364828736	0983563526
report_description	NB students report	BC business owners report	NS refugee population report