



Australian Government

IP Australia

November 2022

# Adoption of Emerging IT Technologies for IP Office Service Delivery

WIPO-ASEAN IT Business Strategy Workshop on Digital Government Services, Singapore

Mladen Mitic

Director Business Transformation & International ICT Cooperation







# Contents

## **Cognitive Futures Strategy**

- Delivery model
- Cognitive Futures Road Map

## **Case Study**

- Patent Auto Classifier

## **Other Tools & Services**

- Automated Preliminary Search
- Family Member Analyser
- Outcome Based Directions
- Trade Mark Precedent Identification
- Trade Mark International Classification Service



# Cognitive Futures Strategy

- Initially developed in 2016-2017
- Cognitive Futures Strategy reviewed for 2022-2024

**GOAL:** Enhance customer service delivery and the way we do business by leveraging the power of cognitive technologies

- Current focus on
  - Text analysis/search (Natural Language Processing)
  - Classification
  - Image analysis/search

## Key Objectives



### *Improve efficiency*

Identify opportunities to be more efficient and effective in our business processes to drive value for customers and the broader IP ecosystem.



### *Enhance quality*

Improve the quality of our products and services and reduce errors in the administration and examination of IP rights.



### *Develop greater insights*

Leverage data assets to better serve our customers and inform our staff.

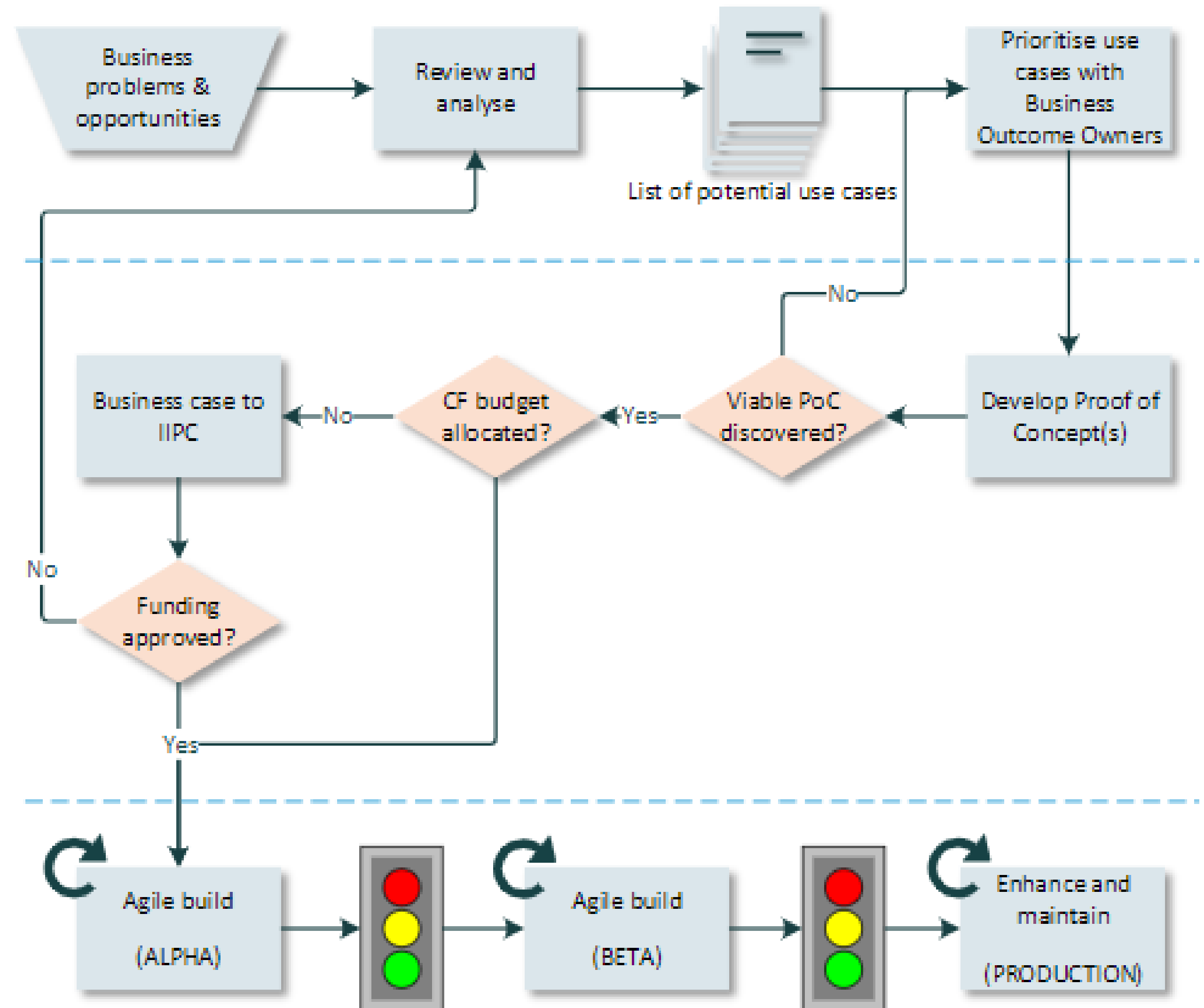


### *Build organisational capability*

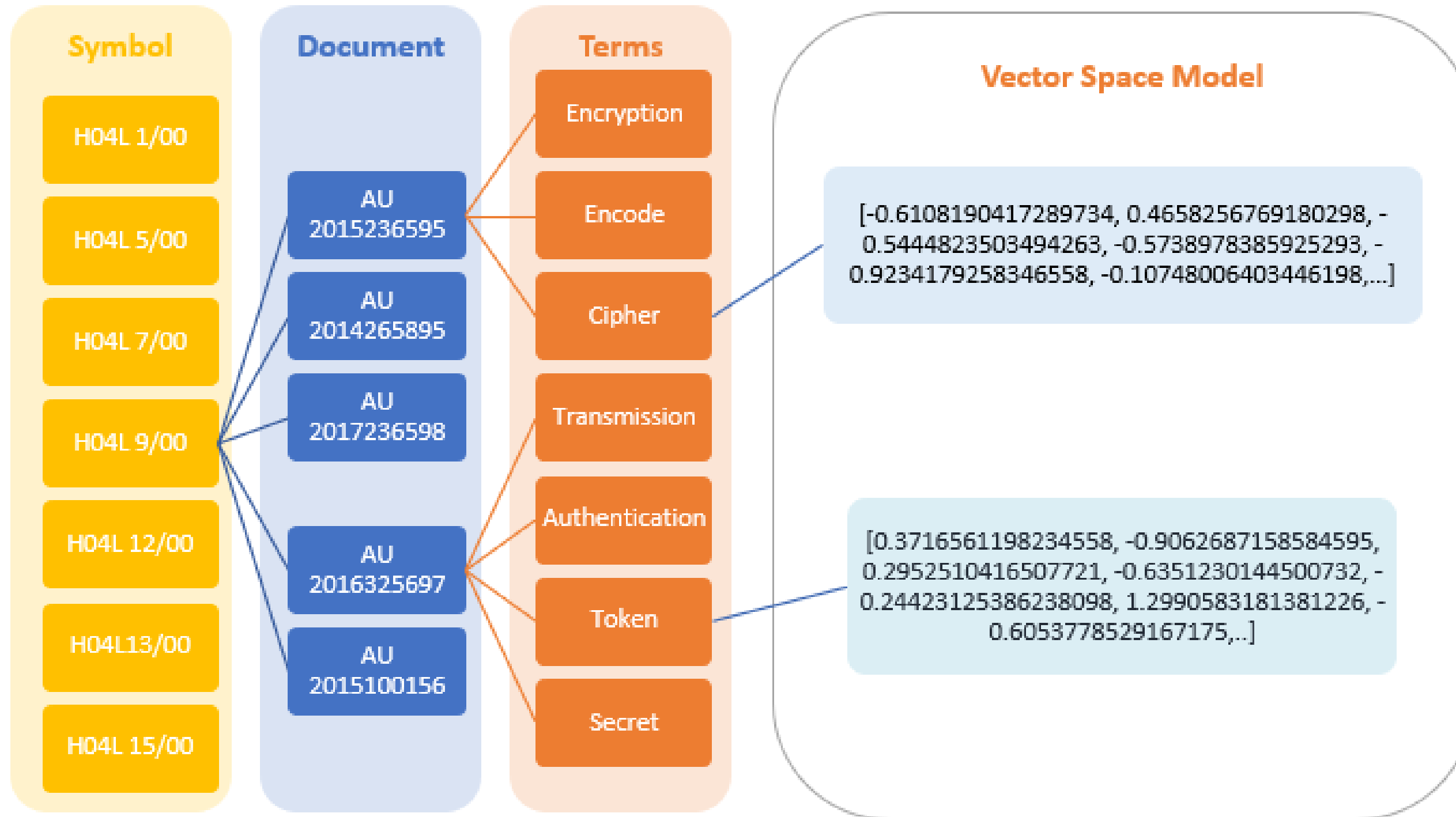
Equip our workforce with the knowledge and skills to derive optimal value from cognitive computing systems.

# Delivery Model

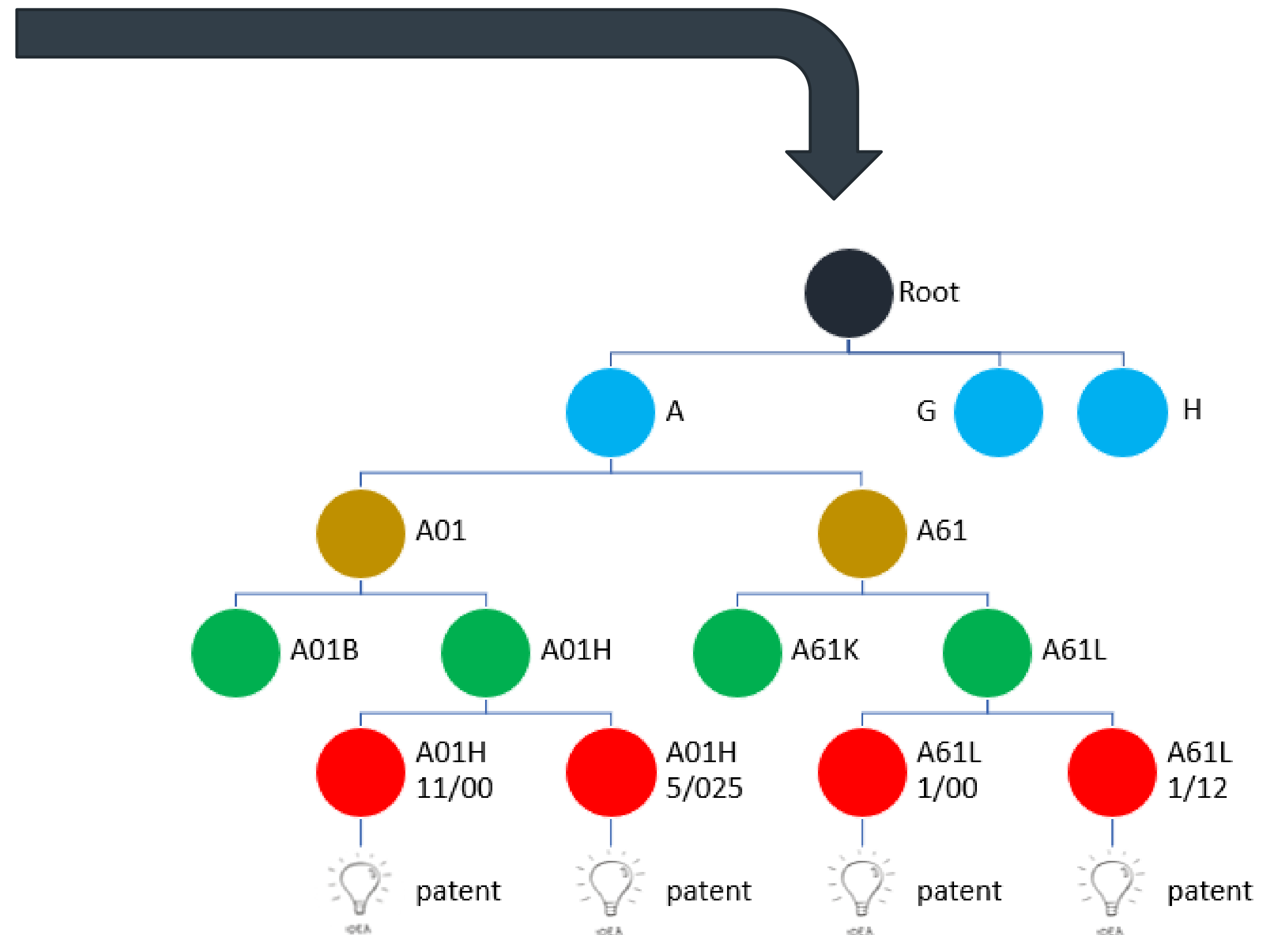
- Necessary to realise the vast benefits of cognitive computing
- Proven to be successful in progressing initiatives from ideation through to production
- Reviewed periodically to ensure suitability



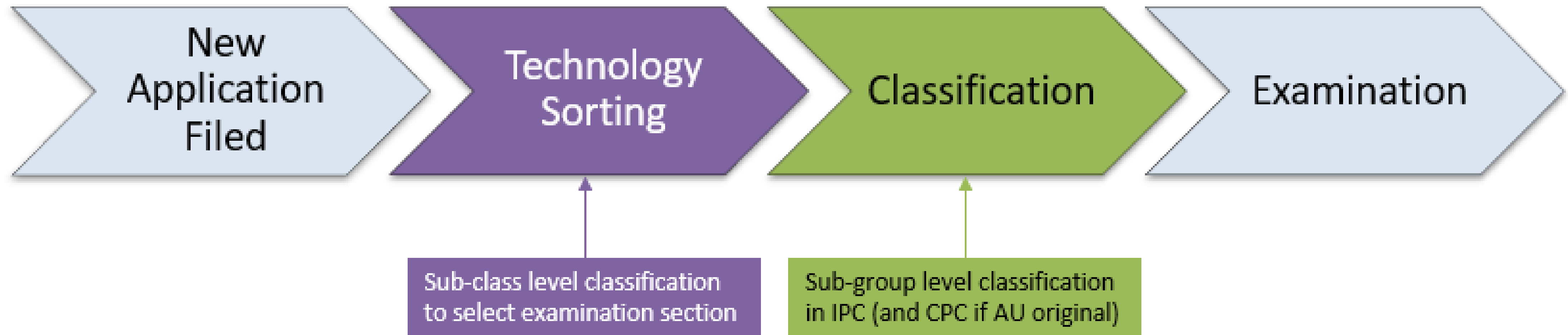
# Case Study: Patent Auto Classifier (PAC)



A service using NLP and ML to perform sort applications by allocating **IPC subclass** or **main-group** level information



# Patent Application Classification Work-flow at IP Australia



# Patent Auto Classifier (PAC)

## Initial Timeline

- 2018 – Successful Proof of Concept
- 2019 – Production deployment for international (PCT) preliminary sorting [on premise]
- 2021 – Production deployment for domestic preliminary sorting and creation of ‘indexing’ tasks [AWS]

## Latest Developments - 2022

- Cloud transformation – inference endpoint refactored as serverless function, ‘old’ AWS PAC decommissioned
- AWS PAC in use for PCT applications, on premise PAC decommissioned

## Related Initiatives

- CPC Prediction PoC and evaluation
- Basic Demo UI for IPC and CPC prediction



ENTER ABSTRACT AND CLAIMS TEXT

artificial neural network

Layer

Main-group

Threshold

0.3

topn

5

Use CPC

Suggest Marks

PROGRESS

(4/4) Completed!

### Predicted IPCs

Returning top 5 predicted IPCs.

<input type="checkbox"/>	IPC	Source	Confidence
<input type="checkbox"/>	G06N3	Prediction	66.29%
<input type="checkbox"/>	G06N5	Prediction	41.16%
<input type="checkbox"/>	G06N99	Prediction	36.50%
<input type="checkbox"/>	G06N20	Prediction	34.54%
<input type="checkbox"/>	G06K9	Prediction	34.41%

Copy selected IPCs

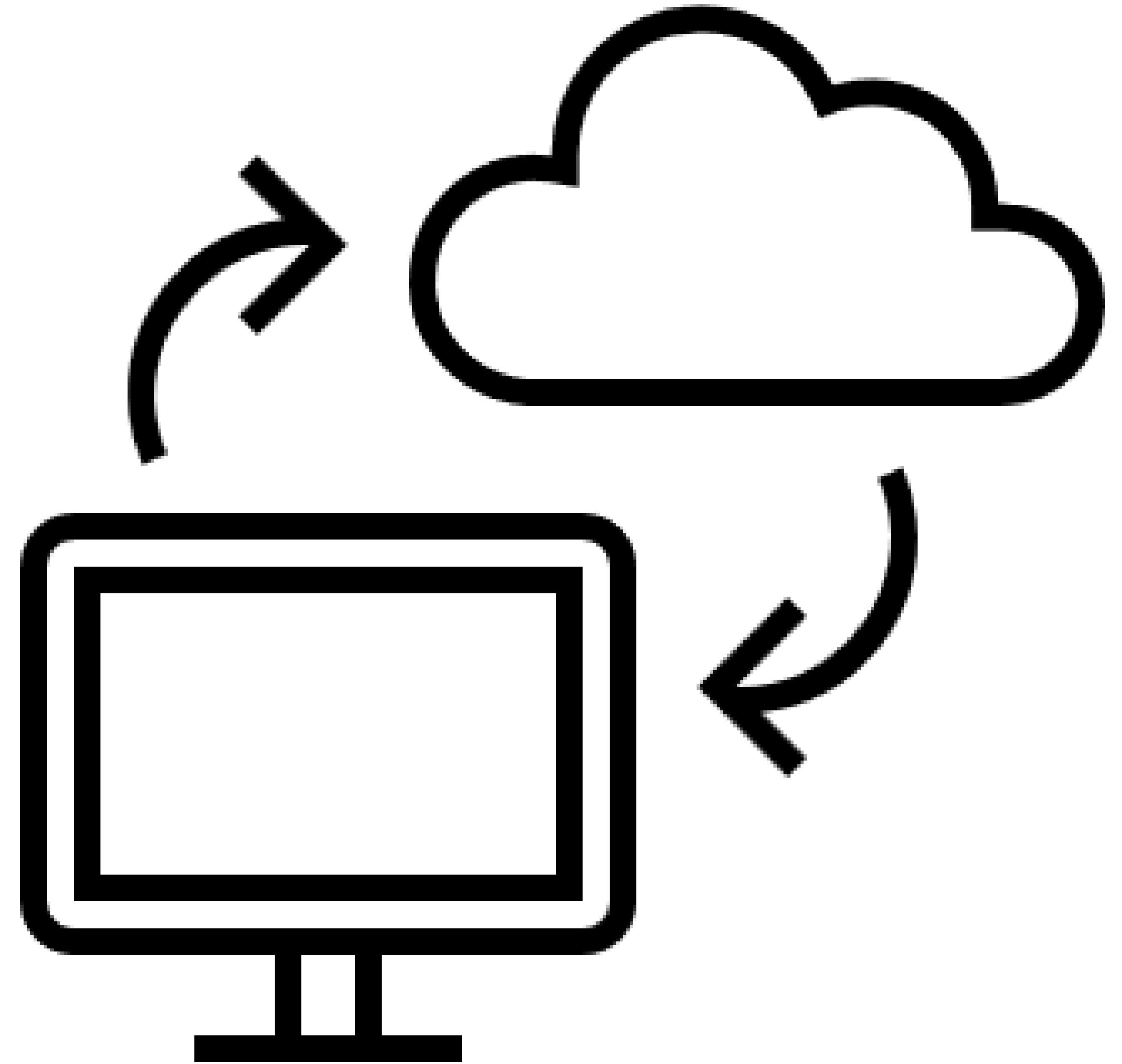
# Why Cloud?

## Alignment with corporate strategic objectives

- IP Australia's Corporate Plan
- ICT strategy (current and previous)
- ITG annual operational plan
- IP Australia's Cloud strategy

## Other benefits

- Variable expenses
- Cost optimization
- Capacity
- Speed and agility
- Cloud-native opportunity





# Assess

“The vision for this strategy is the delivery of all of IP Australia’s ICT services, as services from commercial cloud providers, utilising a combination of ‘Software-as-a-Service’, ‘Platform-as-a-Service’ and ‘Infrastructure-as-a-Service’ offerings”

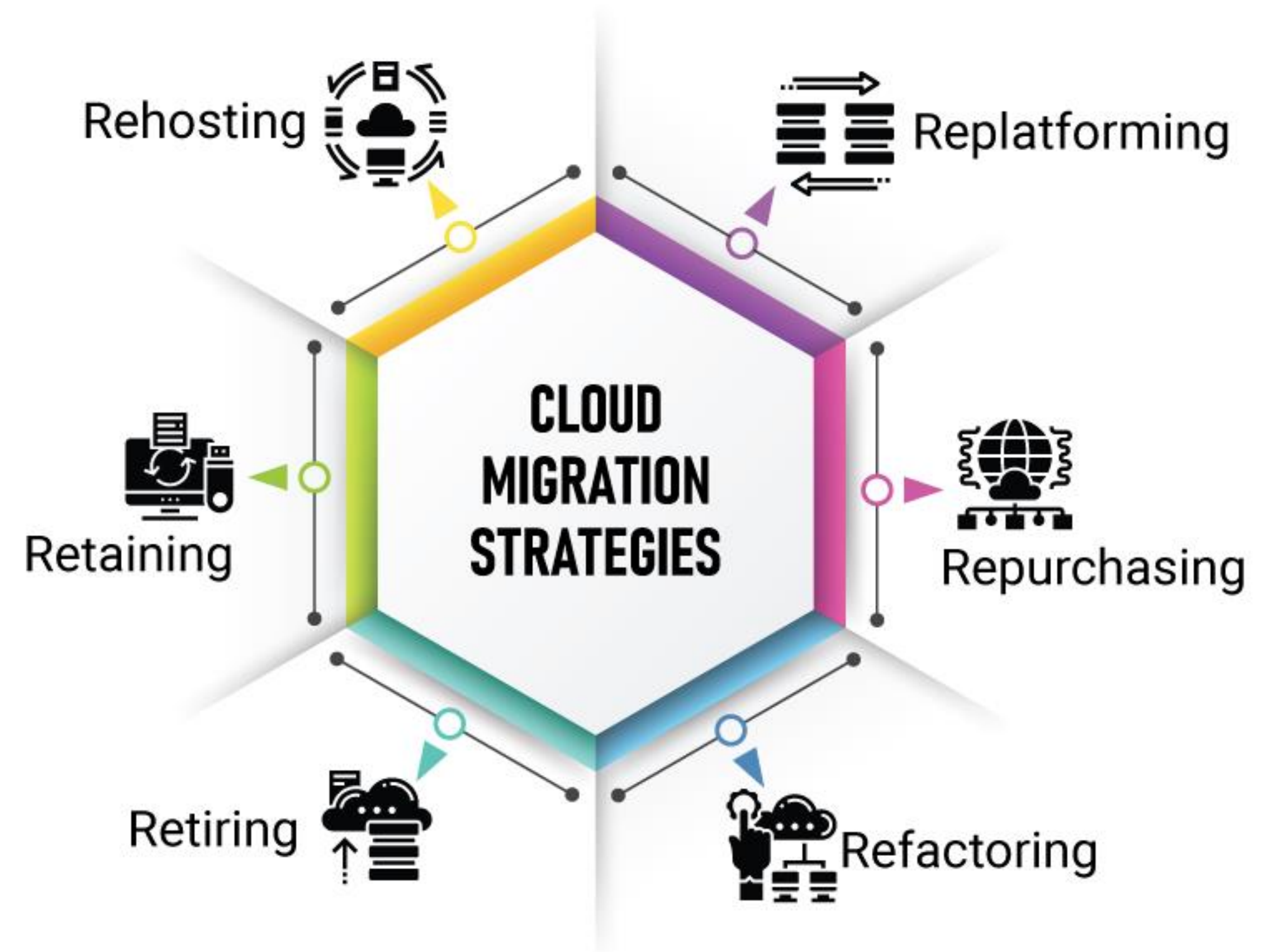
## Cognitive Futures

- ~24 services, apps, projects
- 6Rs of Cloud Migration
  - repurchase (0)
  - rehost (0)
  - replatform (1)
  - re-architect (6)
  - retire (17)
  - retain (0)

Image source: <https://www.spiceworks.com/tech/cloud/articles/cloud-migration-strategy/>



## TYPES OF CLOUD MIGRATION STRATEGIES





# Why PAC?

## The problem with PAC...

- \$\$\$\$
  - \$1000 USD per environment per month (dev, test, uat, prod)
  - ~\$60k AUD/year
  - \$50 USD per request!
- Single Server
- Single Availability Zone
- Terrible logs, no metrics, no traces
- Weeks to deploy





# The Idea

- Can we utilise serverless compute?
- Switch from “always-on” to serverless (FaaS)
- Only pay for what you use
- Goals
  - Reduce costs
  - Scale
  - Increase reliability
  - Improve observability
  - Reduce deployment complexity
  - Keep response times under 40 sec





# Success!



## Deployed in production in March 2022

- Turned off 'old' AWS PAC service in April 2022
- Costs down to \$0.02-\$0.05 per month
- Up to \$0.15-\$0.20 with PCT applications

## September 2022:

- \$1.11 across all four environments
- \$3,760 last month of 'old' PAC
- 99.97% cost saving (\$35k-45k per year) - 99.98% if you only consider production
- Requests: From \$50 to \$0.00042 – roughly ~\$0.01 per 25 requests

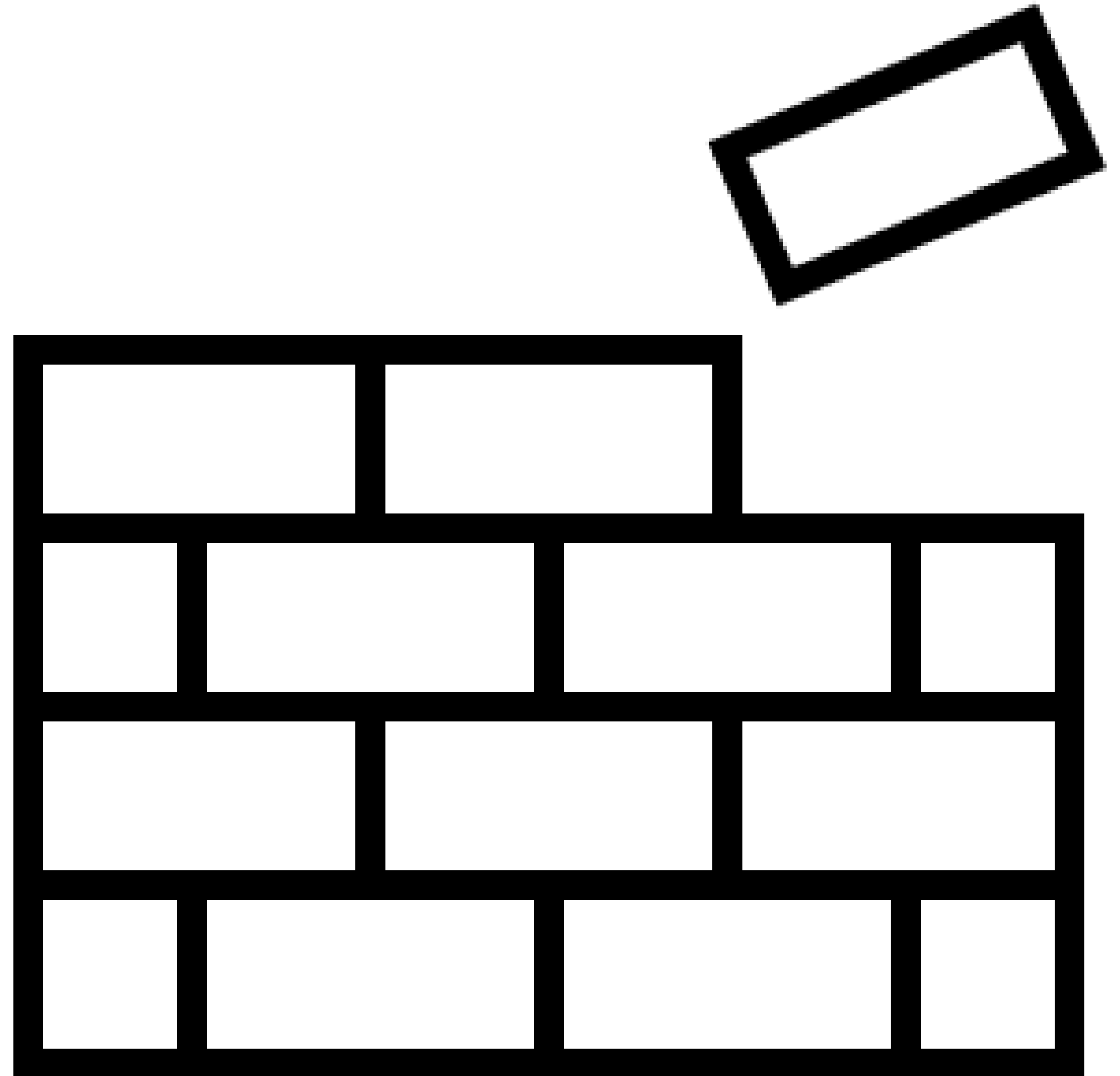
## Other benefits:

- Infinitely scalable, high availability, improved observability, deployable within minutes
- 100% compliance with performance NFRs, 100% uptime, 100% success
- Industry recognition as leaders and innovators in AI using AWS cloud native services



# Caveats

- One size does not fit all
- AWS heavy
- Cold starts (the first time your code runs it is slow)
- We aren't done
- This is not a “how you do it”, but rather “how we have done some of it”



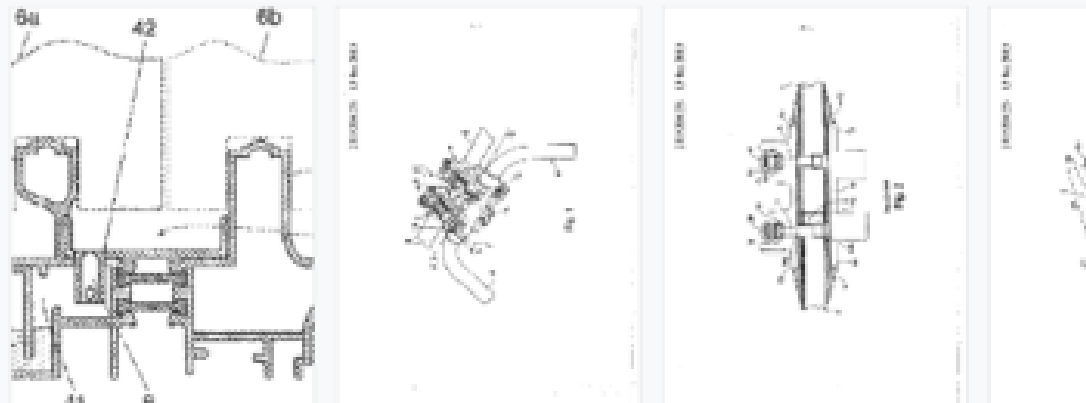
# Automated Preliminary Search Tool

Q AU2015200123 Search

**OPI** AU2015200123A1 - SUSPENSION FOR BABY PUSHCHAIRS

**Abstract**  
A suspension system in the form of a single unit for the two wheels of the baby pushchair, generally the two rear wheels, with independent damping for each of them. The characteristic feature of this suspension is that it has a block attached to the chassis of the pushchair that comprises two suspension elements preferably one beside the other, each of which is linked to the corresponding pushchair wheel support and acts on the wheel in question independently from the other suspension element. This suspension layout means that a movement in the left wheel of the pushchair, for example when encountering a pothole or obstacle in its way, it is damped by the left side suspension element, so that said movement is not transmitted to the right side of the pushchair and vice versa.

**Priority Date** 13 Jan 2014  
**Publication Date** 30 Jul 2015  
**Applicants** JANE S.A.  
**Inventors** Manuel Jane Santamaria  
**CPC Invention** B62B9/18, B62B7/04  
**CPC Additional** B62B2301/20  
**CPC C-sets**  
**IPC** B62B7/00,  
**Family Members** AU2015200123A1, US9132849B2, US20150197267A1  
**External links** Espacenet



Q AU2015200123 Search

**Query**  
asn=(JANE NEAR S.A.) AND inn=(Manuel NEAR Jane NEAR Santamaria)

[Unlock without reset](#) [Copy to SIS](#) [Search Syntax](#) [Search](#)

^ **Search:** ( Applicants  AND Inventors )

**Applicants**

Add manually... [Add](#)

JANE S.A.  
 JANE SA

**Inventors**

Add manually... [Add](#)

Manuel Jane Santamaria  
 MANUEL JANE SANTAMARIA

**CPCs**

Add manually... [Add](#)

B62B9/18  
 B62B7/04  
 B62B2301/20

**IPCs**

Add manually... [Add](#)

B62B7/00

1 search result on this page is hidden as it corresponds to the current application and its family members.

Showing 1 to 25 of 38

Show  per page << < 1 2 > >>

Publication	Priority Date	Pub. Date	Title	Applicants	Inventors	CPC	IPC	Claim Relevance
EP2279904A2	31 Jul 2009	02 Feb 2011	Device for retensioning the straps used in child seats	JANE S.A.	Manuel Jane Santamaria	B60N2/2803 B60N2/2884 <a href="#">+2 more</a>	B60N2/42 B60N2/28 <a href="#">+2 more</a>	★☆☆☆☆
MX2007004200A_	12 Apr 2006	27 Nov 2008	A DEVICE FOR REMOVABLY FITTING TO PRAMS CARRYCOT SEATS AND CARRYCOTS BEING PROVIDED WITH ARTICULATED HANDLE .	JANE S.A.	MANUEL JANE SANTAMARIA	A47D13/02 B62B7/142	A47D13/02	★☆☆☆☆
US7681894B2	14 Feb 2006	23 Mar 2010	Device for fitting seats and the like to the chassis of baby carriages	Jane S.A.	Santamaria Manuel Jane	B62B7/142 Y10S24/51 <a href="#">+8 more</a>	B62B7/14 B62B7/00	★☆☆☆☆



# Family Member Analyser

AU2015200123 Family Member Listing from AU, WO, US, EP, GB, CA, CN, JP, KR

Found a total of 4 Family Members, and 1 Independent Claim for AU2015200123A1 - 1.

Office	Application Number	Publication Number	Publication Date	Relevance	Last Action Date	Last Action	FER Documents	Links	Objection Date	Objections
US	US14580860	US20150197267A1	16 Jul 2015	★★★★★★	26 Aug 2015	Issue Notification			16 Mar 2015	N/IS
		US9132849B2	15 Sep 2015	★★★★☆☆						
EP	EP2014198320	EP2894075A2	15 Jul 2015	★★★★★★	21 Oct 2015	European search opinion				Run FFA
		EP2894075A3	18 Nov 2015	Not available						

Novelty/Inventive Step Objections US14580860 [Non-Final Rejection \(16 Mar 2015\)](#)

[View Objections](#) [View Claims](#) ×

AU2015200123A1    Relevance    US20150197267A1

[Show claim specific text](#) [Show all text](#)

Claim 1    ★★★★★★    Claim 1

Relevance is based on the comparison of published independent claim pairs only

**Claim Rejections - 35 USC § 102**

In the event the det...

**Claims 1, 2, and 4**, as best understood, are rejected under 35 U.S.C. 102(a)(1) and (a)(2) as being anticipated by Thorne et al. (2008/0211206). In regard to **claim 1**, Thorne discloses a suspension for a baby pushchair comprising a block (Fig. 2, item 28) which has two suspension elements acting independently (Fig. 2, item 24), said suspension elements being joined to a support (Fig. 2, item 22) of a pushchair wheel (Fig. 2, item 12), wherein said block is fitted to a chassis of said pushchair (Fig. 3, item 16).

In regard to claim 2...

[Non-Final Rejection \(16 Mar 2015\)](#)

[View Objections](#) [View Claims](#) ×

[Highlight Differences](#) [Highlight Common Text](#)

Relevance: ★★★★★★

AU2015200123A1 Claim 1

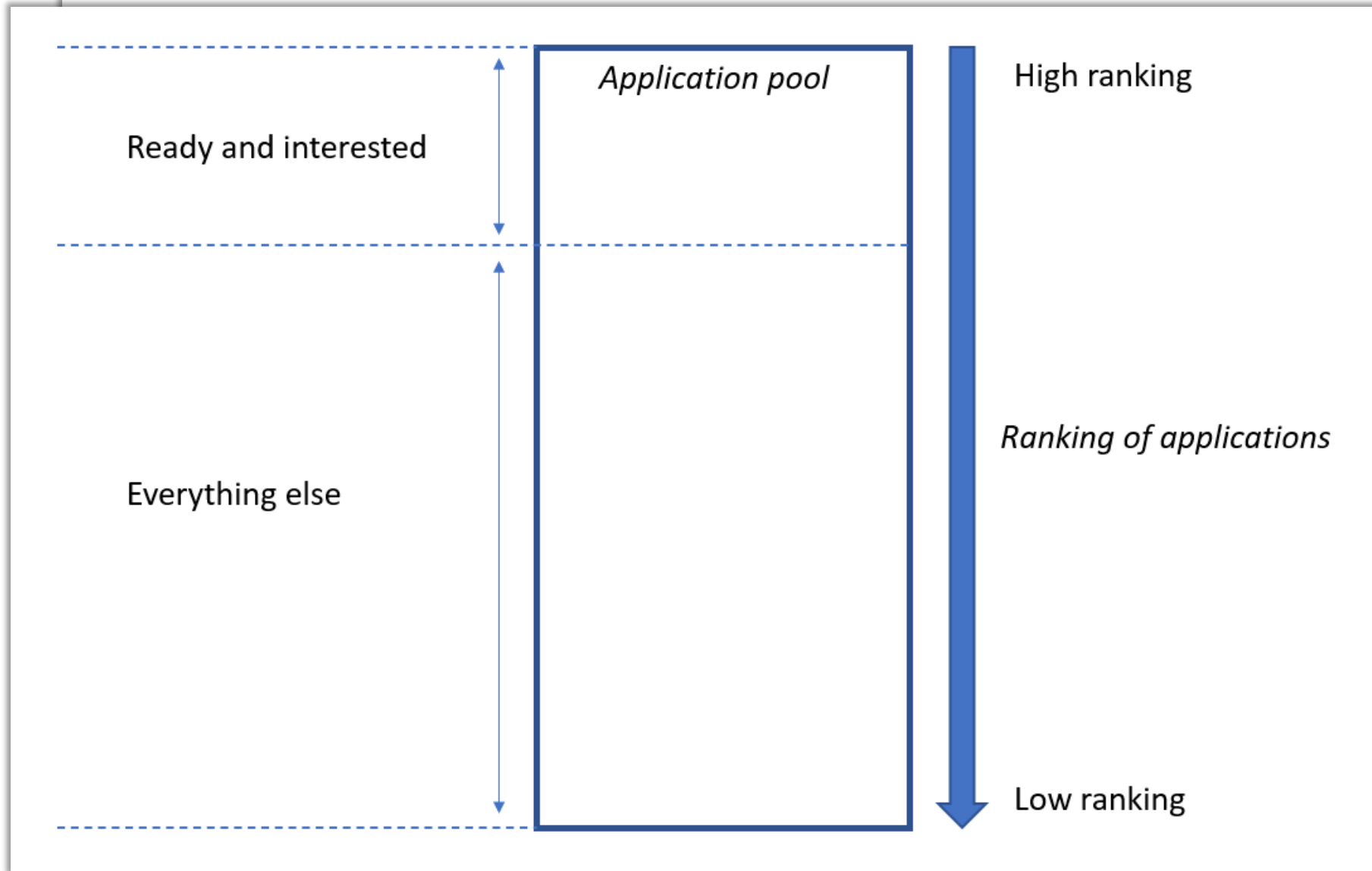
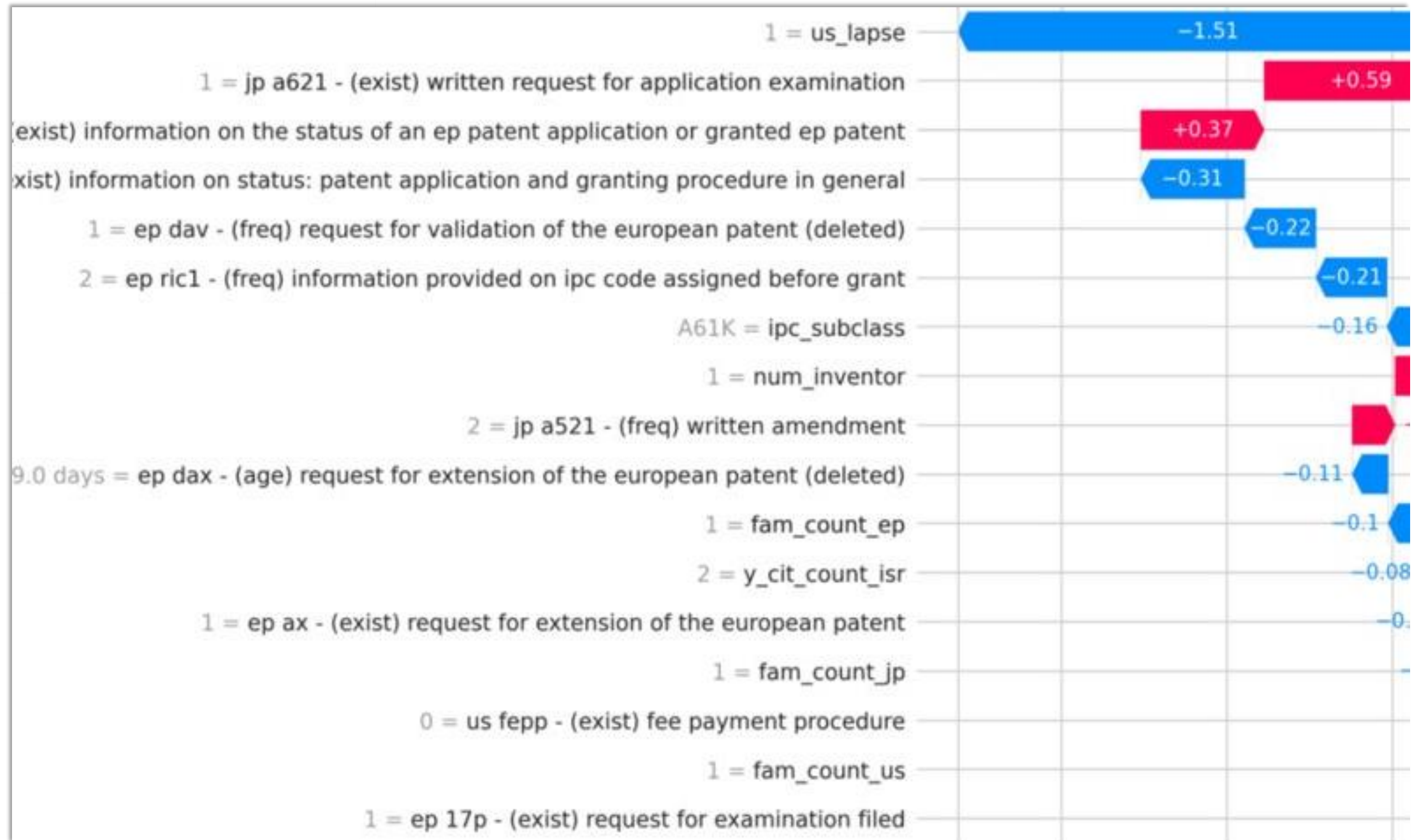
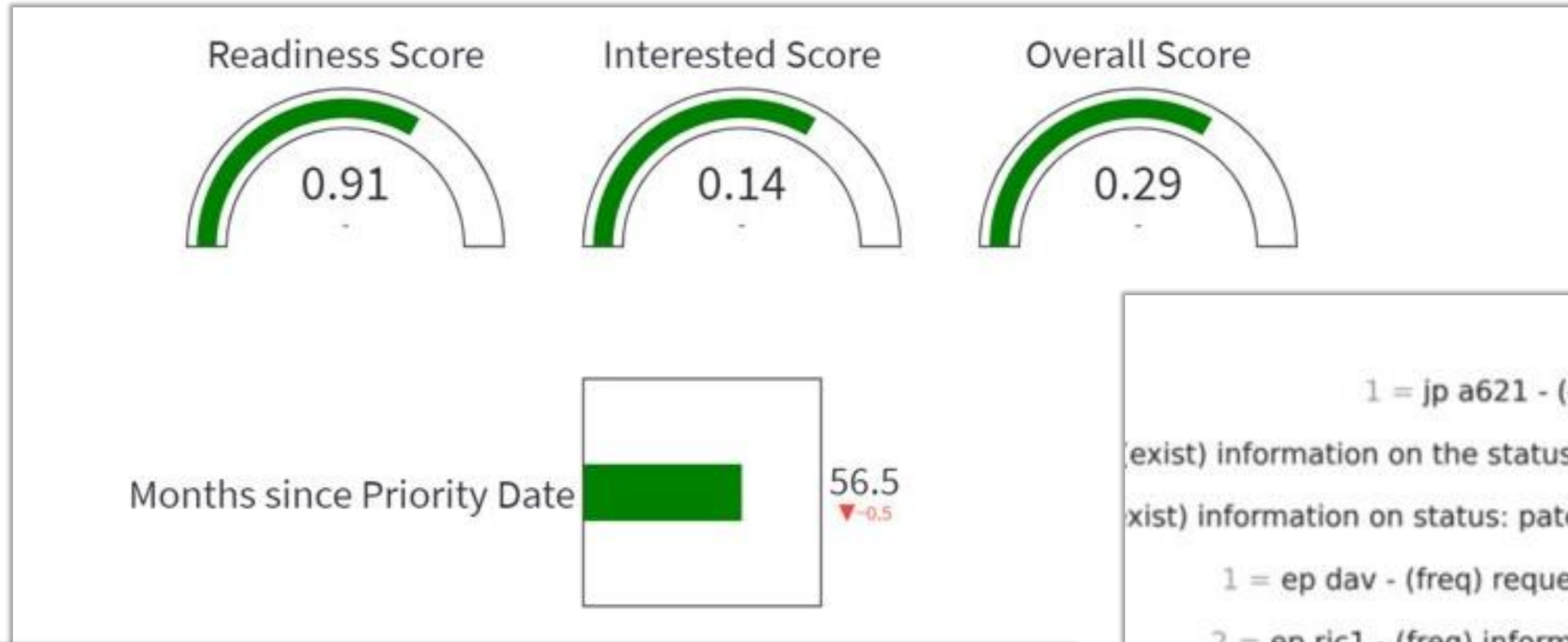
Suspension for baby pushchairs, **characterised in that** it has a block that has two suspension elements acting independently, each of which is joined to the support of one of the pushchair wheels. This block is fitted to the chassis of the pushchair.

US20150197267A1 Claim 1

A suspension for baby pushchairs, **wherein** it has a block that has two suspension elements acting independently, each of which is joined to the support of one of the pushchair wheels. This block is fitted, to the chassis of the pushchair.



# Outcome Based Directions





# Trade Mark Precedent Identification

TMPI Searchv0.1.3

Trade mark #

Trade mark text

Goods & Services

^ Search terms

**Original trade mark (P1)**

Exact match only

×

**Primary terms (P2)**

Exact match only

×

Add

**Secondary terms (P3)**

Exact match only

Add

**Exclude terms**

∨ Filters (3 selected)

Relevance   Show extracted marks only

Results per page

Rank	Relevance	Score	Number	Trademark	Class	Priority Date	Status	Extract
1	★★★★★	1.00	1892088	SOOTHE	9, 42	05/12/2017	Registered: Registered/protected	<input checked="" type="checkbox"/>
2	★★★★★	0.98	1194844	PSOOTHE	42	26/10/2006	Ceased - Not renewed: Renewal fee not paid	<input checked="" type="checkbox"/>
3	★★★☆☆	0.66	1389557	SOOTHIE	10, 11, 21	29/12/2009	Protected: Registered/protected	<input type="checkbox"/>
4	★★☆☆☆	0.66	1250254	SOOTHE TIME	24, 25	21/02/2009	Removed - Not renewed: Renewal fee not paid	<input type="checkbox"/>

# Trade Mark International Classification Service

Search [Filters](#)

Query term:  Results:

Select search mode:  Select sorting mode:

Filter results

Class	Category
45	lawyer services
45	attorney services
45	providing legal expertise
45	legal services
45	barrister services
45	barristers' services
45	barrister's services
45	provision of legal expertise
45	legal support services
35	administrative services relating to the referral of clients to lawyers

Search [Filters](#)

Query term:  Results:

Select search mode:  Select sorting mode:

Filter results

Class	Category
8	brodaxes
16	newspapers for general circulation
16	newspapers
16	general feature magazines
16	magazine paper
16	pocketbooks [printed publications]
16	school yearbooks
16	daily newspapers
20	reading easels
39	delivery of newspapers





Australian Government

IP Australia

# Contact us

[mdb-international-ict-cooperation@ipaustrialia.gov.au](mailto:mdb-international-ict-cooperation@ipaustrialia.gov.au)

 1300 65 1010 (9am-5pm)

 [ipaustrialia.gov.au](http://ipaustrialia.gov.au)

 [facebook.com/ipaustrialia.gov.au](https://facebook.com/ipaustrialia.gov.au)

 [twitter.com/IPAUstralia](https://twitter.com/IPAUstralia)

 [linkedin.com/company/ip-australia](https://linkedin.com/company/ip-australia)

 [youtube.com/user/ipaustrialia](https://youtube.com/user/ipaustrialia)

 [instagram.com/ipaustrialiaofficial/](https://instagram.com/ipaustrialiaofficial/)

