



Patenting in Pandemic Mitigation Technologies

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4th Annual IP Data and Research Conference



OUTLINE

1. Who are we?
2. Context
3. Findings
4. Next Steps

WHO ARE WE?



2017 WOMEN'S PARTICIPATION IN PATENTING

An Analysis of Patent Cooperation Treaty Applications Originating in Canada



Patenting to Fight Pandemics: The Canadian Story

Patents | Canadian Intellectual Property Office

COVID-19 first appeared in December 2019. By March 2020, the virus was spreading around the world with increasing speed, leading the World Health Organization to declare a global pandemic.



Patented Inventions in Climate Change Mitigation Technologies



Processing Artificial Intelligence: Highlighting the Canadian Patent Landscape



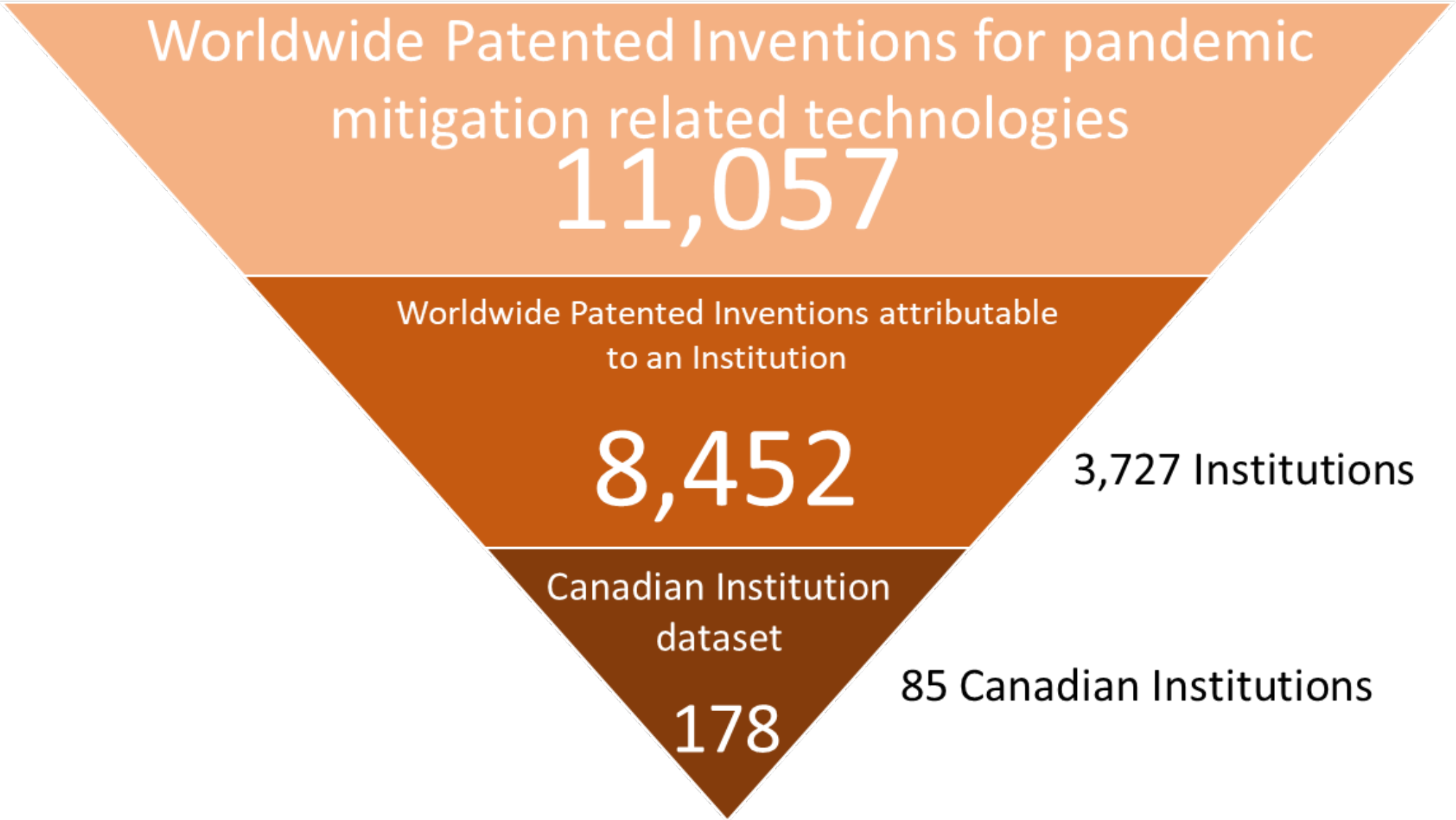
INTRODUCTION

- In March 2020, the Prime Minister announced the *Pandemic Response Challenge Program*.
- The *National Research Council (NRC)* received \$15 million to form teams to support the fight against COVID-19.
- Canadian and international researchers were convened from government, academia, and small and medium-sized businesses to accelerate R&D for the following three areas:
 - Rapid Detection and Diagnosis;
 - Therapeutics and Vaccine Development;
 - Digital Health
- *CIPO* partnered with the *NRC* to assist in exploring the patent landscape for the aforementioned three research areas.



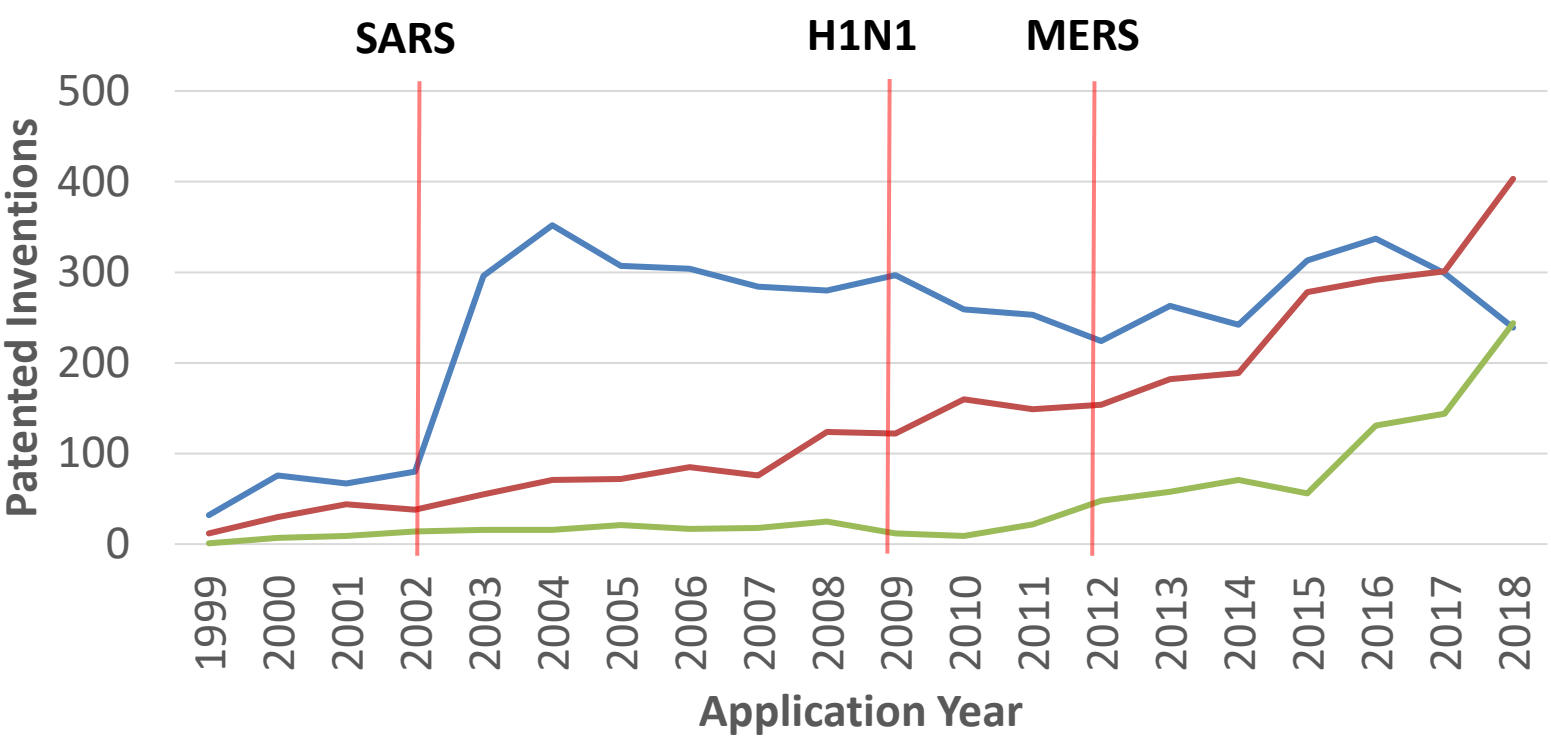
FINDINGS

- CIPO, in collaboration with the NRC, developed the patent search strategy.
- This search strategy yielded more than 11,000 patented inventions globally between 1999 and 2018.
- 178 of these were attributed to at least one Canadian institution.

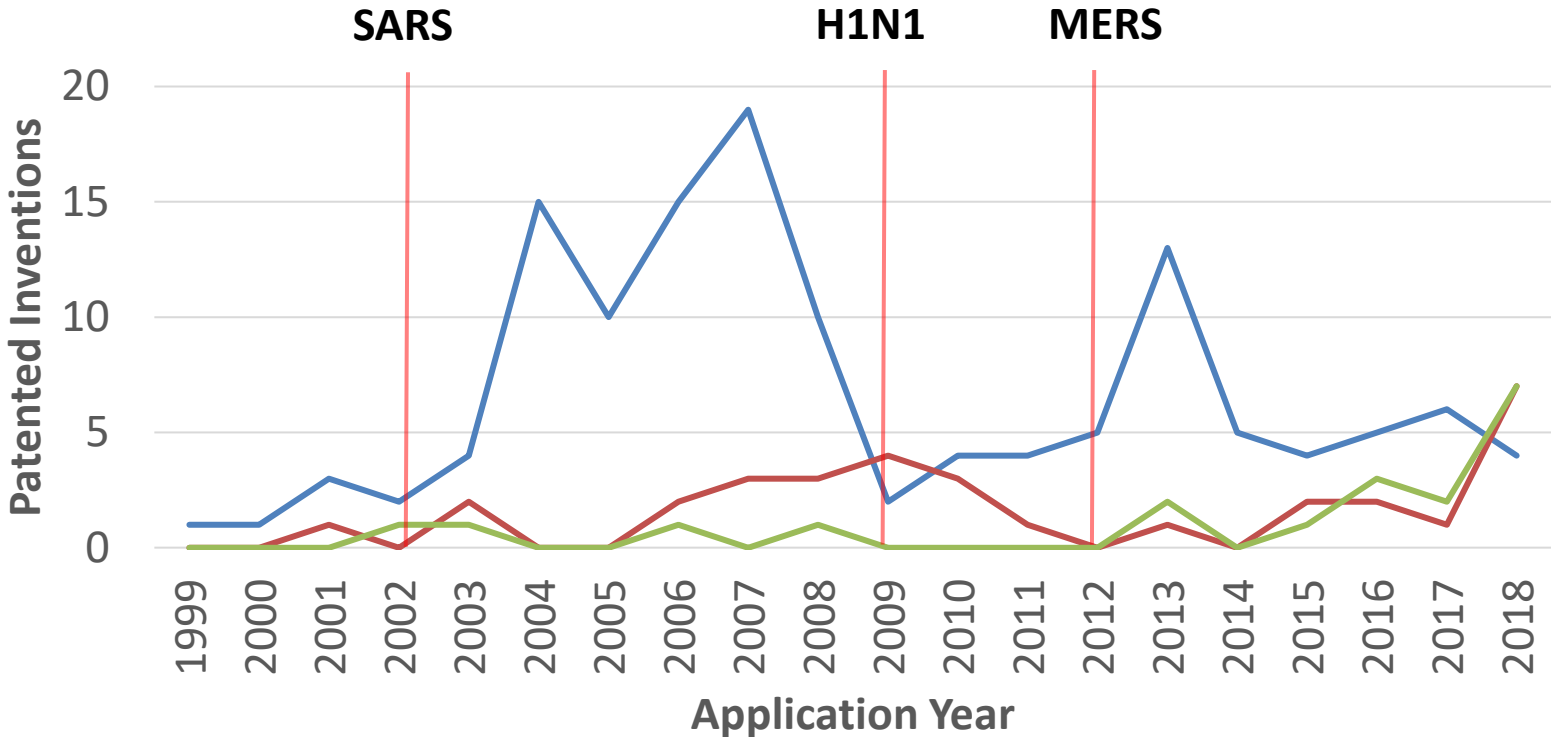


Patenting and outbreak – some correlation?

Institutions Worldwide



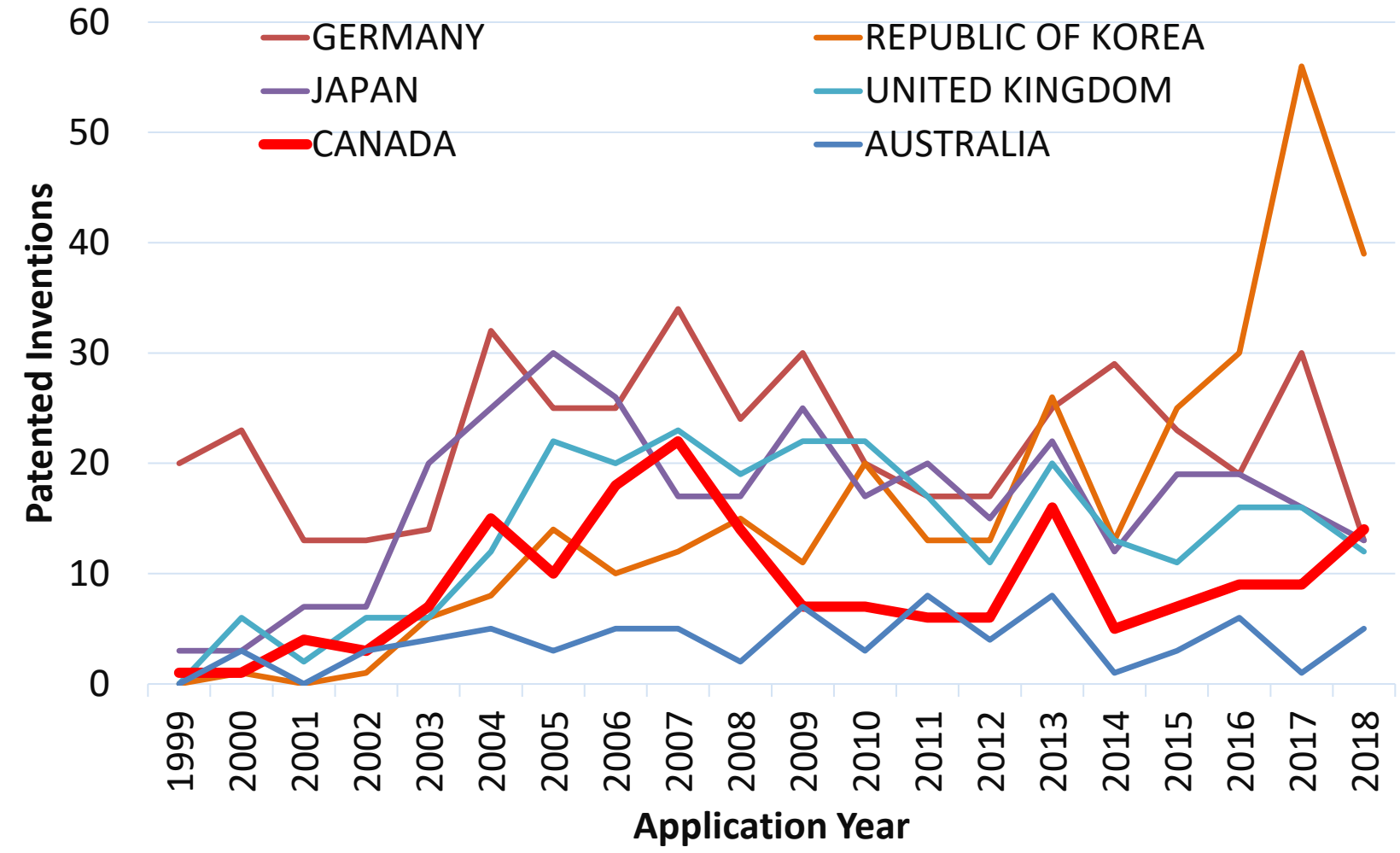
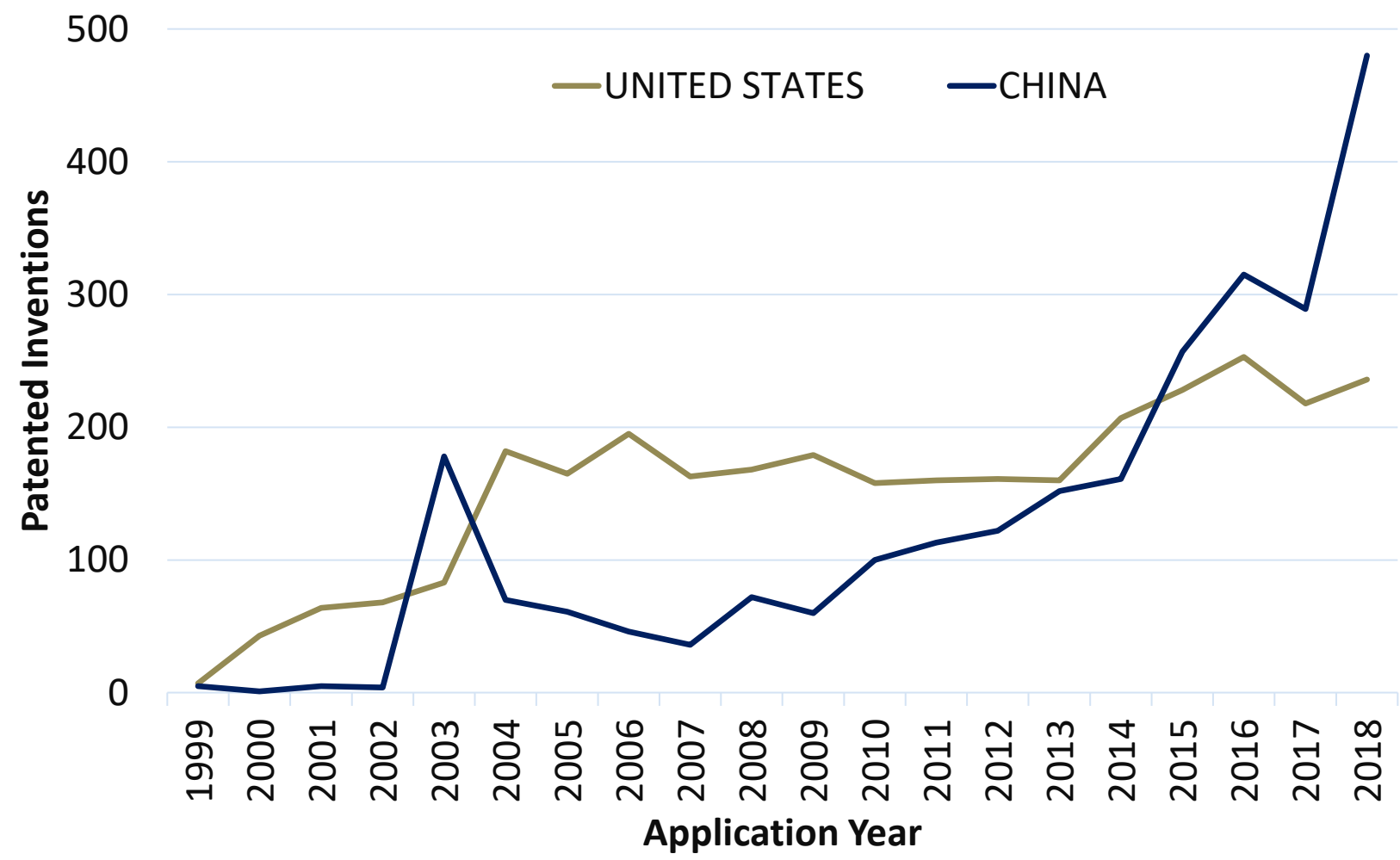
Canadian Institutions



- Therapeutics and Vaccine Development
- Rapid Detection and Diagnosis
- Digital Health

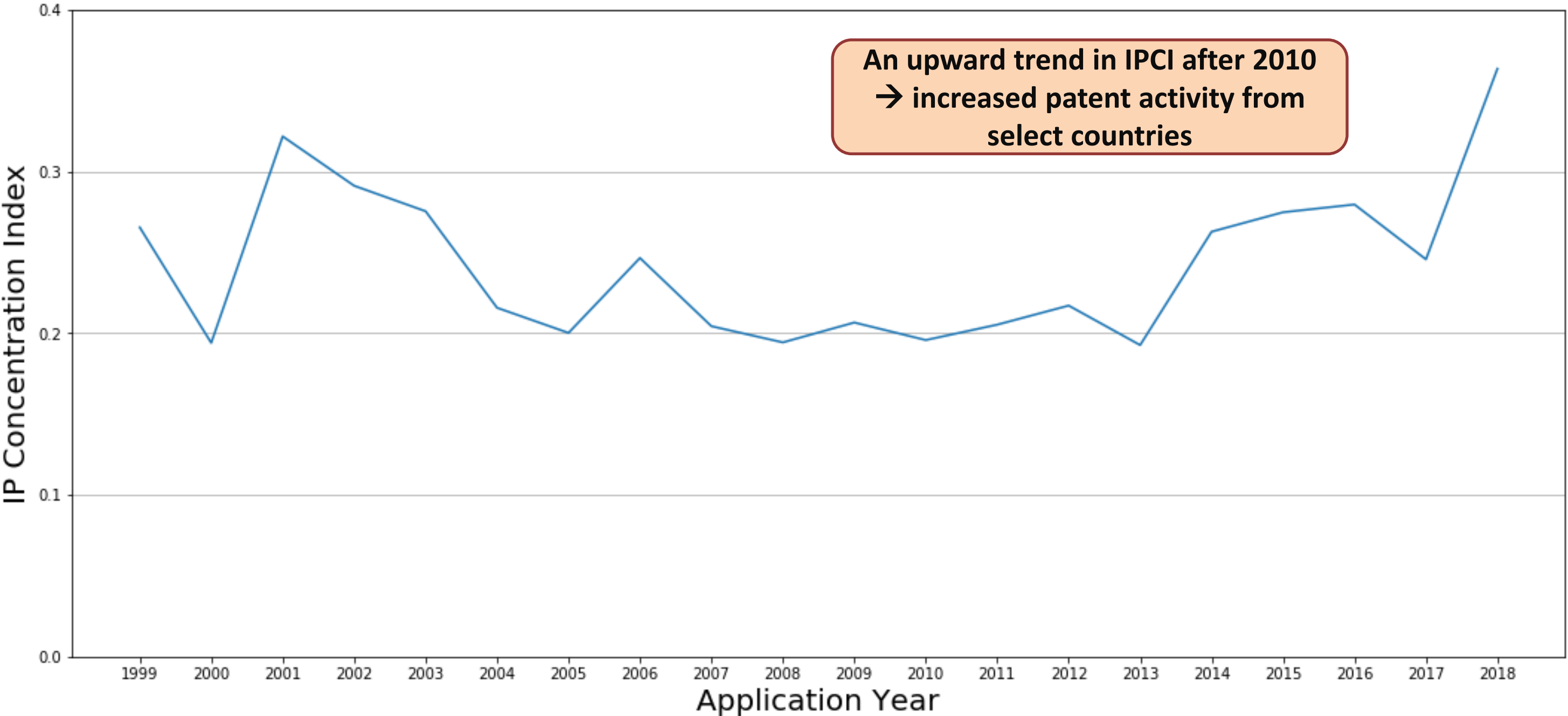
56% of the inventions patented by institutions worldwide fell under Therapeutics and Vaccine Development

FILING TREND BY INSTITUTION'S COUNTRY OF ORIGIN

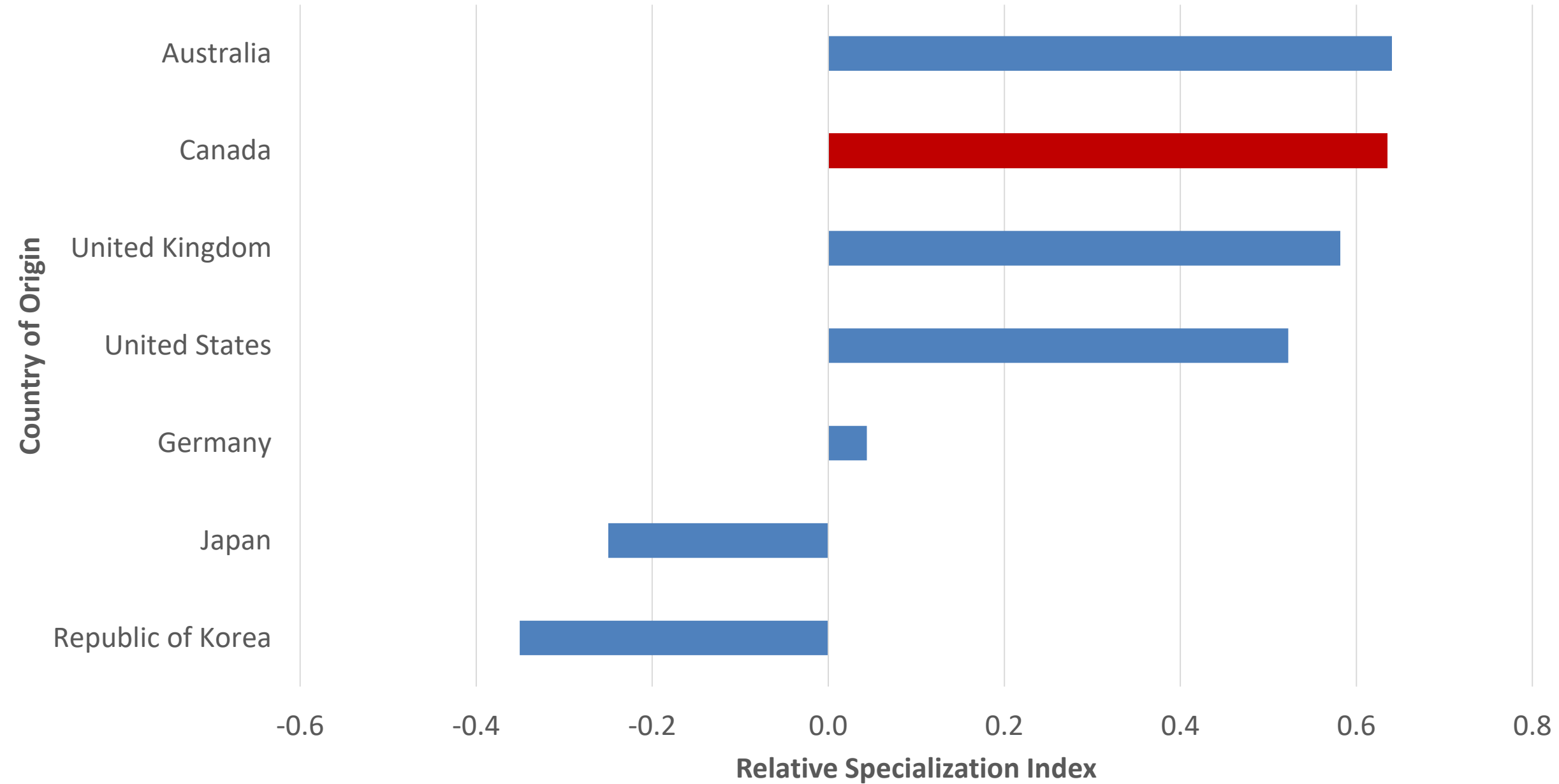


1. United States and China account for more than 50% of the inventions patented globally.
2. Chinese institutions grew at an higher-than-average rate between 2009 and 2018 → 26% v/s 8%
3. Canadian growth is in line with the global average between 2009 and 2018.

IP CONCENTRATION INDEX

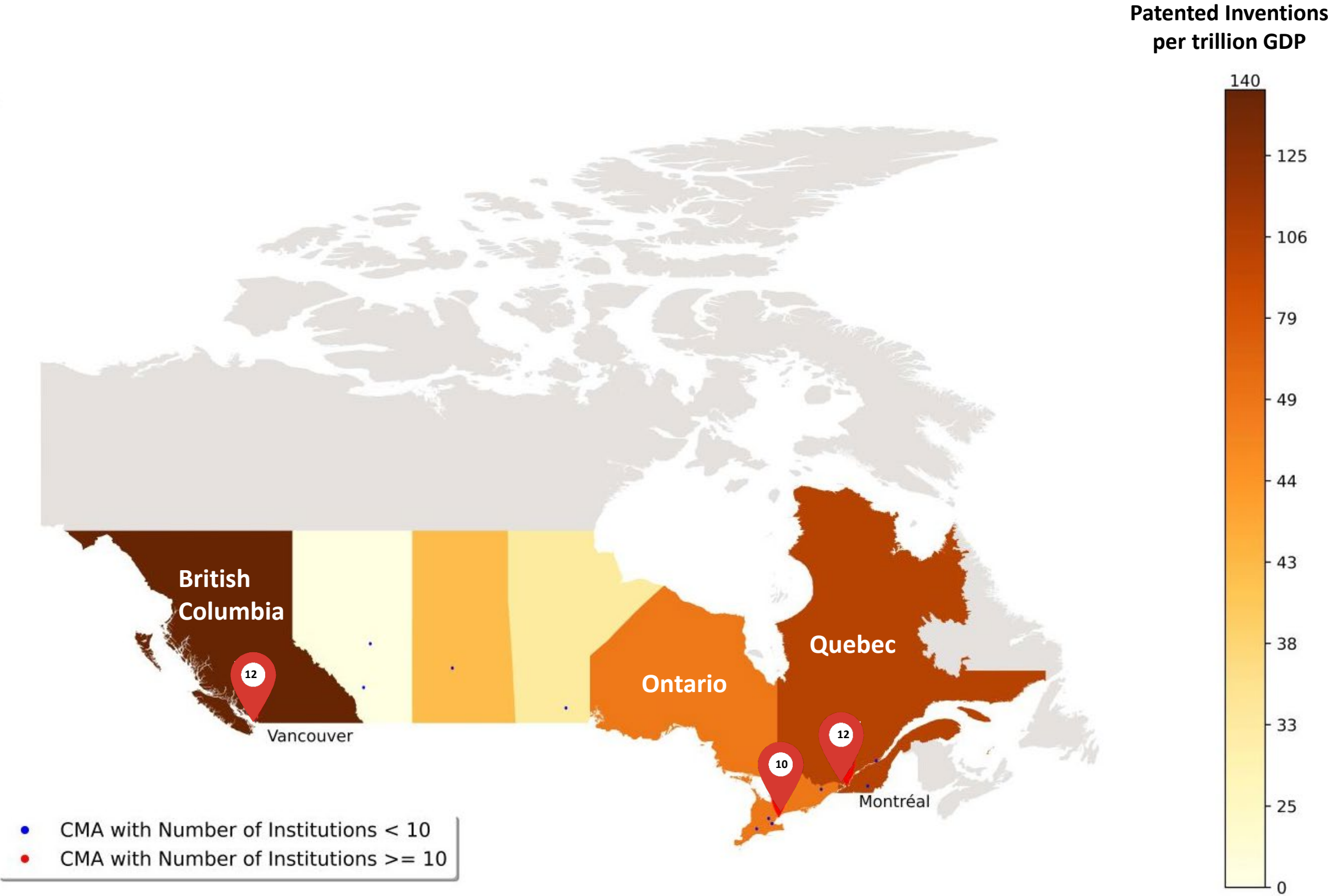


RELATIVE SPECIALIZATION INDEX (RSI)



Canadian institutions have one of the highest RSI values thereby indicating a relatively high specialization for pandemic mitigation technologies.

REGIONS CLUSTERS OF ACTIVITY



LEADING CANADIAN INSTITUTIONS

Pharmaceutical firms; academic institutions; government departments

| Canadian Institution | | Leading Inventor | |
|--|----|---------------------------------|---|
| XENON PHARMACEUTICALS INC (BC) | 19 | Kamboj Rajender (India) | 7 |
| FIO CORPORATION (ON) | 11 | Chan Warren Che Wor (ON) | 3 |
| REPLICOR INC (QC) | 8 | Vaillant Andrew (QC) | 5 |
| UNIVERSITY HEALTH NETWORK (ON) | 7 | Kelvin David (ON) | 3 |
| MEDICAGO INC (QC) | 6 | Vezina Louis-Philippe (QC) | 3 |
| MERCK CANADA INC (QC) | 6 | Robichaud Joel (QC) | 2 |
| INIMEX PHARMACEUTICALS INC (BC) | 5 | Lentz Shannon Wayne (BC) | 3 |
| | | Rozek Annett (BC) | 3 |
| QU BIOLOGICS INC (BC) | 5 | Gunn Harold David (BC) | 3 |
| YES BIOTECHNOLOGY INC (BC) | 5 | Whitehead Peter (BC) | 3 |
| FOLIA BIOTECH INC (QC) | 4 | Leclerc Denis (QC) | 3 |
| ID BIOMEDICAL CORPORATION OF QUEBEC (QC) | 4 | Lowell George H.(QC) | 2 |
| UNIVERSITY OF MANITOBA (MB) | 4 | Kikkert Marjolein (Netherlands) | 2 |
| | | Mark Brian Leonard (MB) | 2 |
| UNIVERSITY OF TORONTO (ON) | 4 | Gray-Owen Scott (ON) | 2 |
| CHEMAPHOR INC (ON) | 3 | Burton Graham (ON) | 2 |
| | | Daroszewski Janusz (ON) | 2 |
| LUMEN ASSOCIATES INC (AB) | 3 | Fry Jeffrey Donald | 2 |
| MICROBIX BIOSYSTEMS INC (ON) | 3 | Hughes Kenneth (ON) | 2 |
| | | Williams Gregory V. | 2 |
| HEALTH CANADA (CA) | 3 | Andonov Anton (MB) | 2 |
| NEOMED INSTITUTE (QC) | 3 | Marsault Eric (QC) | 2 |

Could be an indication of a large talent pool within Canada

NEXT STEPS

THERE'S STILL MORE...

1. A comprehensive IP Analytics report to be published on CIPO's website.
2. Follow-up study: role of IP in an organization's ability to pivot and support the fight against COVID-19.



Thank you

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Canada 



Intellectual
Property
Office

Impact of COVID-19: an IP office perspective

Chris Harrison

Head of IP Analytics and Data Insights, Economics Research and Evidence

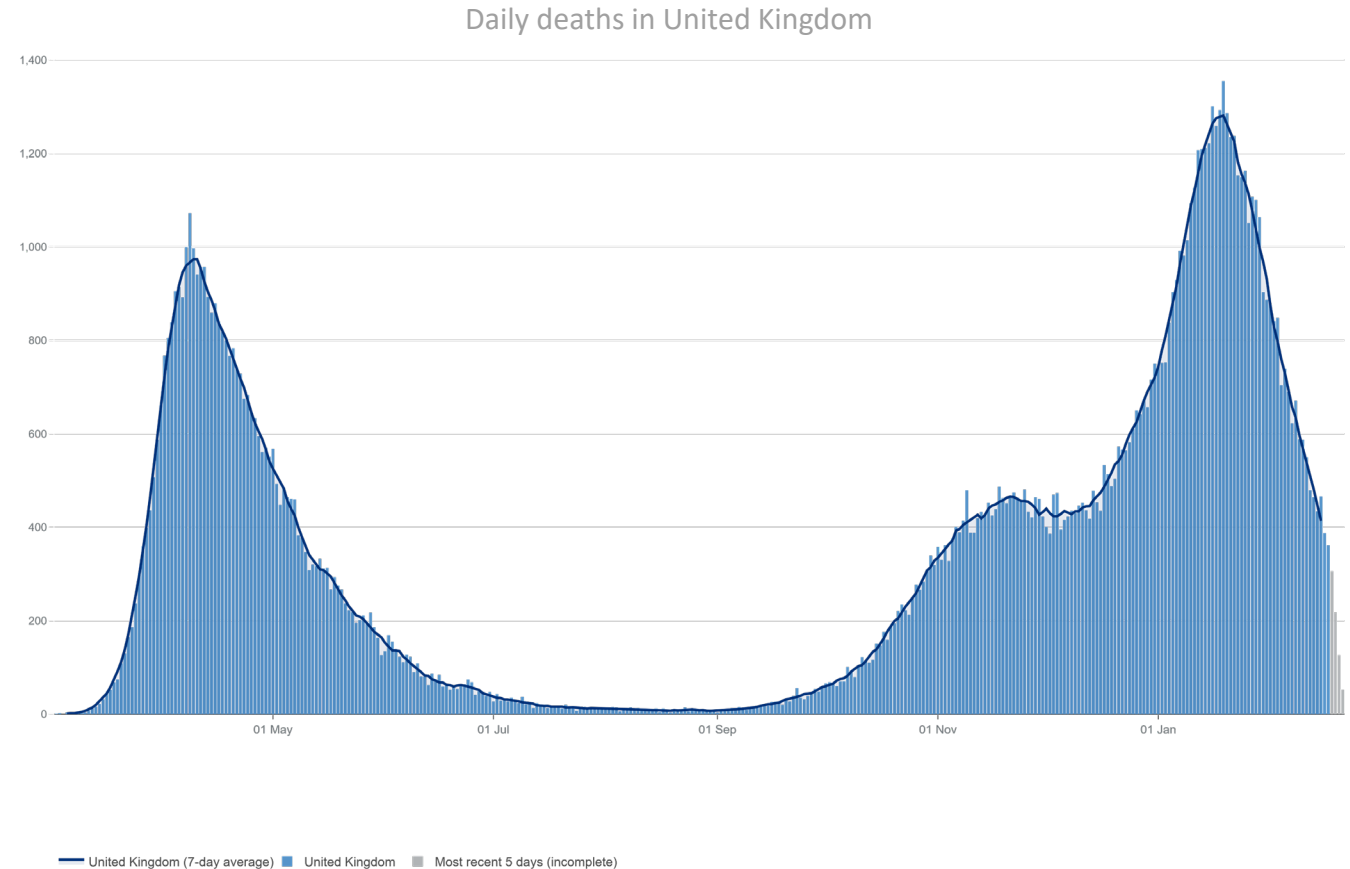
UK Intellectual Property Office

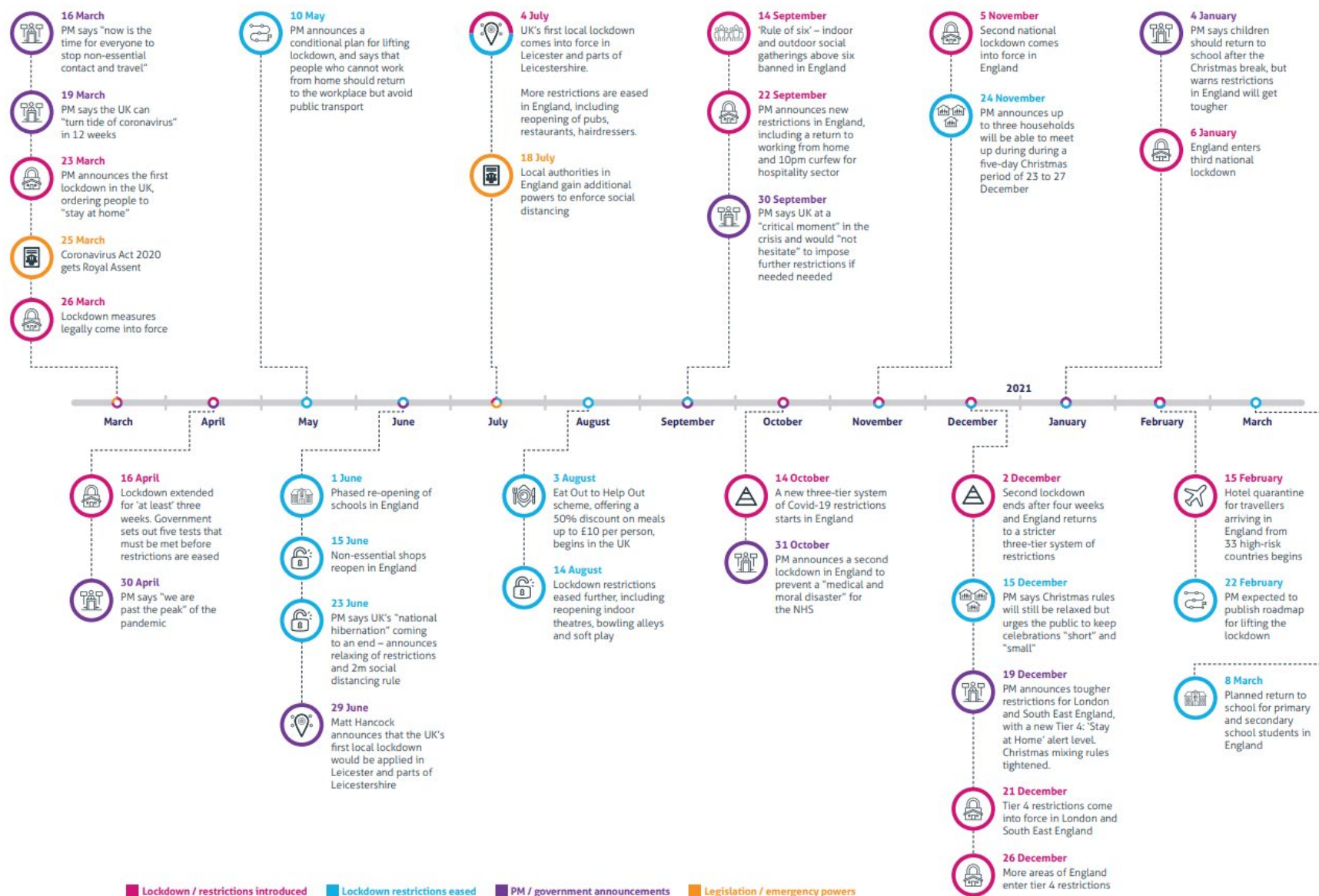
- The Intellectual Property Office (IPO) is the official UK government body responsible for intellectual property (IP) rights including patents, designs, trade marks and copyright
- 1500+ members of staff
 - >350 patent examiners
 - >150 trade mark examiners
 - >20 design examiners

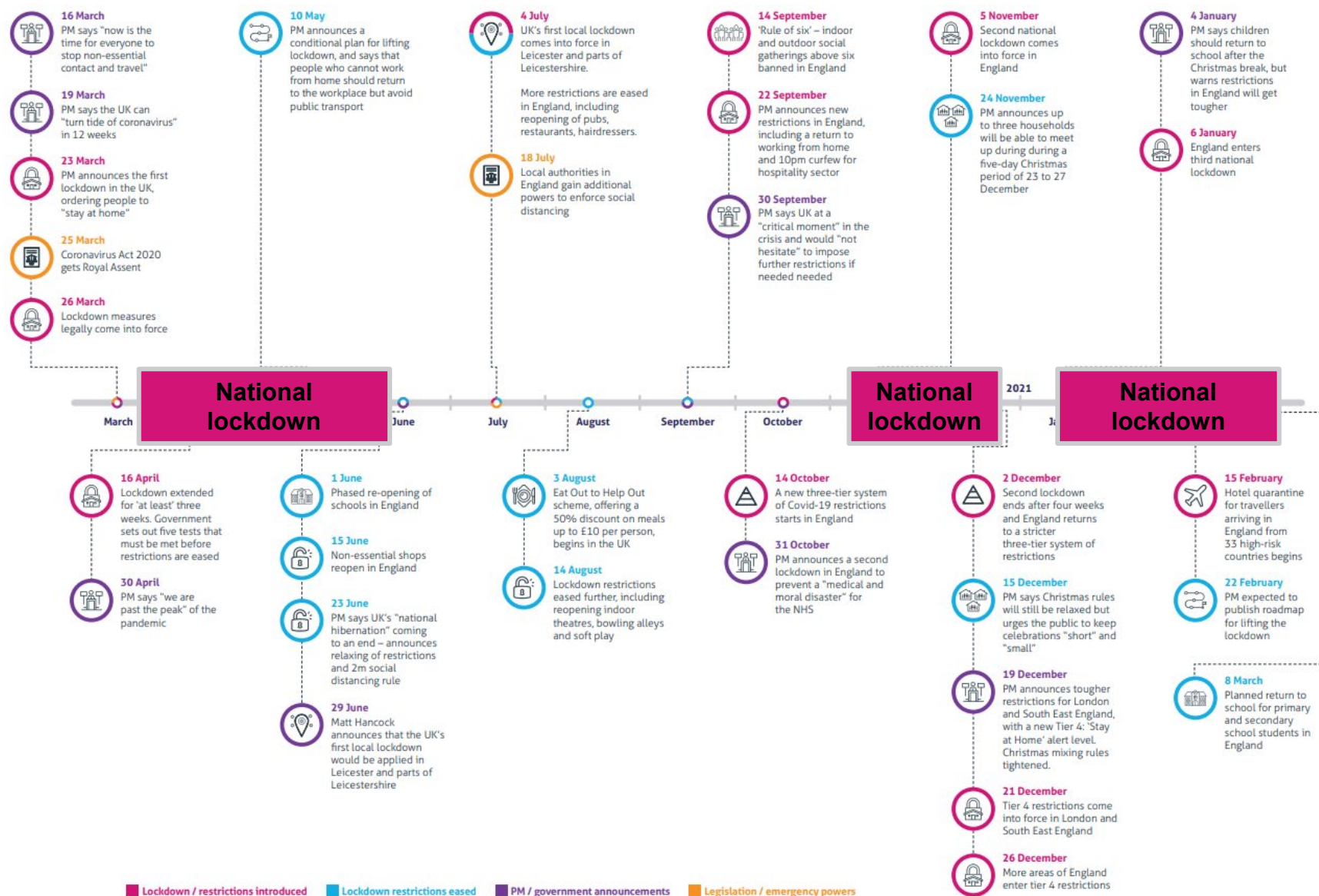


COVID-19 in the UK

- >4m confirmed cases
- >120,000 deaths
- But >20m people now vaccinated (40% of adult population)







UKIPO: “Keeping the lights on”

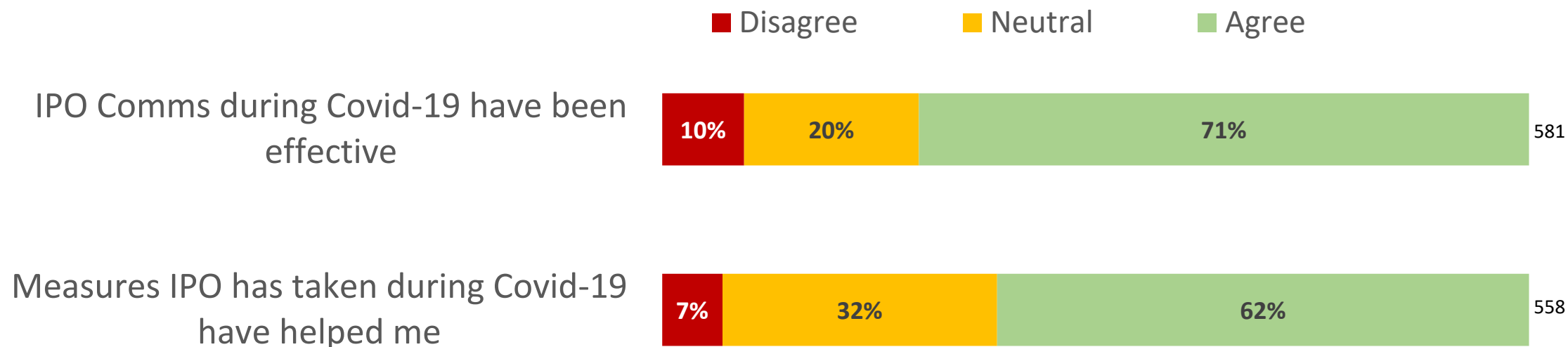
- UKIPO is funded by our fees (not by central UK government)
- Remote working
 - IT modernisation in recent years allowed this to be done for all staff within a week
- Fast-tracking IT changes
 - Turning off fax
 - Issuing Official Correspondence electronically
- Interrupted days
- Temporary fee changes
- Closely monitoring and analysing filing activity, maintenance fee payments, customer analysis
- Virtual recruitment and onboarding
- Staff mental health and wellbeing

COVID-19 customer survey

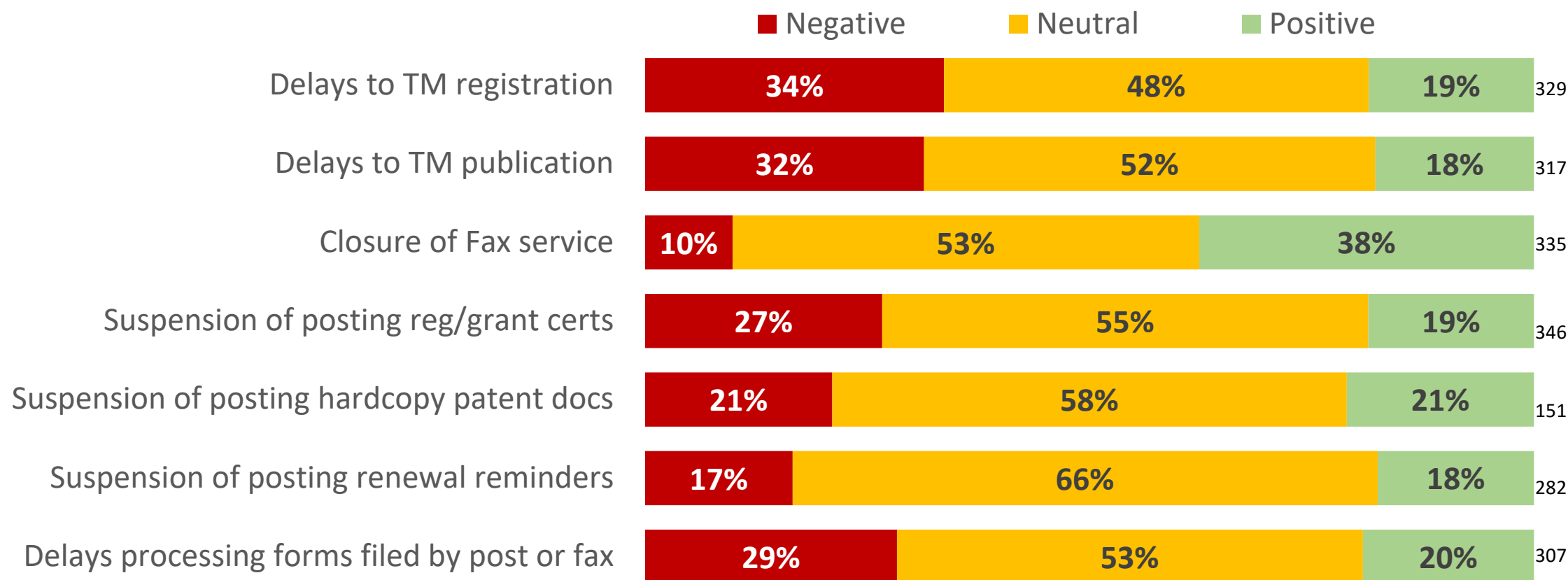
- Undertaken in May 2020
- To gauge customer reaction to the changes UKIPO made during the COVID-19 pandemic



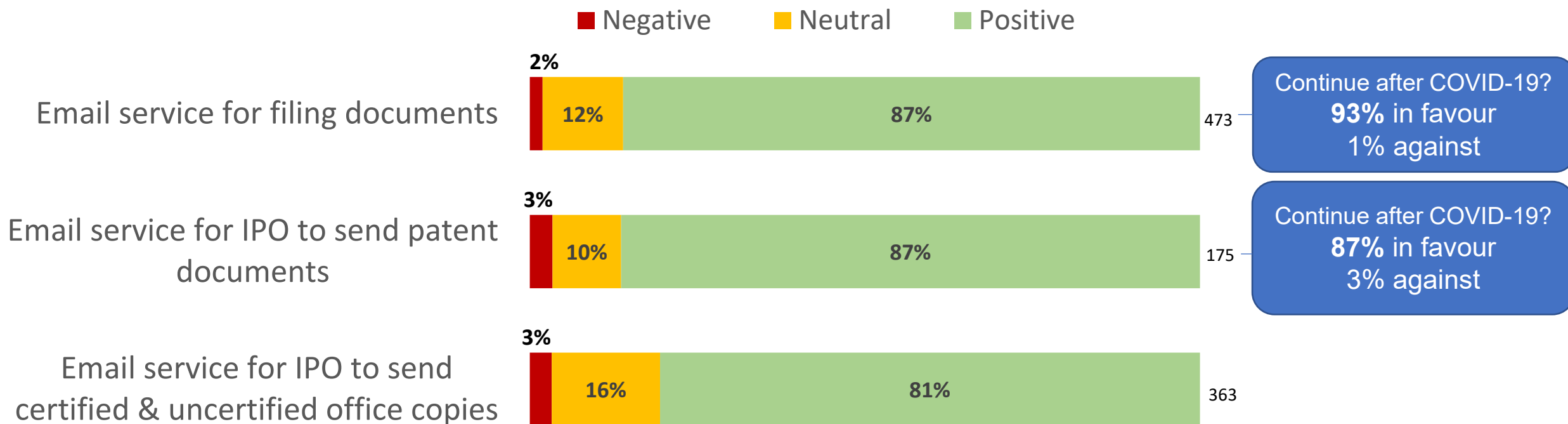
Overall endorsement of UKIPO measures and communications



Limited negative impact of processing delays & suspended services

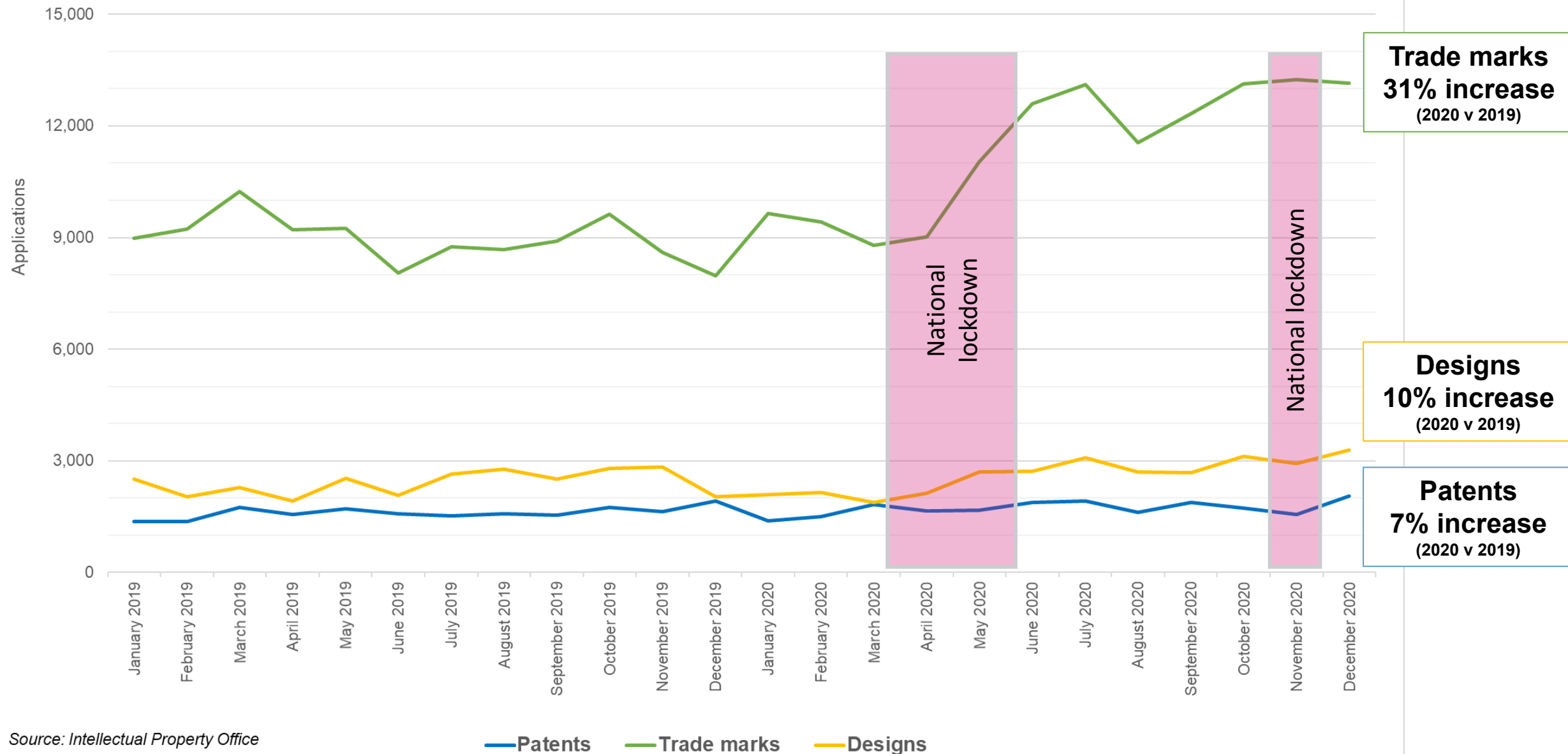


Positive experience of email services



UKIPO input

Summary of monthly filings at the IPO of the UK



Source: Intellectual Property Office

Notes:

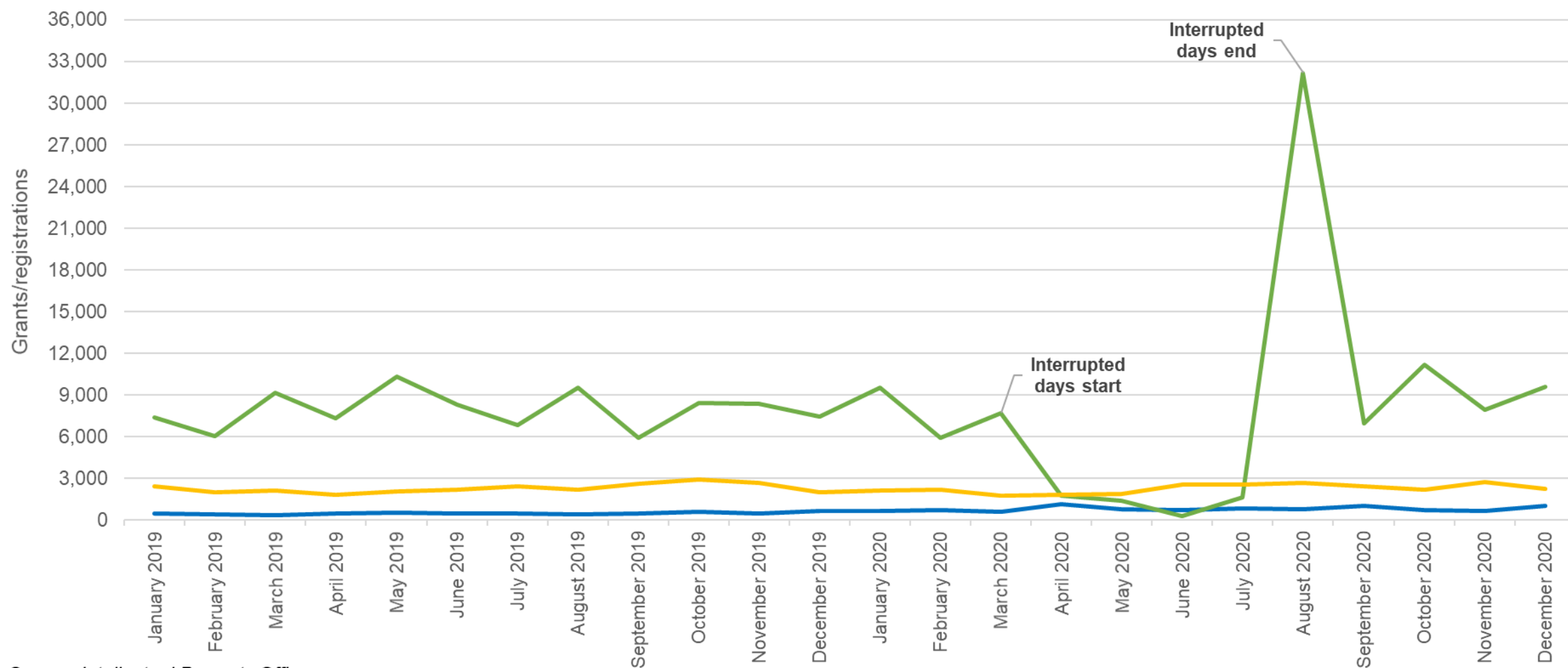
Patents include those filed directly at the IPO and PCT applications.

Trade marks include domestic trade mark applications and international 'Madrid' registrations (excluding additional classes).

Designs include domestic design applications and international 'Hague' registrations.

UKIPO output

Summary of monthly grants/registrations at the IPO of the UK



Source: Intellectual Property Office

Notes:

Patents include those filed directly at the IPO and PCT applications.

Research: Productivity

- Examiner productivity has increased over the past year (increased input and increased output) but quantitatively measuring it is not easy
- Productivity is difficult to measure because examiners do not record the 'actual' time worked on live cases (vs. meetings, training etc)
- Total productivity is not just examiner time, but the whole prosecution process (e.g. also including document reception, index and scanning, formalities, publication cycle etc)
- UKIPO commencing some research to better understand how we can measure IP office productivity across the entire process
- Understanding our own productivity is only part of the picture without benchmarking and comparison with counterparts at other IP offices (which requires comparable data points and agreed metrics)

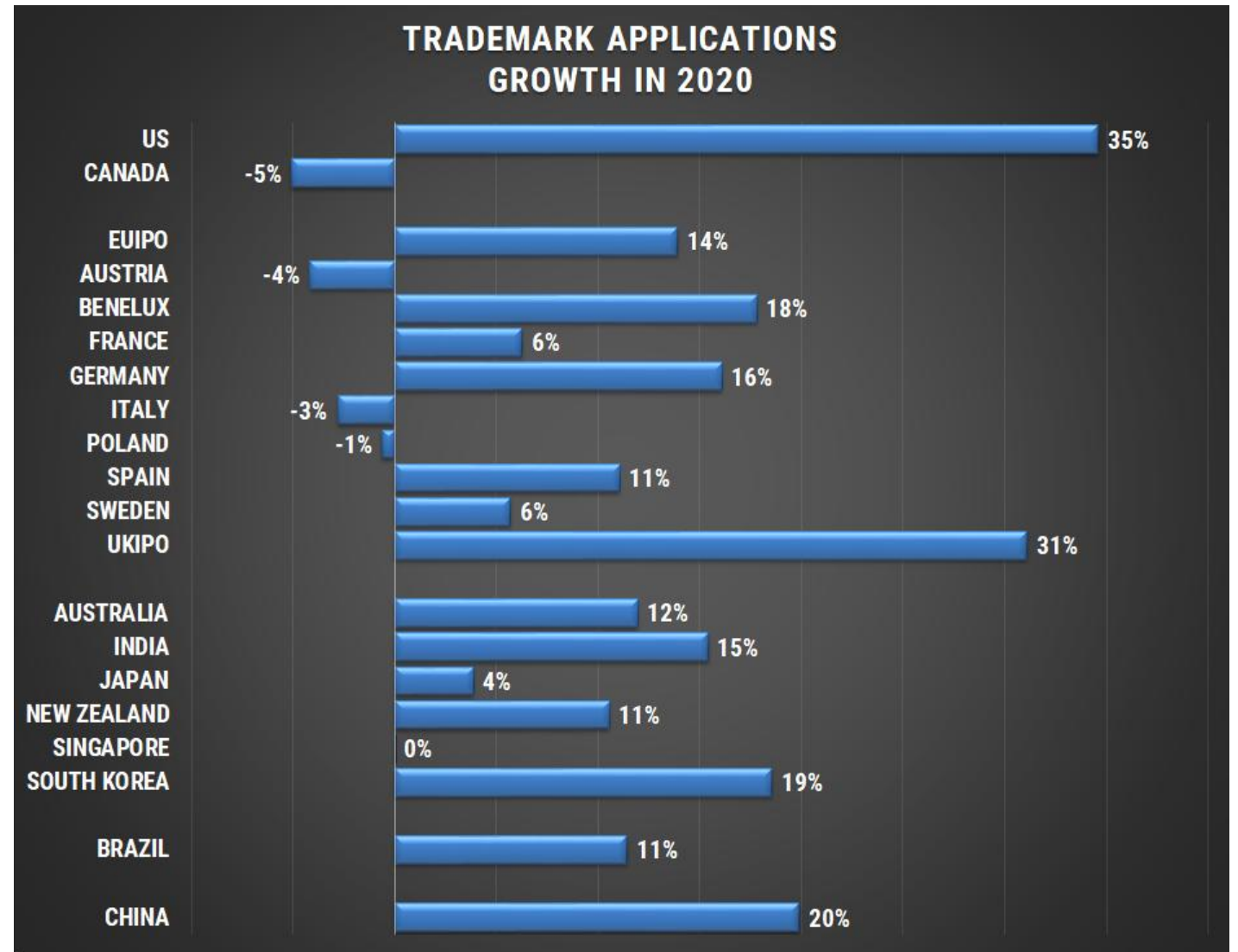
International comparisons

- Global patent and design filing statistics for 2020 are not yet available due to the timeframes involved in the patent and design prosecution processes
- Global trade mark filing activity in 2020 has generally followed two common themes:
 - Trade mark filing activity took a hit in March and April when many countries introduced lockdowns
 - Trade mark filing activity then recovered quickly, and continued to grow on most trade mark registers, generally well ahead of 2019



Trade marks

- Last year the UK had the 2nd fastest growing trade mark register in the world (31% annual growth 2020 v 2019)



Trade marks

- 2021 will be another record year in the UK because UK protection for trade marks previously registered at the EUIPO now have to be filed at UKIPO

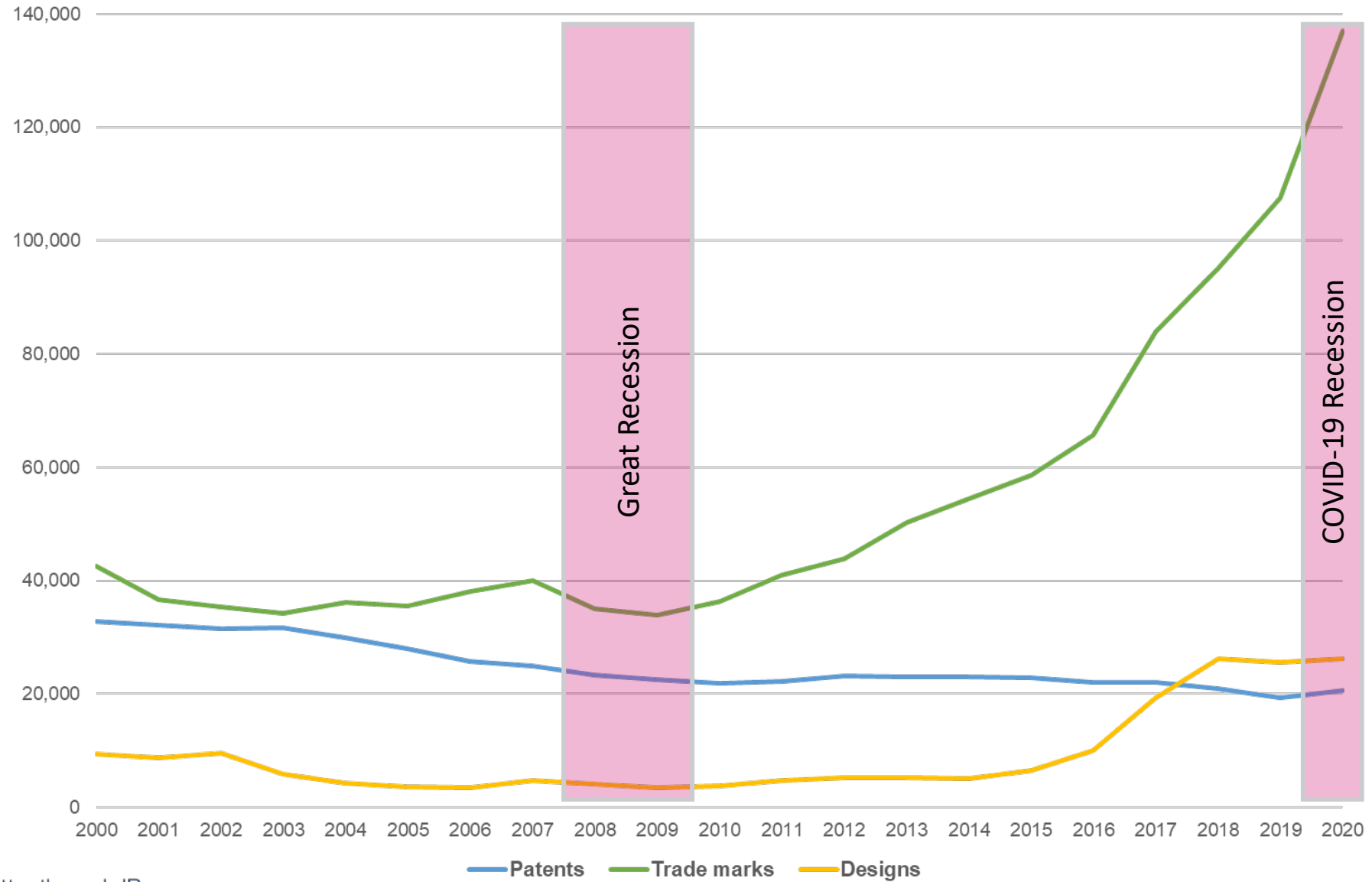


Explaining the global trade mark trends?

- This level of global trade mark growth is unprecedented and in stark contrast to the macro-economic data that suggests economies are contracting
- The increases in trade mark filings may be linked to increased investment in new brands, perhaps as businesses and some entire sectors innovate and pivot to take advantage of quickly changing opportunities
- In short, we do not have a full understanding of what is going on, both in the UK and globally
- Not least because a lot of previous academic literature concluded that trade mark applications tend to move in the same direction as GDP and investment, and that trade mark filings can be used as a good predictive indicator for business cycles and recessions

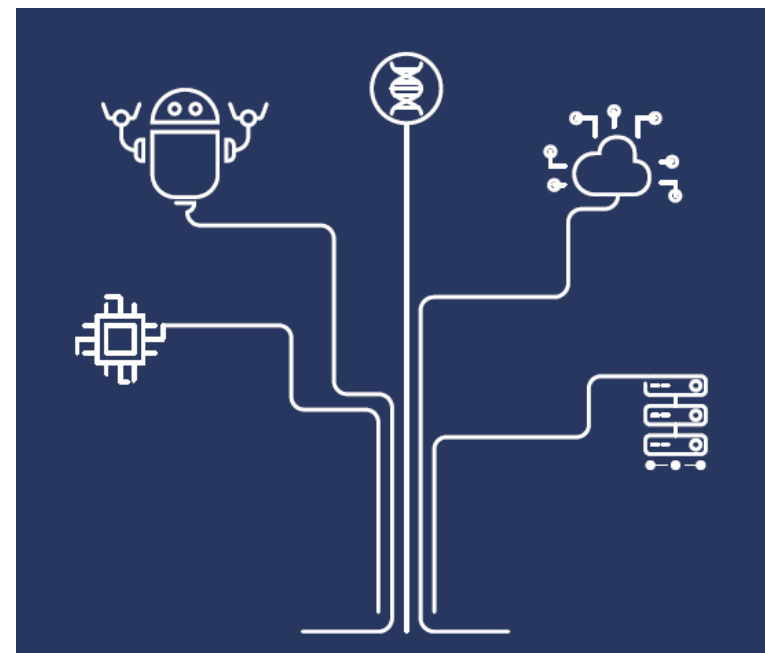


UKIPO filing trends (2000-2020)



Research: Drivers of IP demand

- Academic literature is light in this area
- 18-24 month UKIPO research project
 - To help deepen our understanding of how the IP system is used
 - To help with forecasting future input and resource planning
- Both in-house research/analysis, as well as externally-commissioned research
- To consider all registered rights (patents, trade marks and designs)



Summary - Impact of COVID-19 on UKIPO

- COVID-19 has changed our lives, and the workplace, forever
- As an IP office, we faced a number of significant operational changes in the short term as we adjusted to the 'new normal'
- UKIPO examiner productivity has increased over the past year but quantitative measurement of productivity not straightforward, with a lack of comparators between IP offices
- Global trade mark filings remain in stark contrast to the macro-economic data
- Highlighted how little we know about the drivers of IP demand, prompting further research

Thank you

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Government
of Canada

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du Canada

Canada

Innovation Canada

ExploreIP: Canada's Intellectual Property Marketplace

4th Annual IP Data & Research Conference
March 2021



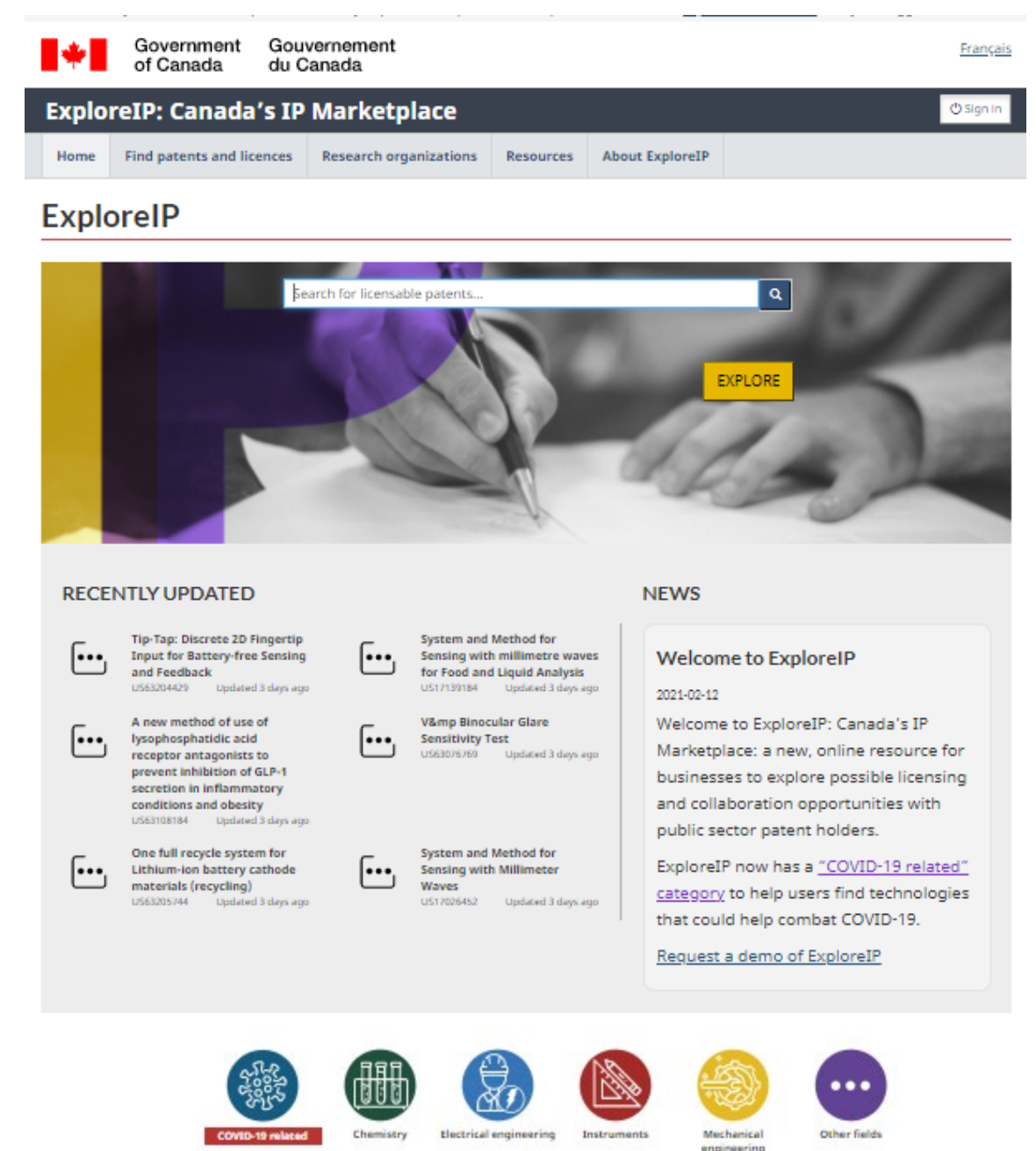
It can be difficult for Canadian businesses to find useful technologies

- Canada's public sector is a key **source of technologies** that can be used by innovative SMEs to grow and become more competitive
- Most SMEs do not know where to look – even fewer have the **time and resources** to track down these technologies to further their business needs
- **ExploreIP** aims to provide a new way for businesses to find relevant technologies

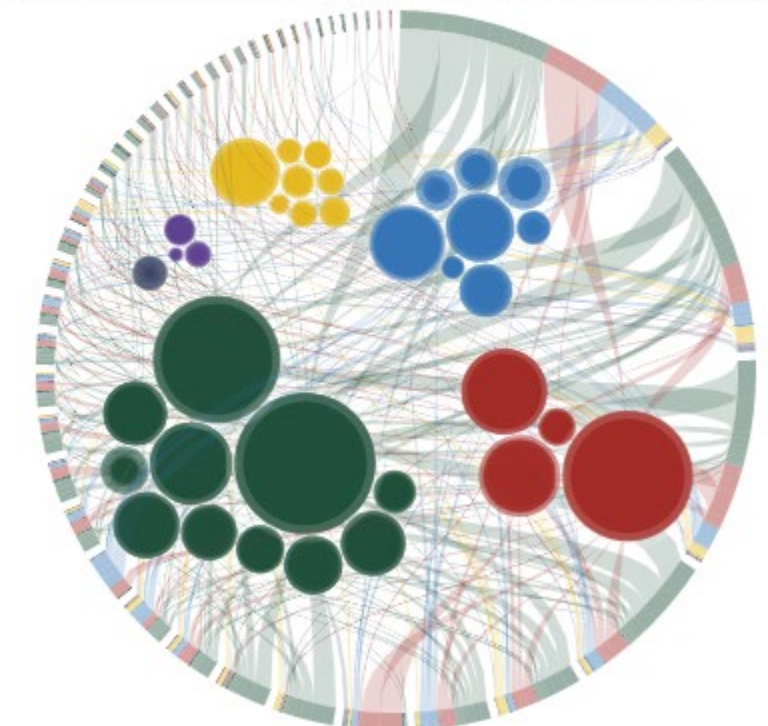


What is ExploreIP?

- One of key initiatives coming out of the National Intellectual Property strategy
- Launched in August 2019
- Developed in collaboration with IP Australia's SourceIP
- User-friendly interface allows users to discover licensable inventions through key word searches and filters



You can also hover over the colour-coded circles to reveal the subcategories associated with each category.



ExploreIP Today

- 3,800 + patent families, +13,000 patent applications/ patents
- Repeat visits and average time spent on the tool increasing since launch
- 51 public sector organizations in Canada, (federal departments, agencies, crown corporations, universities and hospitals) – with a plan to add more continuously
- 260+ contact requests (licensing/ collaboration)
- Phase I ended in June 2020, followed by maintenance/ consultations. Phase II starts in April 2021



ExploreIP – Promotions

- Key to our success
- Outreach to businesses, entrepreneurs and innovators through:
 - ✓ Events (Collision, Startupfest, Expo Entrepreneur)
 - ✓ Direct demos on demand
 - ✓ Online presence
 - ✓ Co-promoters (OGDs, CIPO etc)
- Contact us for a demo



ExploreIP – Pandemic Period

- Launch of a new COVID-related category in April 2020:
 - ✓ Allows IP owners to promote technologies that could be used in the fight against COVID-19
 - ✓ Helps interested businesses find and obtain licences to commercialize those technologies
 - ✓ Features 59 COVID-19 technologies from 11 institutions




**COVID-19
related**



ExploreIP – for Businesses


Features:

- Search thousands of licensable patents and inventions held by Canadian public sector institutions
- Easily find licensing, collaboration and commercialization opportunities and their licensing status
- Connect directly with IP holders and learn more about the research expertise of public sector institutions


Licence Available

Auto-Refrigerated Gas Separation System For Carbon Dioxide Capture and Compression

Publication Number: CA2769687 ([CIPO](#), [WIPO](#))

 Natural Resources Canada
Ressources naturelles Canada

Contact Patent Holder

About this Patent

To contact the patent holder, please provide your details below. This information will be sent to the patent holder.

Phone

Email

☒ I am interested in licensing
☐ I am interested in collaboration

Your Enquiry

Please enter your enquiry here.

Send

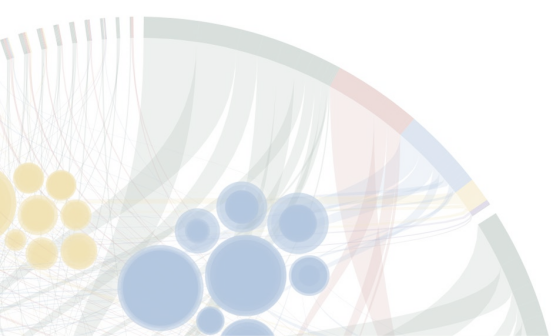
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Technology Field

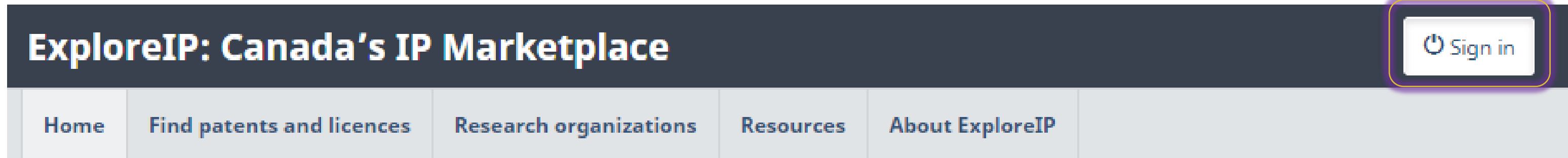
Chemistry → Chemical engineering

Bibliographic Details

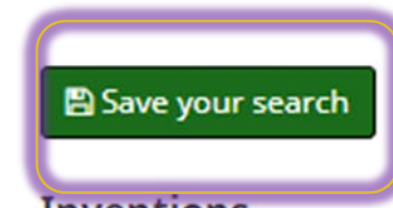
- Applicants: HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY THE MINISTER OF NATURAL RESOURCES
- Inventor(s): ZANGANEH, KOUROSH; SHAFEEEN, AHMED
- Filing: 2010






Sign-in function for all users



- Public “Sign-in” function
- Enables all users to create a profile and:
 - ✓ Save search preferences (keywords, filters)
 - ✓ Receive email notifications when new inventions matching preferences are added
 - ✓ Automatically pre-fill contact request form when sending a licensing/collaboration request to IP owner



Inventions

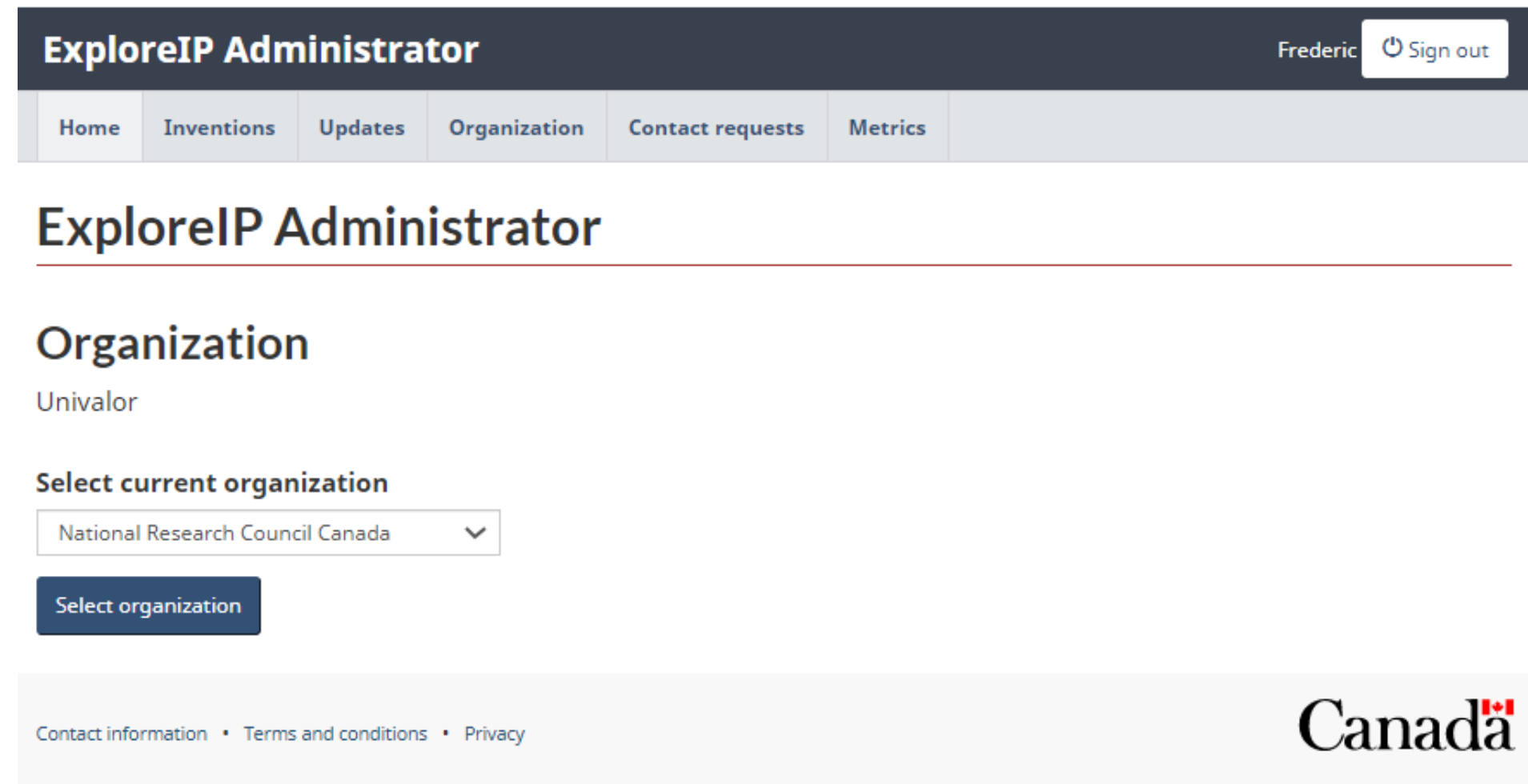
| Licensing ^ | Invention title | Organization(s) | Inventor(s) | Filed | Date added |
|---|---|--|---|-------|------------|
|  Licence available | GLUTATHIONE DISULFIDE IN PARENTERAL NUTRITION FOR MAINTAINING OR INCREASING PROTEIN SYNTHESIS WO2019113692 | Univalor | LAVOIE, Jean-Claude; MOHAMED, Ibrahim; ROULEAU, Thérèse | 2017 | 2020-04-17 |
|  Licence available | MARESINS FOR USE IN THE TREATMENT OF CNS INJURIES WO2019016580 | McGill University | LOPEZ VALES, Ruben; FRANCOS QUIJORNA, Isaac; SCHWAB, Jan Markus; SAMUEL, David | 2017 | 2020-11-13 |
|  Licence available | ENZYMATIC-BASED PROCESS FOR THE EXTRACTION OF VALUE ADDED PRODUCTS FROM RAW BIOMASSES WO2018195657 | National Research Council Canada | YANG, Trent (chunzhong); WOOD, Mark; HUANG, Fang; DJUKIC, Theresa | 2017 | 2020-07-07 |



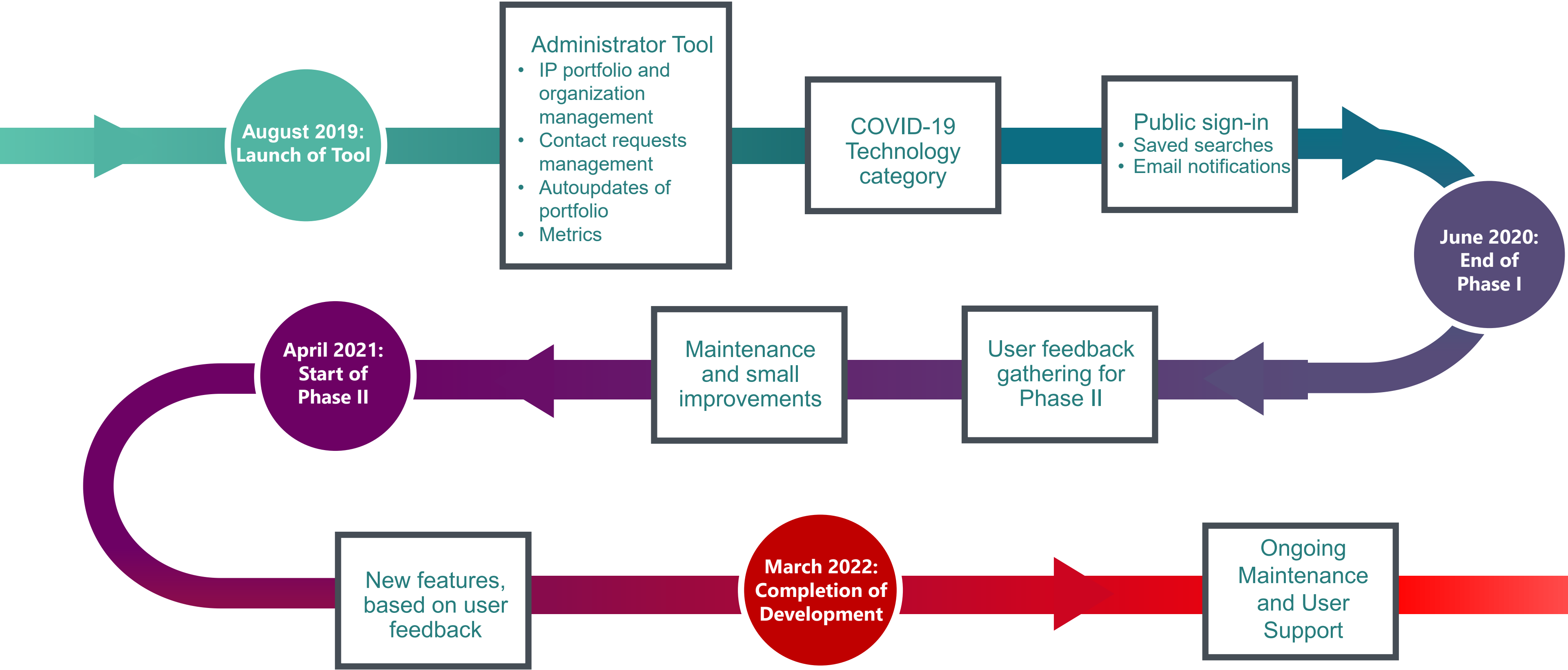
ExploreIP – for IP Owners

Features:

- IP owners have their own user accounts which they can access to:
 - ✓ Manage their IP portfolio and organizational profile
 - ✓ Track metrics to measure engagement with their portfolios
 - ✓ Manage all contact requests received

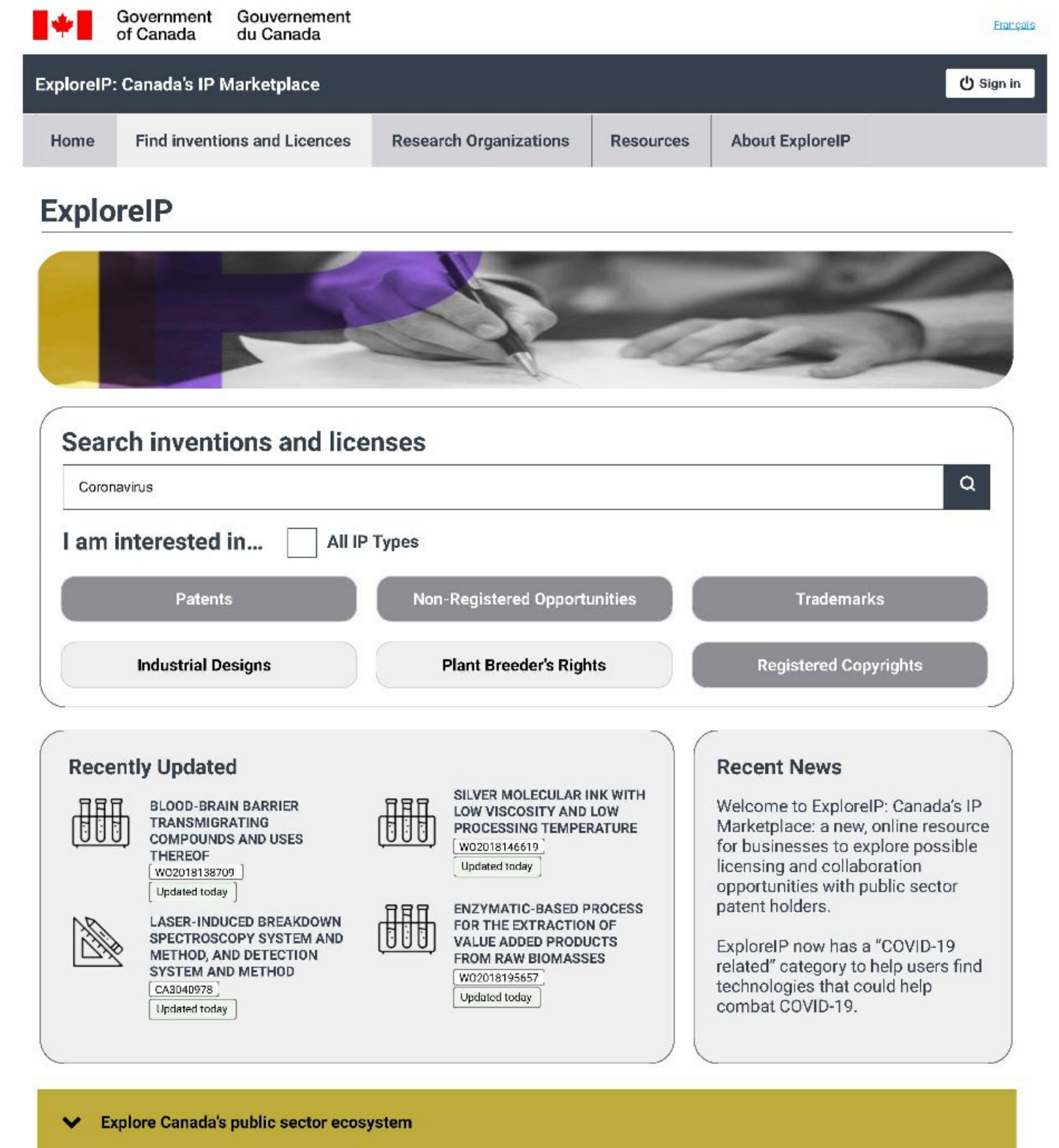


ExploreIP - Development Roadmap 2019-2022

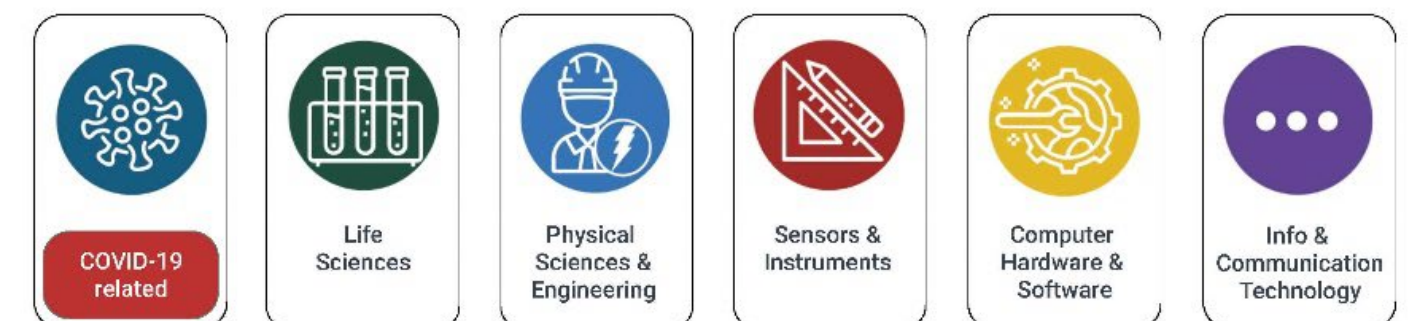


Phase II Consultations

- Consultations with more than 50 stakeholders between Oct – Feb 2021
- Some of the features being considered:
 - ✓ Enhanced search
 - ✓ Additional types of IP beyond patents
 - ✓ More features enabling posting of technology needs/ opportunities
 - ✓ Enhanced metrics for IP owners



1- Select a technology category



Sample design of Phase II homepage

Why ExploreIP?



SEARCH

- Search thousands of licensable patents and inventions held by Canadian public sector institutions



FIND

- Easily find licensing, collaboration and commercialization opportunities



CONNECT

- Connect directly with IP holders and learn more about the research expertise of public sector institutions





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Questions?

Canada.ca/exploreIP

exploreip@canada.ca

