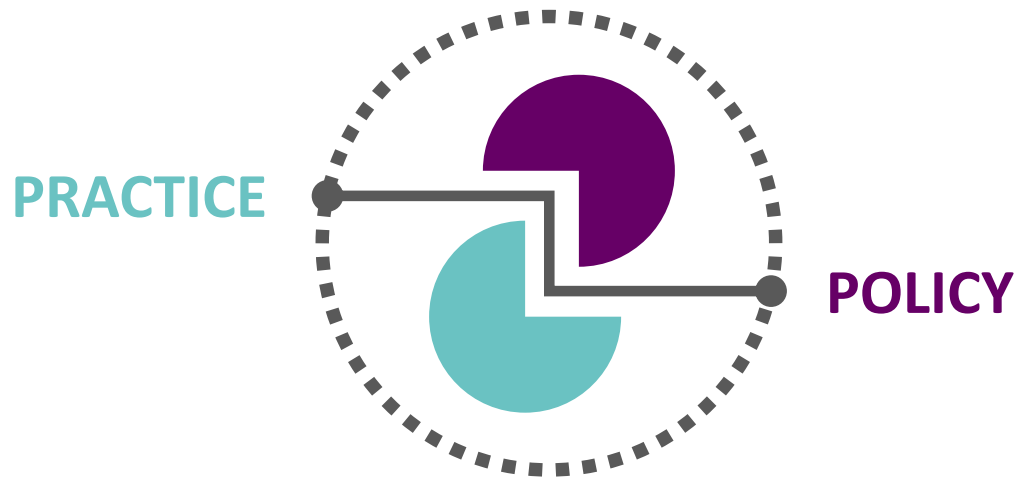


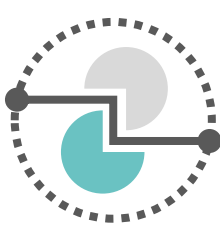


Artificial Intelligence and Augmented Decision-making @ IRCC



IRCC Presentation to the Law Commission of Ontario

15 May 2019



Significant Volume Growth

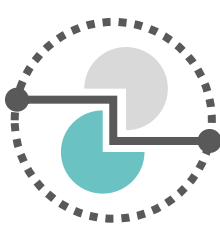
- » IRCC has been facing an ongoing and significant volume growth with temporary resident applications (visitors, students and workers), in particular from China and India.

Emphasis on Client Service and Efficiency

- » Minister's mandate letter is clear: reduce application processing times, improve service delivery to make it timelier and less complicated, and enhance system efficiency.

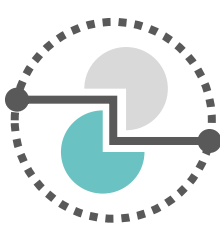
A Need for Innovation

- » Since traditional means to deal with pressures do not suffice, IRCC has been developing its advanced analytics capacity including predictive analytics and machine learning.



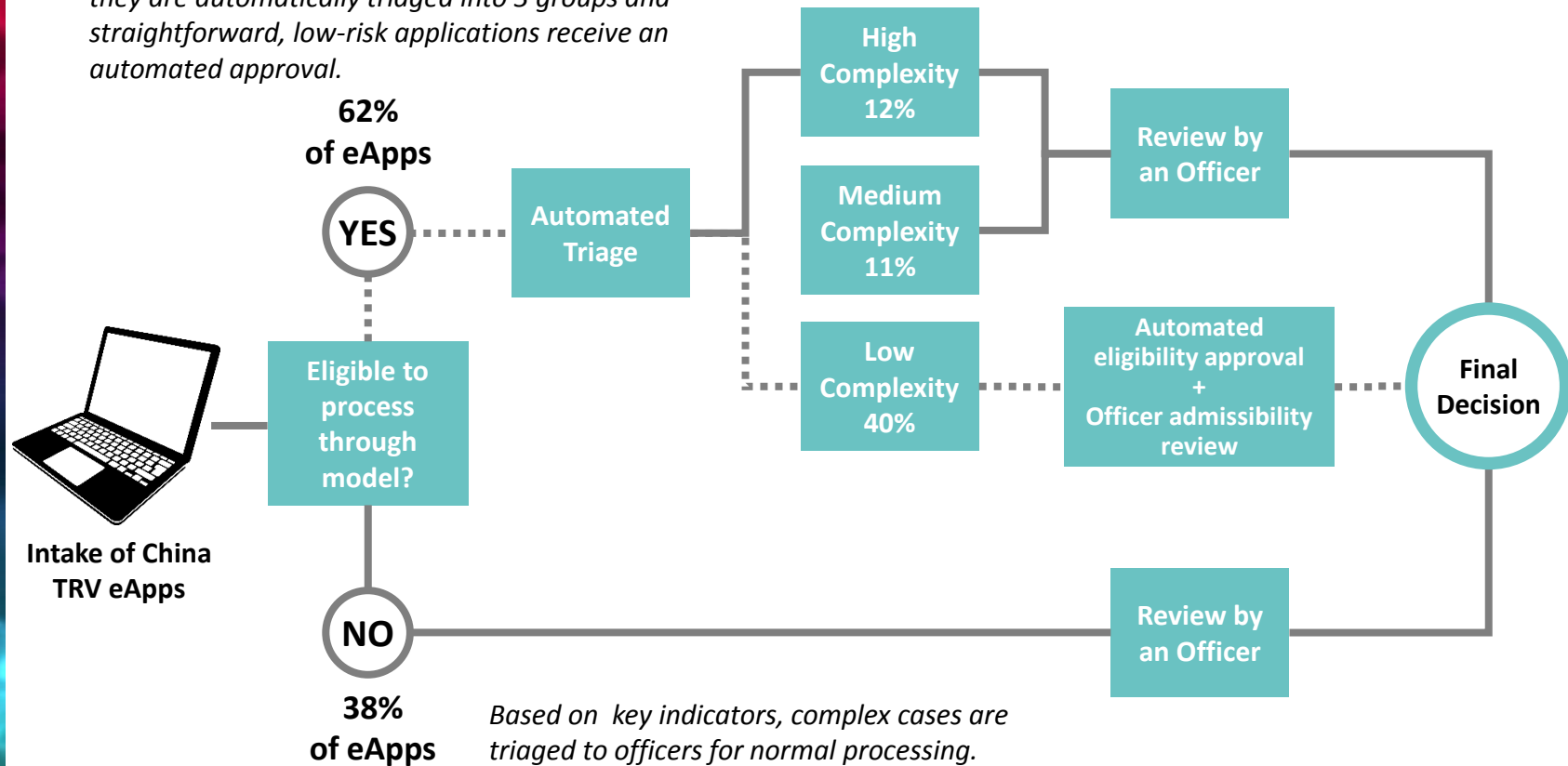
Using Advanced Analytics & Machine Learning Technology

- » The goal is to automate a portion of the temporary residence (TR) business process, focusing on on-line applications (e-Apps) from China and India.
 - Model trained to recognize key factors at play in decision making on visitor applications.
 - The machine then automatically triages applications and identifies applications that should be approved at this step
- With the TR model, positive eligibility decisions are made automatically, based on a set of rules derived from thousands of past officer decisions. When an application meets certain criteria, it is approved for eligibility without officer review.

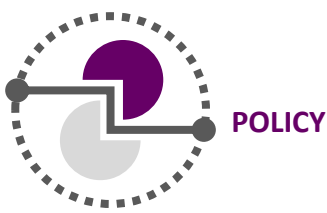


China Pilot: Process Flow

Remaining applications go through the model where they are automatically triaged into 3 groups and straightforward, low-risk applications receive an automated approval.



- The pilot included an extremely rigorous **quality assurance** process, which demonstrated that the model's outputs were remarkably consistent with human decision-making.
- The model is able to process positive eligibility decisions **87% faster**.



Key Project Considerations

Legal & Policy

Ethics

Privacy

Communications

Data Governance &
Management

Information Technology

Change Management

Build the Data Science Skills
Set & Recruitment Strategy

Data Science & Third Party
Review

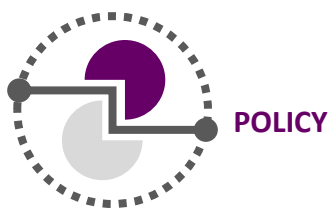
Part 4.1 – Electronic Administration

The *Immigration and Refugee Protection Act* now provides broad authorities for the use and governance of electronic systems, including automated systems

Key provisions include:

186.1(1) *The Minister may administer this Act using electronic means, including as it relates to its enforcement*

186.1(5) *An electronic system may be used by an officer to make a decision or determination or to proceed with an examination*



A POLICY PLAYBOOK

A strong legal foundation on its own is not enough to move forward with the use of automation and AI. We need to make sure we're:

- *Connecting the right people;*
- *Asking the right questions; and*
- *Taking the right steps.*

DRAFT

AUTOMATED DECISION SUPPORT Policy Playbook



How to ensure responsible use of automation, advanced analytics and artificial intelligence in service of administrative decision-making

- 1 Preamble
- 2 Guiding Principles
- 3 The Automator's Handbook
- 4 Glossary of Key Terms

- » **Guiding Principles**
- » **A Handbook for Innovators**



Draft Guiding Principles

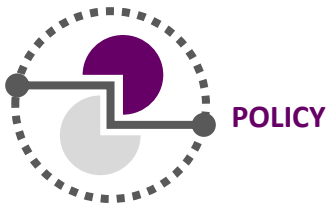
Guiding principles will give IRCC a coherent basis for strategic choices about whether and how to make use of new tools and techniques.

Overarching Goals

- The use of new tools should deliver a clear **public benefit**
- **Humans**, not computer systems, **are responsible** for decisions

The Right Tools in the Right Circumstances

- Because our decisions have significant impacts, IRCC should **prioritize approaches that carry the least risk**
- “**Black box**” algorithms should not be the sole determinant of final decisions on client applications



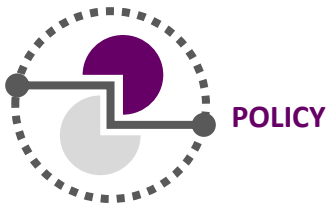
Draft Guiding Principles

Responsible Design

- Recognize the **limitations** of data-driven technologies and take all reasonable steps to **minimize unintended bias**
- Officers should be **informed**, not led to conclusions
- Humans and algorithmic systems play complementary roles; must **find right balance** to get the most out of each
- Adopt new **privacy-related best practices**

Transparency and Explainability

- Subject systems to appropriate **oversight**, to ensure they are fair and functioning as intended
- Always be able to provide a **meaningful explanation of decisions** made on client applications
- Balance transparency with the need to protect the **safety and security of Canadians**
- Clients to have **access to the same recourse** mechanisms



The Automator's Handbook

A handbook is being developed to help guide innovators through a linear process when considering the development of a new automated decision system, equipping them to consider the right questions at the right times.

When deciding if automated decision-making is well suited to the problem at hand

- *What impact would our proposal have on clients?*
- *Do we have the data we need to make this work?*

1

When setting out to design and build a new system

- *What can we do to guard against algorithmic bias?*
- *How will the system ensure procedural fairness?*

2

Once an automated system is up and running

- *What is the going process for quality assurance?*
- *Is our confidence threshold still appropriate?*

4

When preparing for system launch

- *What is our approach to public transparency?*
- *Have employees received the training they need?*

3



THANK YOU