



# USPTO AI Innovation Journey

Adventures in change management

# Intellectual property and the U.S. economy

**27.9m**

IP intensive jobs (2014)

**38.2%**

IP intensive industries share of total US  
GDP (2014)

**\$6.6 trillion**

Value add of IP-intensive industries  
(2014)

**\$1,312/week**

(46% higher)  
Avg. weekly wages for workers in IP-  
intensive industries

**\$115.2 billion**

Revenue specific to the  
licensing of IP rights totaled  
(2012)

**28 industries**

Deriving revenues  
from licensing

Source: Department of Commerce. 2016. "Intellectual Property and the U.S. Economy: 2016 Update". September 26.  
[www.uspto.gov/sites/default/files/documents/IPandtheUSEconomySept2016.pdf](http://www.uspto.gov/sites/default/files/documents/IPandtheUSEconomySept2016.pdf) (January 3, 2018).



# The USPTO at a glance - FY20

## 12,928 employees

- **8,434** patent examiners
- **622** trademark examining attorneys
- **221** Patent Trial and Appeal Board team
- **24** Trademark Trial and Appeal Board team

## Patents

- **653,311** applications filed
- **399,055** patents issued

## Trademarks

- **553,505** trademark applications
- **295,728** Certificates of Registration

Fostering innovation, competitiveness, and job growth in the United States by conducting high-quality and timely Patent and Trademark examination and review proceedings in order to produce reliable and predictable intellectual property rights, guiding intellectual property policy and improving intellectual property rights protection, and delivering intellectual property information and education worldwide.

# USPTO organizational culture

Director

Policy

International

Operations

Management

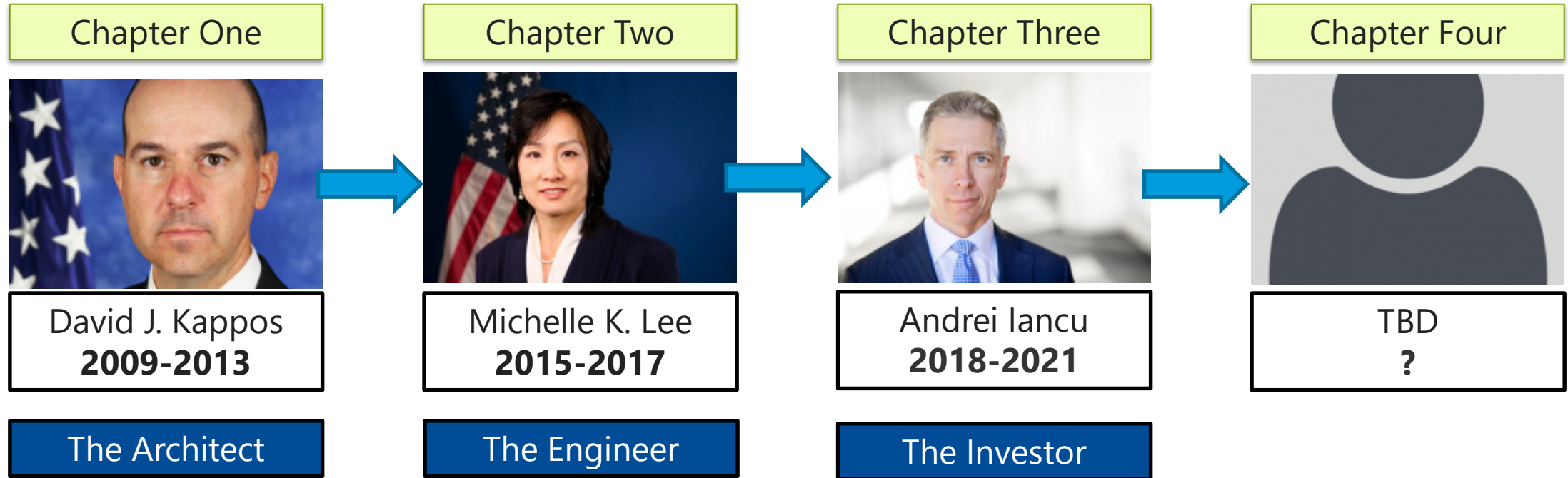
Employees

Public

**Your AI journey needs an organizational platform to support change.**



# AI journey across USPTO leadership



# Chapter one – The architect thinks big

When President Barack Obama tapped IBM's top worldwide intellectual property lawyer for the post, he was picking someone who would shake up the PTO. If the White House wanted to capitalize on the notion that America is an “innovation economy,” then it was going to have to do something to reform an office that had a **tremendous patent backlog** and a record for many patents being challenged in court.

**Kappos: Patent system's reinventor**

<https://www.politico.com/story/2012/01/kappos-the-patent-systems-reinventor-071412>

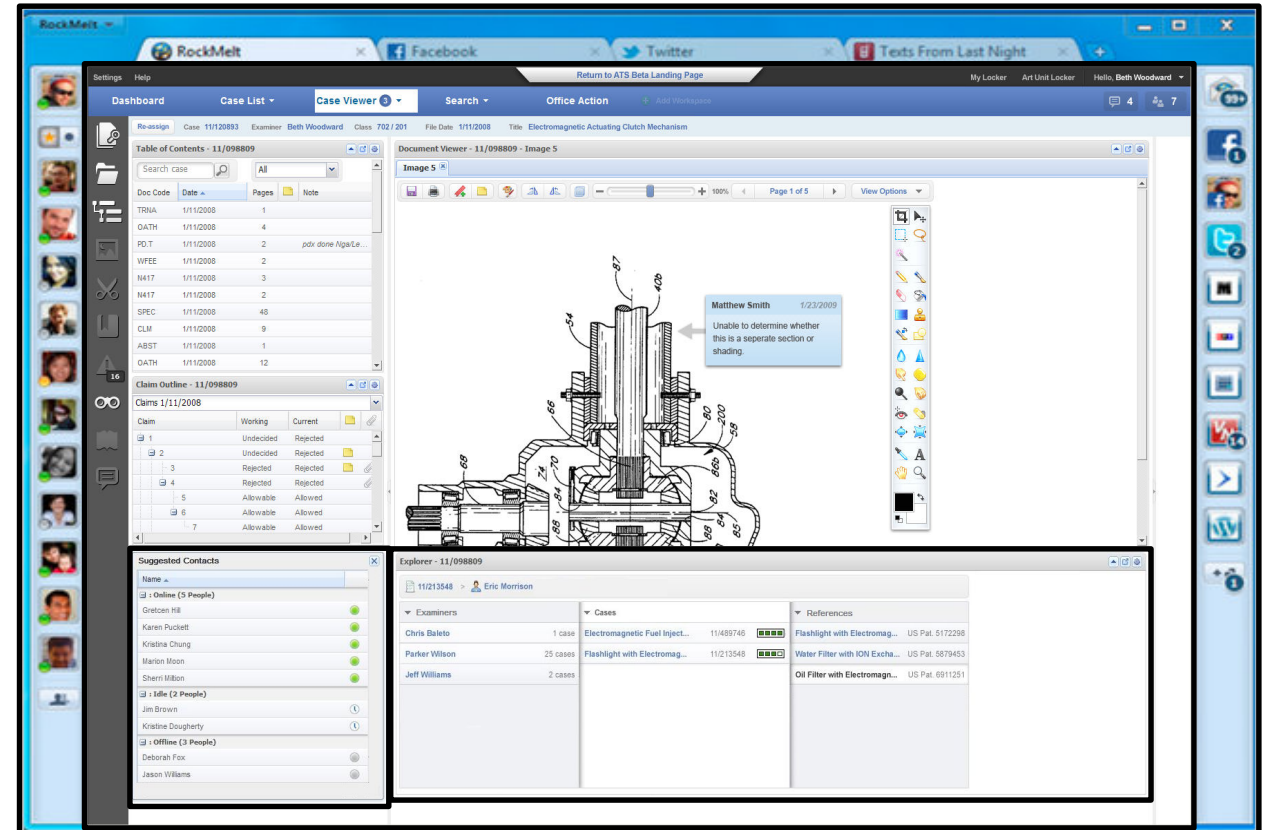
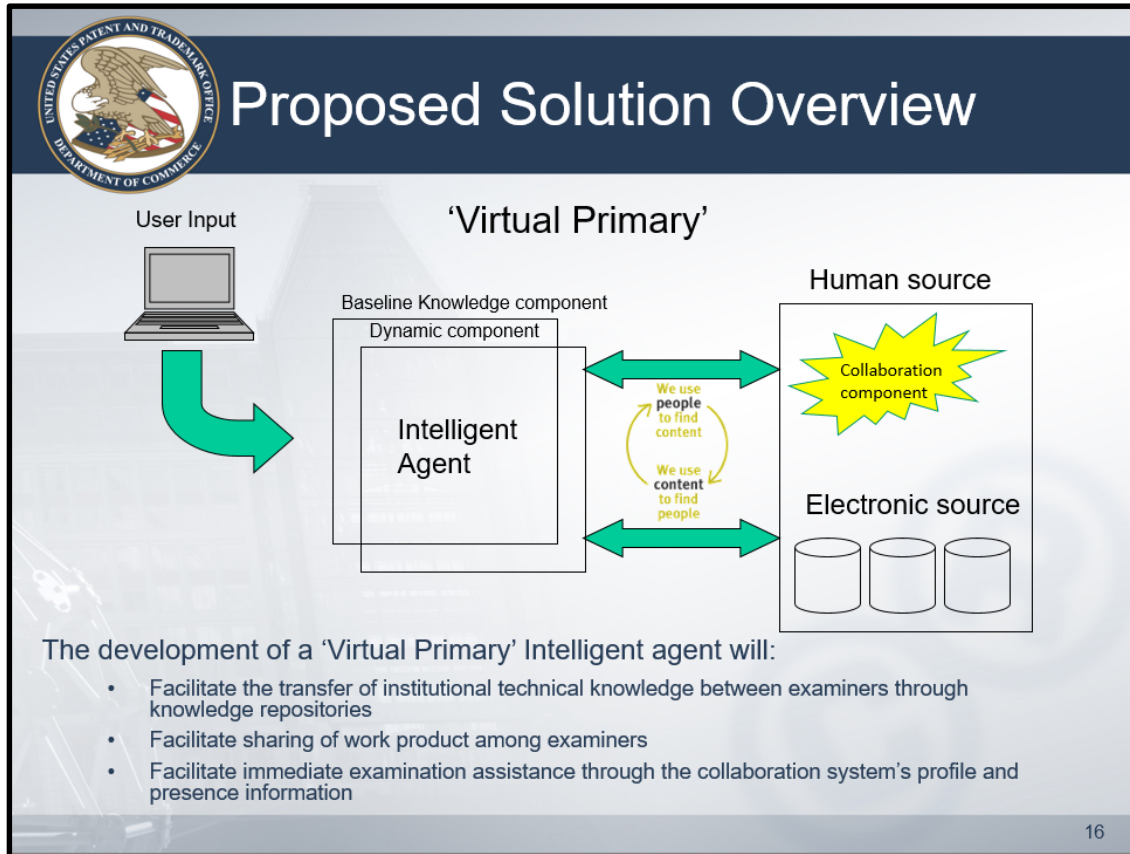
“Let's be clear: **patent quality does not equal rejection.**”

**Remarks by Director Kappos: Director's blog**

<https://patentlyo.com/jobs/2009/08/director-kappos-patent-quality-equals-granting-those-claims-the-applicant-is-entitled-to-under-our-laws.html>



# Designing an intelligent agent



Use people to find content  $\leftrightarrow$  Use content to find people

# Thinking big to . . .

## Dynamic Knowledge

Search Assistance

Similar Applications / Art

Pre-examination

Smart Docketing

## Baseline Knowledge

Contact Information

Search based information

Relevant art information

## Collaboration

Examiner profile

Related application news feed

Discussion forums

The Patent Process Reengineering team reviewed the top recommendations from all working groups and recommended the development of this effort based on having the highest impact Corps-wide in terms of people, volume of work affected, and highest benefits to the quality of examination.

# Architecting change at the USPTO

Lesson #1: Organizational buy-in is never optional



# Chapter two – The engineer and her scrappy team build the foundation

For Michelle K. Lee ... the path to the corridors of power in Washington began in the garage of her family's Saratoga, California, home. That's where her father, a Silicon Valley electrical engineer, kept his workshop and where amid the resistors, circuit boards, and soldering irons, young Michelle developed a passion for science and technology. Building a hand-held radio or programming a computer, she was in her element.

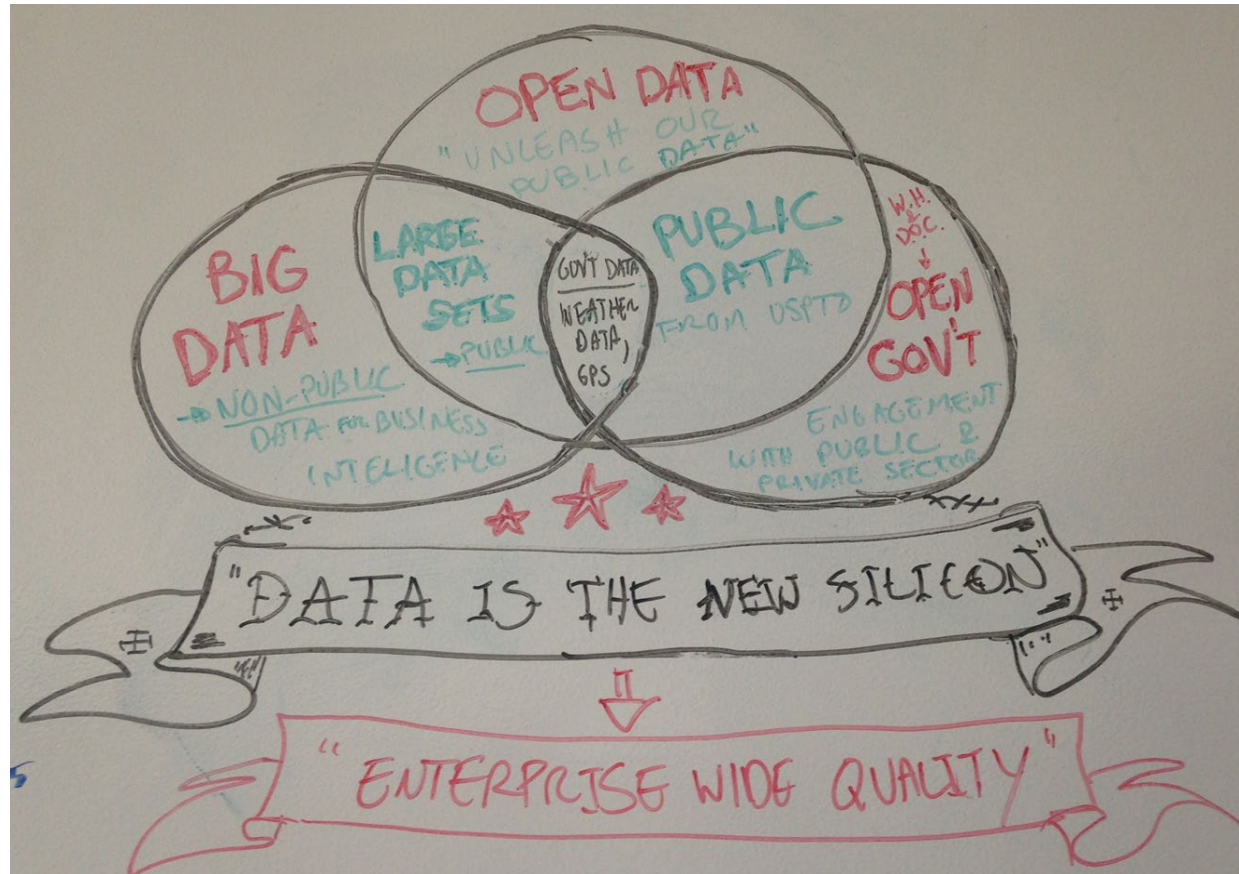
***Head USPTO Sets Innovation Agenda***

<https://law.stanford.edu/stanford-lawyer/articles/michelle-k-lee-first-woman-to-head-uspto-sets-innovation-agenda/>





**Thomas Beach**



**Vikrum Aiyer**

I challenged a small internal team to act like a "start-up" and develop some new ideas on how to use the vast reserves of data the USPTO gathers to help solve some of the agency's age old challenges. . .

**Embarking on a New Adventure**

[https://www.huffpost.com/entry/embarking-on-a-new-advent\\_b\\_10116076](https://www.huffpost.com/entry/embarking-on-a-new-advent_b_10116076)



Essential to Innovation

# Part One: Open Data





## Electronic Data Products

- Patent Grant Data Products
- Patent Application Publication Data Products
- Additional Patent Data Products
- Trademark Data Products
- PTMT - Patent Statistics Reports / Data Products

### XML Resources

XML Resources - Retrospective

USPTO Contact Center Order Form

Services

Locate Libraries

Training/Events

Online Services Hub

## Downloads

- [2014 USPTO Product Matrix \[Excel\]](#)

## Popular Links

- [Official Gazette - Patents](#)
- [Official Gazette - Trademarks](#)
- [Copy / Document Sales](#)

## Patent Grant Data Products

A patent grant is an intellectual property right granted by the U.S. Government to an inventor "to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States" for a limited time in exchange for public disclosure of the invention when the patent is granted.

A patent grant document contains a patent number, title, inventor name, assignee, application number, filing date, prior publication date, foreign application priority data (if applicable), classification information, references cited, examiner and attorney information, abstract, specification, claims, and drawings.

- [Patent Grant Multi-Page Images \(1790-current Calendar Year\)](#)
- [Patent Grant Single-Page Images \(current Calendar Year\)](#)
- [Patent Grant Full Text \(1976-current Calendar year\)](#)
- [Patent Grant Full Text with Embedded Images \(2001-present\)](#)
- [Patent Grant Bibliographic \(1976-present\)](#)
- [Patent Grant OCR Text \(1920-1979\)](#)

### Patent Grant Multi-Page Images (1790-current Calendar Year)

Contains the images of each patent grant issued weekly (Tuesdays) from July 31, 1790 to present in Tagged Image File Format (TIFF) Revision 6.0 with CCITT Group 4 Compression (multi-page TIFFs) from the USPTO USAPat optical disc product (discontinued 12/31/2011).

Also included are older grants that have new Certificates-of-Correction (C-of-C) and rescanned images of older patent grants. Each weekly file contains approx. 4,000 patent grants.

Approx. 6 GB (compressed) per week. Entire collection approx. 8 TB.

Available weekly (7-14 days after issue) for no charge: <http://patents.reedtech.com/pgmpi.php>

[Back to top](#)

### Patent Grant Single-Page Images (current Calendar Year)

Contains the images of each patent grant issued weekly (Tuesdays) from July 31, 1790 to present in Tagged Image File Format (TIFF) Revision 6.0 with CCITT Group 4 Compression (single-page TIFFs). Includes a separate weekly Certificates-of-Correction (C-of-C) file and a daily Certificates file. Each weekly file contains approx. 4,000 patent grants.

Approx. 6 GB (compressed) per week. Backfiles are approx. 10 GB (compressed). Entire collection approx. 8 TB.

(\*An annual subscription for the current Calendar Year is available on blu-ray discs for \$10,400. Contact [ipd@uspto.gov](mailto:ipd@uspto.gov) for ordering information.)

(\* An annual subscription for the current Calendar is available on Blu-ray discs for \$10,400. Contact [ipd@uspto.gov](mailto:ipd@uspto.gov) for ordering information.)



# Before

# USPTO OPEN DATA INITIATIVE

Open data is at the heart of the USPTO's mission of delivering intellectual property information to foster innovation, competitiveness and economic growth. The USPTO Open Data Initiative is an agency-wide initiative that seeks to nurture a culture change that sees transparency and open data as a central part of the agency's mission. This change requires the USPTO to increase its understanding of its customer data needs.

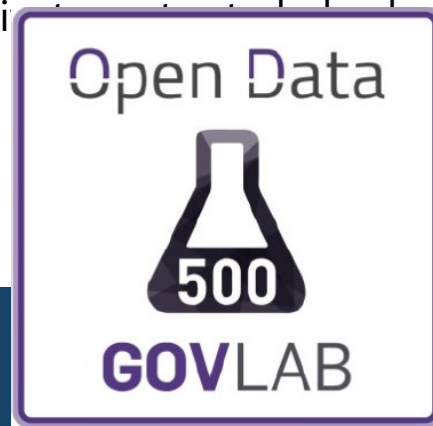
Through this event, we seek to share the work that we are doing and gain valuable feedback from you to set the stage for further engagements. We want to broaden the base of our user community and build an active developer community through public-private partnerships. Together we will make our data more transparent and more accessible to encourage innovative use.

The Open Data & Mobility Roadmap is our plan to chart our progress from where we are to where we would like to be in terms of APIs, data access, use and quality. The Roadmap has three main facets.

**Deliver:** The USPTO will provide data and application programming interfaces (APIs) to the public.

**Engage:** The USPTO will work with the community to do innovative things with our data and APIs.

**Collaborate:** The USPTO will partner with the private sector to help shape the direction of open data at the USPTO.

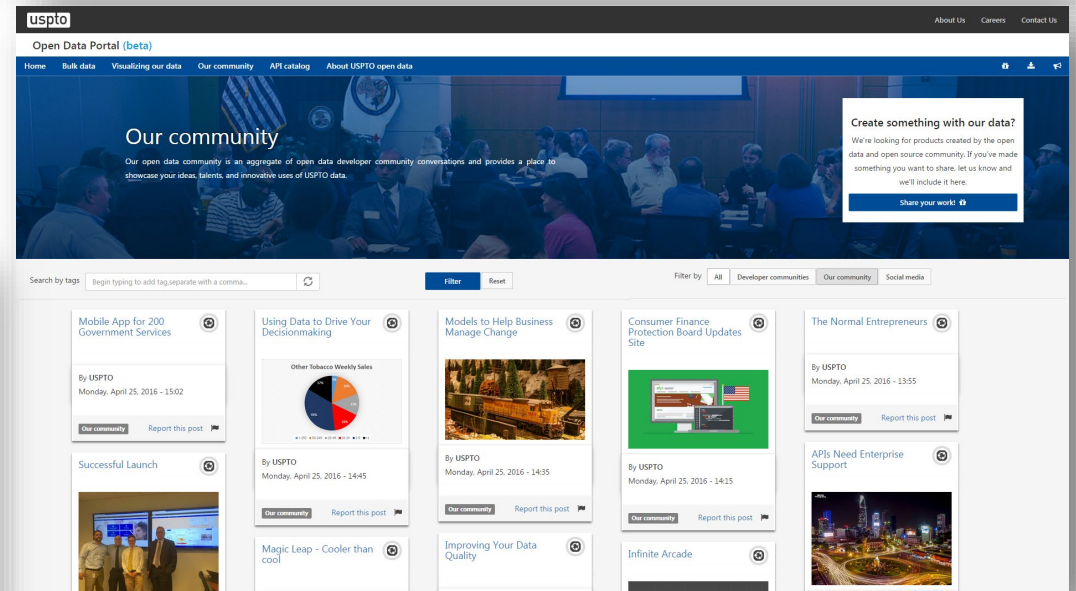
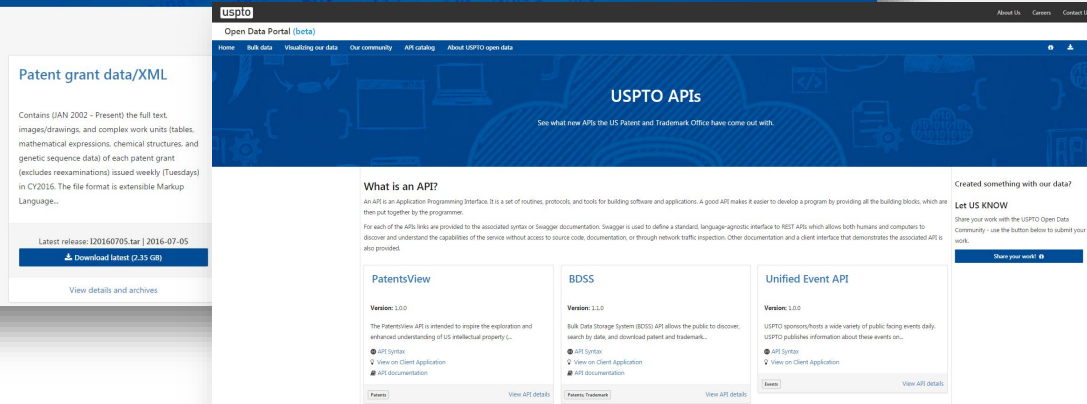
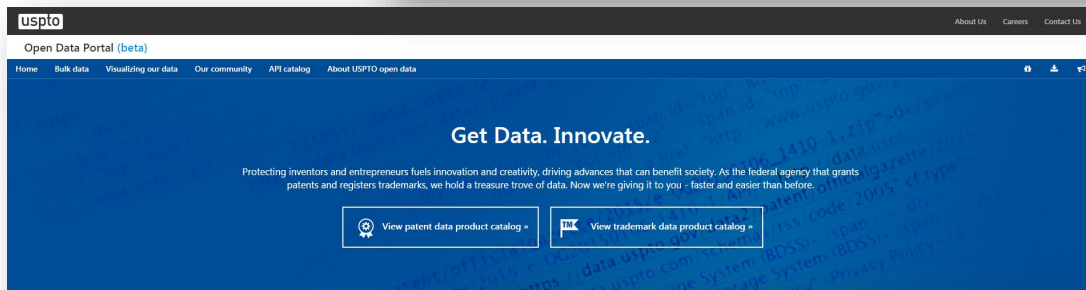
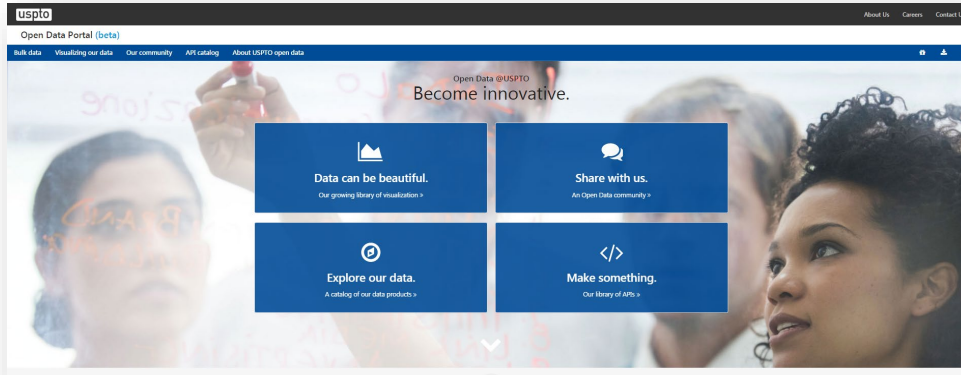


# USPTO open data & mobility roadmap

	Q1 FY15	Q2 FY15	Q3 FY15	Q4 FY15	Q1 FY16	Q2 FY16
Deliver	<p>Launch Beta USPTO.Gov NextGen</p> <p>Update existing Trademark APIs Documentation</p> <p>Add new datasets to Data.Gov</p>	<p><b>Publish Technical Architecture</b></p> <ul style="list-style-type: none"> <li>Shared Services</li> <li>Data Formats</li> <li>Documentation</li> <li>API Standards</li> <li>Security/Access</li> <li>Toolset</li> <li>Collaboration Tools</li> </ul>	<p><b>Public Pair API Beta</b></p> <p><b>PatentsView Beta</b></p> <p><b>Developer Sandbox</b></p> <ul style="list-style-type: none"> <li>USPTO Datasets</li> <li>Documentation</li> <li>Development Tools</li> <li>Sample Code</li> </ul>	<p><b>Public Pair API Released</b></p>	<p><b>Assignments Data API Beta</b></p>	<p><b>Assignments Data API Released</b></p>
Engage	<p>USPTO Data Roundtable</p> <p>Organize Open Data Affinity Group</p>	<p><b>USPTO Data Jam:</b> Public Pair Data</p> <p><b>Roundtable Presentation:</b> Community Feedback</p>	<p><b>USPTO Hackathon:</b> Public Pair API</p> <p><b>Roundtable Presentation:</b> USPTO Monitoring Reports Review</p>	<p><b>USPTO Data Jam:</b> Assignments Data</p> <p><b>Roundtable Presentation:</b> Market Opportunities</p>	<p><b>USPTO Hackathon:</b> Assignments Data API</p> <p><b>Roundtable Presentation:</b> Best Practices: UX/Visualization</p>	<p><b>1<sup>st</sup> Annual Datapalooza</b></p> <p><b>Roundtable Presentation:</b> Best Practices: Mobile Development</p>
Collaborate	<p>Launch Open Data Roadmap</p> <p>Public Facing Data Inventory</p> <p>Draft Community Governance Plan</p>	<p><b>Community Governance Kickoff</b></p> <ul style="list-style-type: none"> <li>Structure</li> <li>Roles/Responsibility</li> <li>Communications Plan</li> <li>Security/Privacy Plan</li> <li>Data Management</li> </ul> <p><b>Prioritize Data Pipeline</b></p>	<p><b>Community Partnerships</b></p> <ul style="list-style-type: none"> <li>Business</li> <li>Government</li> <li>Developer</li> <li>International**</li> </ul>	<p><b>Taking Stock</b></p> <ul style="list-style-type: none"> <li>Governance</li> <li>Operations</li> <li>Communications</li> <li>Improvement Needed</li> </ul>		



# After



<https://developer.uspto.gov>





2015 – USPTO Hackathons

2016 – USPTO-DARPA Hackathon



2015 – USPTO Iconathon



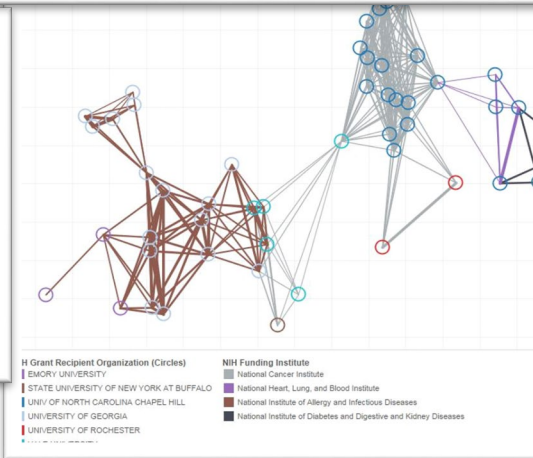
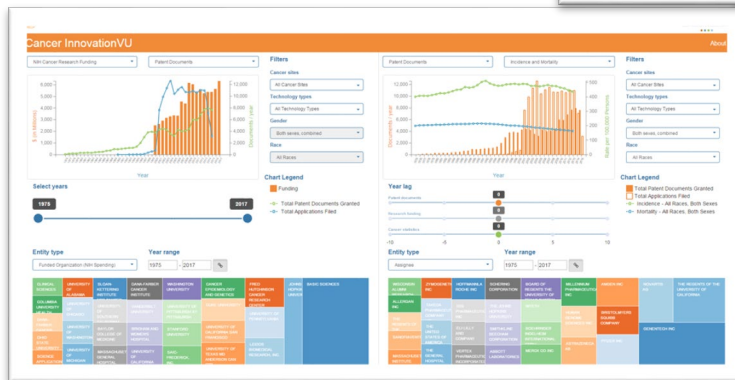
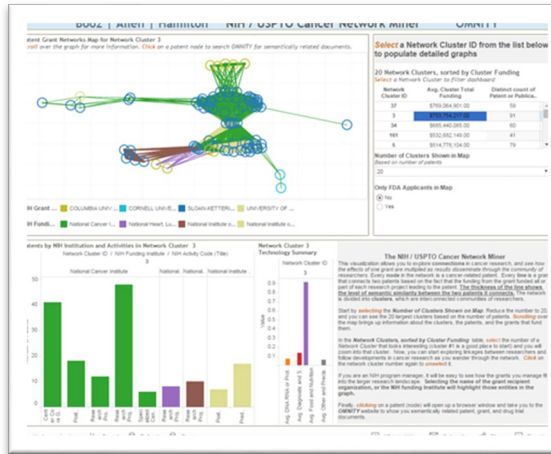
# USPTO data engagements

2016 – Commerce Data Advisory Committee



# WH Cancer Moonshot

Importance of Patent Data to guide policy and research



**Penny Pritzker** @PennyPritzker Follow

Director Michelle K. Lee on using @USPTO's patent data to help fuel the #CancerMoonshot: [medium.com/cancer-moonshot](https://medium.com/cancer-moonshot) @VP

Intellectual property data is often an early indicator of meaningful research and development, and by combining it with other economic and funding data, this can create and illuminate new trend lines for

**VP Biden Live** @VPLive Follow

Check out the winners of @USPTO's #CancerMoonshot Challenge, using patent data to help accelerate cancer research:

**Unlocking Patent Data to Spur Cancer Breakthroughs – Cancer Moonshot**

During his final State of the Union, President Obama reminded all of us that we are not alone in this fight against cancer, and that if we...

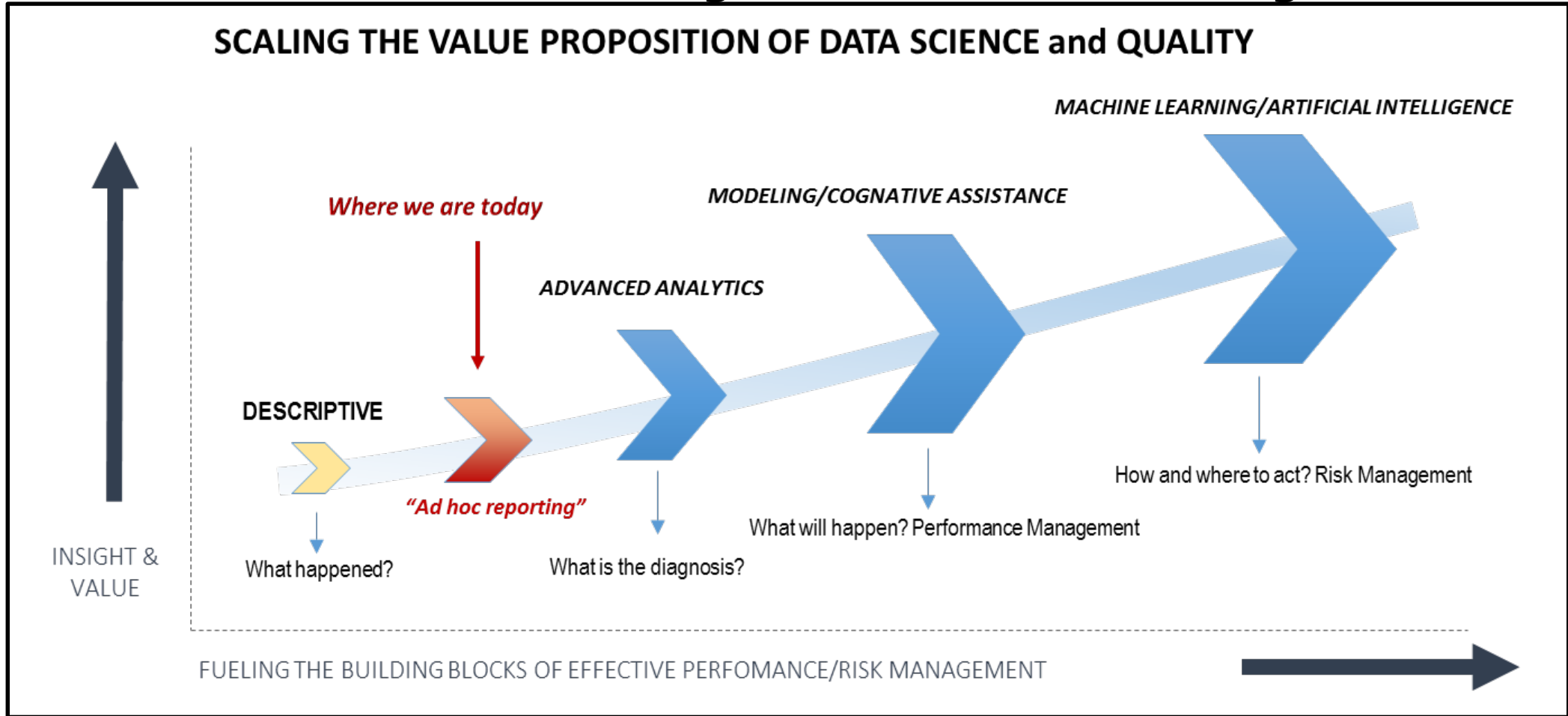
[medium.com](https://medium.com)

And technology firm is research data new

Essential for becoming data driven

## **Part 2: Big Data**

# USPTO data/analytics maturity





### OPQA Review Program

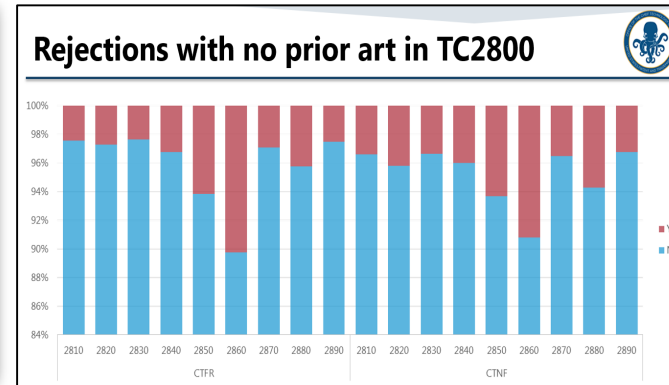
- 6,600 random reviews conducted using the Master Review Form (MRF) so far in FY17
  - Projected 18,000 by end of FY
- FY17Q1 focus was on consistency of applying review standards and synthesizing volume of data points collected
  - Approximately 275 review questions/items in MRF

We need to give you enough data points so you can really understand these compliance rates targets . . . are reflective of what's going on

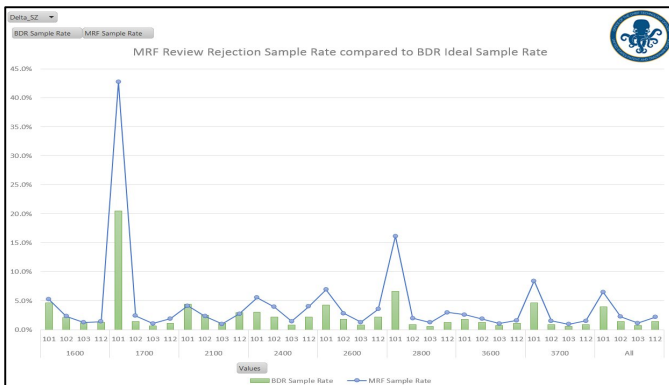
### Data Collection for Study

- Queries developed to obtain data from USPTO Big Data Reservoir (BDR)
- Data collected from publicly available applications in 13 and 14 series
  - February 2011 – November 2016

We really used our big data team . . . to determine 0.26% [out of 1.5 million] applications did not practice compact prosecution



We need to leverage data to identify hotspots and . . . shine the light on trying to get more consistent in our determinations



MRF sample rate confidence study

### Findings

- The practice of compact prosecution studied is not a problem that would require corps wide examiner training
- This study did not identify any particular Technology Center or time period where the practice of non-compact prosecution was statistically significant

Compact Prosecution Topic Submission study

### PPAC Annual Report Recommendations

- Search Enhancement
- Identifying and Resolving Quality Issues
- Information Technology Modernization
- Time and Attendance

Identification of consistent work study

**Quality Index Review III**

Wizard    General Report Settings    Transactional QIR Metrics

**Time Period**

Fiscal Year  
 Quarter  
 Pay Period

Fiscal Year Period Start: 2017  
 Fiscal Year Period End: 2017

**Employee / Organization**

Examiner:

Enter Employee Number:

Grade(s):  5  7  9  11  12  13  14  15

Signatory Level(s):  N/A  Probationary  Regular  Partial  Full

**Presentation**

Order By:  ASC

Hide Rows with No Data?

Include Any Application Listings with Report Item(s)

Show Only Selected  ON  OFF    Display Full List  ON  OFF

General and Time Related Information

General Information

**OC Document Search**

multicast

Search In:  OACS  OC  Forms  Detailed Actions

Search Options:  
 Search Contents  Case Sensitive  Exact Word(s)/Syntax  
 Search OC/Action Type  
 Action Name: Includes

Document Date: Any

All 82    Non-Final Rejection 45    Final Rejection 30    Examiner Answer to Appeal Brief 2    Allowability Notice 1    Corrected Final Rejection 1    Examiner Amendment 1    Examiner Answer 1    Restriction\_Election Requirement 1

App #	OC/Action Type	Paper Number	Document Name	Modified	Source	Title	# of Hits
11/281,156	Allowability Notice	20111208	Allowability Notice	12/14/2011 09:50:09 AM	oacs	Allowability Notice	5
13/147,459	Corrected Final Rejection	20140219	Corrected Final Rejection	03/07/2014 02:26:57 PM	oacs	Corrected Final Rejection	2
11/809,009	Examiner Amendment	20100317	Examiner Amendment	03/30/2010 10:40:19 AM	oacs	Examiner Amendment	13
	Examiner Answer		Examiner Answer	05/21/2010 09:36:36 PM	oacs	Examiner Answer	28
	Examiner Answer to Appeal Brief		Examiner Answer to Appeal Brief	12/01/2011 08:49:22 AM	oacs	Examiner Answer to Appeal Brief	14
	Examiner Answer to Appeal Brief		Examiner Answer to Appeal Brief	01/24/2017 08:06:18 AM	oacs	Examiner Answer to Appeal Brief	16
	Final Rejection		Final Rejection	06/27/2014 06:41:35 AM	oacs	Final Rejection	21
	Final Rejection		Final Rejection	03/12/2011 12:32:41 PM	oacs	Final Rejection	14
	Final Rejection		Final Rejection	08/24/2015 02:45:28 PM	oacs	Final Rejection	1
	Final Rejection		Final Rejection	02/28/2016 05:53:26 PM	oacs	Final Rejection	32
	Final Rejection		Final Rejection	04/24/2015 06:59:28 AM	oacs	Final Rejection	60

**Integrated Quality System**

Docket    Reviews    Reports    Help

Quality Dashboard

Fiscal Year(s) Mailed:  
 FY 2016  
 FY 2017  
 FY 2018  
 Quarter 1

Organization(s):  
 Corps  
 1600  
 1700  
 2100  
 2400  
 2600  
 2800  
 2900

Action Type(s):  
 Allowance  
 Final Rejection  
 Non-Final Rejection

Compliance Type(s):  
 Overall  
 Compliant  
 Non-Compliant  
 102 Compliance  
 Compliant  
 Non-Compliant  
 103 Compliance  
 Compliant

Examiner Grade(s):  
 5  
 7  
 9  
 11  
 12  
 13  
 14  
 15

Case Status(es):  
 Finalized  
 Pending



USPOINTRANET    Home    Ad Hoc Reports    Site Map    Resources    Contacts    Internet Search

Corps    **Miami Reports**

Fiscal year: 2017    Technology center: 2400

Timeliness    Production    **Quality - QIR**    Quality - IQS    Backlog Metrics    Patent Goals

Hide WGs    Hide GAUs    Show All

**TC 2400 IQS Compliance Data for F**

Organization	SPE Name	Review Count	Compliant 101 Count	% Compliant 101	Compliant 102 Count	% Compliant 102
Goals:		15,909	15,354	96.51%	15,029	94.47%
2400		2,081	1,907	91.64%	1,968	94.57%
2410		131	126	96.18%	126	96.18%
2411	LAI, ANDREW	27	25	92.59%	27	100.00%
2412	JIANG, CHARLES C	37	37	100.00%	34	91.89%
2413	CHO, UN C	7	7	100.00%	6	85.71%
2414	ORGAD, EDAN	28	28	100.00%	27	96.43%
2415	RUTKOWSKI, JEFFREY M	12	10	83.33%	12	100.00%
2416	BEHARRY, NOEL R	20	19	95.00%	18	90.00%
2420		184	171	92.93%	172	93.48%
2421	FLYNN, NATHAN J	21	18	85.71%	20	95.24%
2422	HAROLD, JEFFREY F	40	40	100.00%	37	92.50%
2423	BRUCKART, BENJAMIN R	26	23	88.46%	25	96.15%
2424	KUMAR, PANKAJ	23	22	95.65%	21	91.30%
2425	PENDLETON, BRIAN T	25	22	88.00%	23	92.00%
2426	GOODARZI, NASSER MOAZZAMI	23	22	95.65%	22	95.65%
2427	BELVEAU, SCOTT E	26	24	92.31%	25	96.15%
2430		225	196	87.11%	198	88.00%
2431	ZECHER, CORDELIA P K	25	24	96.00%	25	100.00%
2433	PMJ, JEFFREY C	33	28	84.85%	28	87.88%
2434	ZAND, KAMBIZ	26	20	76.92%	20	76.92%
2435	HIRL, JOSEPH P	30	25	83.33%	27	90.00%
2436	GELAGAY, SHEWAYE	23	20	86.96%	19	82.61%
2437	SHIFERAW, ELENI A	20	18	90.00%	19	95.00%
2438	ARANI, TAGHI T	39	34	87.18%	37	94.87%
2439	PHAM, LUU T	29	27	93.10%	26	89.66%
2440		220	197	89.55%	209	95.00%
2441	CHAN, WING F	25	22	88.00%	24	96.00%

Data updates are addressed in the FAQ.  
 Last Updated: 08-Nov-2017 07:09:18 am    Miami Version: 1.98 (Wed Aug 30 12:49:45 2017)

**SPE Dashboard**    Management Reports Home

Dashboard Data As Of: 11/14/2017 02:59 PM

**INDIVIDUAL EXAMINER'S REPORTS**

Enter GAU, Group or TC: 1600    GO

Examiner Name:  Select Examiner \*    GO

NOTE:  
 • If entering a new GAU, Group or TC, after clicking 'GO' please allow a few moments for the screen to refresh.

Click on any category below to see the criteria for the  
 • Red -> 76% of days to Ceiling  
 • Orange - From Target exceeded to 75% of days to Ceiling  
 • Yellow - 51% of Target days to Target  
 • Green - <= 50% of Target days

Select All

New Applications    77    131    235    250

Regular Amended    800    712    2603    612

Special Amended    8    16    14    10

Expedited Applications    25    117    84    261

Return Applications    8    77    53    140

Ceiling Exceeded    130

Docket Management Plan    27

• Red=Critical; Yellow=Semi-critical; Green=Non-Critical

Counted Not Mailed Applications    103    345    770

PTA Amendments    463    2283

8 Month Status Applications    63    272

Pre-Appeal Conferences    8    39

Accelerated Examination    2    7

Reissue Applications

Mis-docketed Applications

Potential Abandonment    851    795

Request for Interview    25    17    53

Print Selected Reports    Group by Examiner

Date Case Listing (YYYYMM)    GO

**REPORT SEARCH**

Type search terms here:  All Words    Search

**PRINTED REPORTS MOST FREQUENTLY USED (for GAU 1600)**

- 3210-PR1 Summary Biweekly Production Report History
- 3692-PR2 Comp Time Report History
- 3105-PR2 Inactive Examiner Docket Reports History
- 3110-PR2 Docket Summary History
- 3140-PR1 Abandonment List - by time overdue History
- 3253-PR1 Counted not mailed History
- 3256-PR1 Amendment after finals History
- 5431-PR9 Accelerated Examination History

**COMPLETE LISTING**  
 • Weekly    • Bi-weekly    • Monthly    • Quarterly

**T&A**

- Time and Attendance Info
- Examiner Productivity Maintenance (To Change Position Factor, Expectancy and Workflow/Customer Service Points)
- PALM Detailed T&A Data

**USEFUL LINKS**

- SPE Management Database
- Employee Locator
- Transaction Information
- Adhoc Reporting
- Examiner Dashboard
- Award Calculator
- eSTATS
- QIR
- Supervisory Resource Center
- SPE Toolkit

# Self-service analytical tools



- Search for Law 112(f): "112\(\f\)"
- Search for Art Unit "ArtUnit 3889"~2

Office Action Search

Example: Search for law 112(f): "112\(\f\)" or for Art Unit 3889~2



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From: 01-01-2017

To: 06-01-2017

Submit

ACTION TYPE

Search Action Type

CTNF 192

CTFR 125

NOA 12

APEA 10

CTRS 2

ART UNIT

Search Action Type

3902 91981

2913 72866

2912 70864

2911 68797

2914 68201

REJECTION TYPE

Search Rejection Type

102

103

104

105

341 Results containing search term: apple 5 per page Page 15 of 25

Application NO.	PALM	Invention Title	ART UNIT	Action Type	Mailing Date
13144457		Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et	3902	CTFR	05/07/2017
14185647		Lorem ipsum dolor sit amet, consectetur adipiscing elit, seolore magna aliqua. Ut enim ad minim	2913	CTFR	04/07/2017
15157867		Lorem ipsum abore et dolore magna aliqua. Ut enim ad minim veniam,	2912	CTFR	03/07/2017
16117967		Lorem ipsum dolor sit amet, consectetur adipiscingveniam,	2911	CTFR	02/07/2017
17756589		Lorem ipsum dolor sit amet, consectetur	2914	CTFR	01/07/2017

Document ID: 98680132 | [DAV](#) Customer #: 69316 Effective Filing Date: 2010-02-18  
 Inventor: Richard Henderson Assignee: Jonathon Johnson Inventor Classification: 715/760000  
 Filing Date: 2011-05-27 Filing Ref No: 333019.01 Foreign Priority Claim: No

Lorem ipsum dolor sit amet, **Apple** adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea **Apple** consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, **Apple** in culpa qui officia deserunt mollit anim **Apple** est laborum.

13144457		Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et	3902	CTFR	05/07/2017
14185647		Lorem ipsum dolor sit amet, consectetur adipiscing elit, seolore magna aliqua. Ut enim ad minim	2913	CTFR	04/07/2017
15157867		Lorem ipsum abore et dolore magna aliqua. Ut enim ad minim veniam,	2912	CTFR	03/07/2017
16117967		Lorem ipsum dolor sit amet, consectetur adipiscingveniam,	2911	CTFR	02/07/2017
17756589		Lorem ipsum dolor sit amet, consectetur	2914	CTFR	01/07/2017

Agency Trends

Select Tech Center

Search or select Tech center

Select date range

Start

End

Submit

Reset

Rejections Type Count by Date Range

Display by:

1 Year

Display Rejection Type

Deselect All

101

102

103

112

Display Trend Line

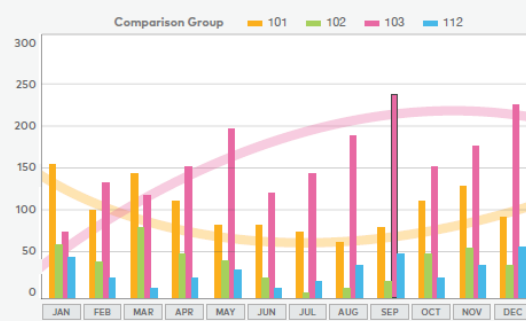
Select All

101 Trend

102 Trend

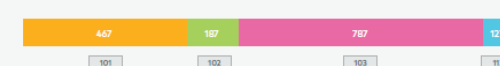
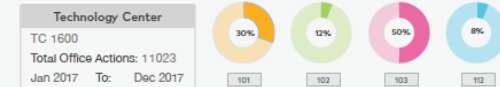
103 Trend

112 Trend

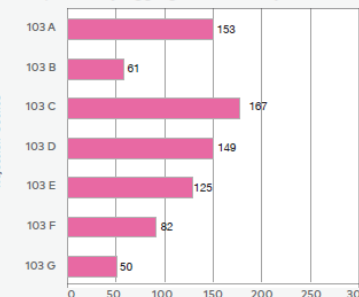


Rejection Type	Counts	Percentage	Trends
101	467	29.78%	
102	187	11.93%	
103	787	60.19%	
112	127	8.1%	
<b>Total Rejections</b>	<b>1568</b>	<b>100%</b>	

Rejections Relative Average



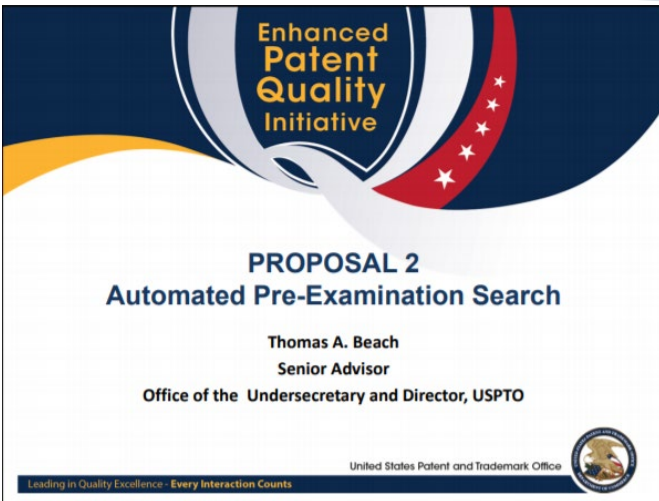
Rejection by Aggregated Count by Year



Aggregate Type	Counts	Percentage	Trends
103 A	153	19%	
103 B	61	8%	
103 C	167	21%	
103 D	149	19%	
103 E	125	16%	
103 F	82	10%	
103 G	50	6%	
<b>Total Aggregate</b>	<b>787</b>	<b>100%</b>	







80, No. 24/Thursday, February 5, 2015/Proposed Rules 0479

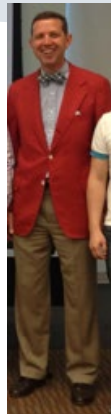
the benefit of the patent owner, the courts, third-parties, and the public at large, giving inventors and investors the confidence to take the necessary risks to launch products and start businesses, and the public benefit of knowing the precise boundaries of an exclusionary right. The USPTO is actively pursuing further measures and initiatives for enhancing the clarity and completeness of all aspects of the

to the public the examiner's reasons why the claimed invention is patentable.

*Proposal 4 Under Pillar 2: Review of and Improvements to Quality Metrics*

The USPTO proposes to re-assess the effectiveness of the Quality Composite Metric and welcomes stakeholder guidance on the effectiveness of the current Metric, as well as ways to

Given that computerized searching algorithms and database technologies have advanced significantly in recent years, the USPTO is seeking input on new tools that might be useful to conduct a pre-examination search. For instance, the new tool might utilize a custom extraction routine that enables keyword, stemming, concept-semantic, and relational word searching capabilities. The USPTO's current pre-examination search tool PLUS does not possess these functionalities. Likewise, the new tool might employ more modern natural language search queries, which PLUS also cannot do.



# Finding Prior Art for Patent Examination: A Machine Learning Approach

Joe Bailey, PhD  
Edison Scholar, USPTO



PRITHWIRAJ CHOUDHURY  
TARUN KHANNA  
SARAH MEHTA

HARVARD | BUSINESS | SCHOOL

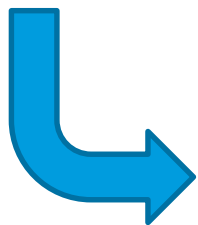
N9-617-027  
FEBRUARY 2, 2017

## The Future of Patent Examination at the USPTO

2016/2017 – Sigma Plus

The first “use case” my team decided to address with a big data approach was “consistency” of patent examination. .... we can still do more with **our wealth of data**—for example, **supplementing the examiner’s manual searches of prior art with automated searches using artificial intelligence techniques.**

- Michelle K. Lee



2015/2016 – Automated Pre-search (APES)

# Start of AI search efforts

## Serco Awarded \$95 Million Patent Classification Contract with the U.S. Patent and Trademark Office

November 30, 2015

**RESTON, VA – November 30, 2015** – Serco Inc., a provider of professional, technology, and management services, announced today the Company has been awarded a patent classification services contract with the United States Patent and Trademark Office (USPTO). Serco will provide initial patent classification and reclassification services to support USPTO's core mission of examining, granting, and disseminating patents and trademarks. The recompete contract has a one-year base period with four one-year option periods, and is valued at \$95 million over the five-year period, if all options and award terms are exercised.

$$\text{score}(C|\text{claim text}) = \sum_i \text{idf}(\text{word}_i) * \log(\text{tf}(\text{word}_i|C))$$

## Start of AI efforts to predict classification

```
NBC_weights('A computer with a flat screen.', weights_reg, top20_codes, idf=idf, rmv_stop_words=False)
```

```
[('345', -72.48064269534366), ('348', -77.18842816554756), ('600', -81.93719678071837), ('701', -83.10775088386325),  
.03032984327993), ('439', -94.54792603791589), ('438', -95.40223404654427), ('726', -95.64249038009253), ('257',  
.10070392573702), ('514', -121.84196478069018)]
```

# Building the foundation

Lesson #2: Roadmaps will be fluid



# Chapter three – The investor turns up the heat

It's an honor to share the stage with my immediate predecessor, Michelle Lee, who initiated a Big Data program that not only supports what we currently do at the USPTO, but also serves as the foundation for future AI development at the agency.

As director of the USPTO, one of my top priorities is making sure the United States remains the market of choice when it comes to innovation, especially in the emerging technologies of the future, including AI and machine-learning technologies.

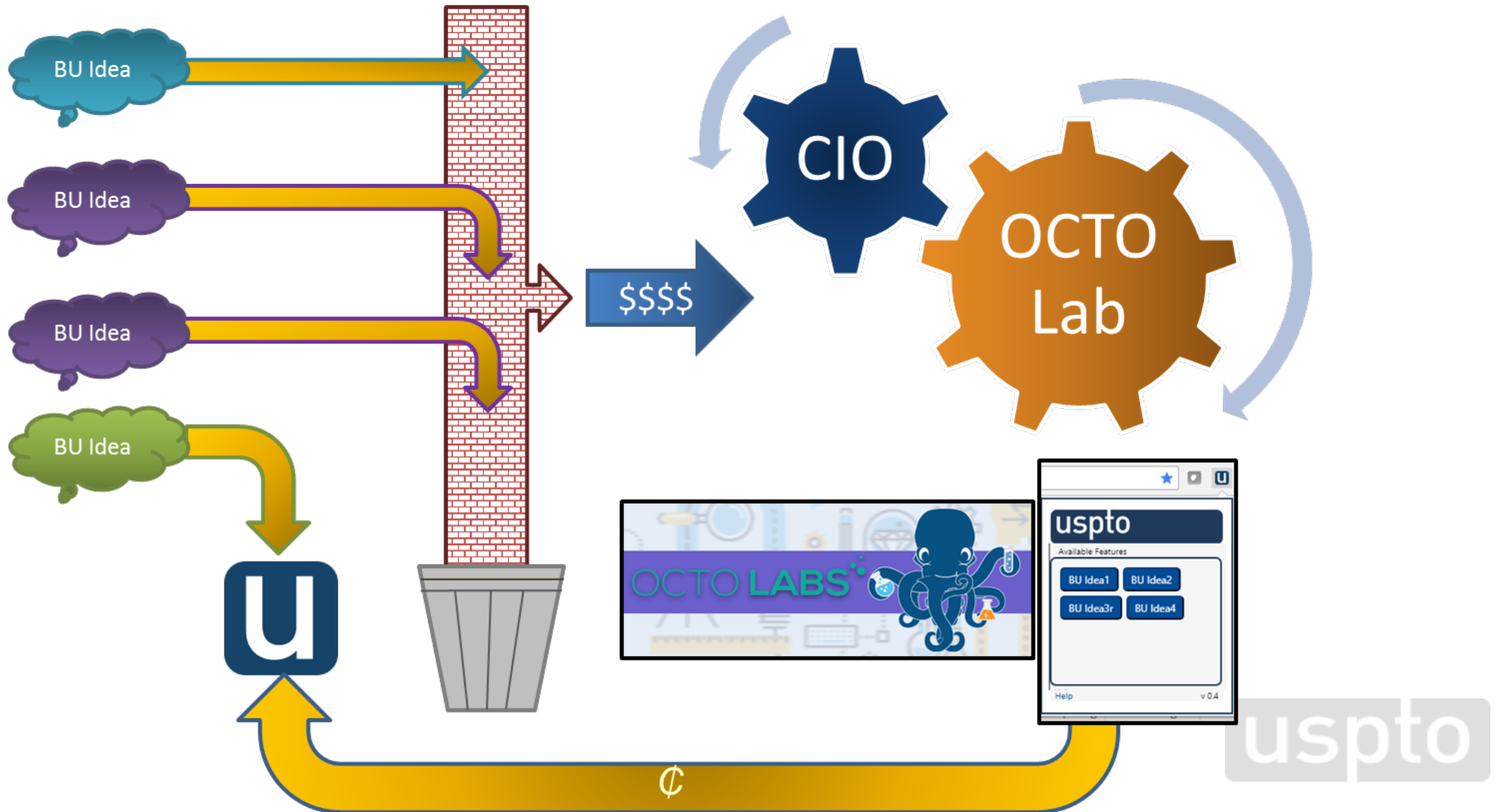
**Remarks by Director Iancu: 2018 National Lawyers Convention**

<https://www.uspto.gov/about-us/news-updates/remarks-director-iancu-2018-national-lawyers-convention>





# New relationship approach

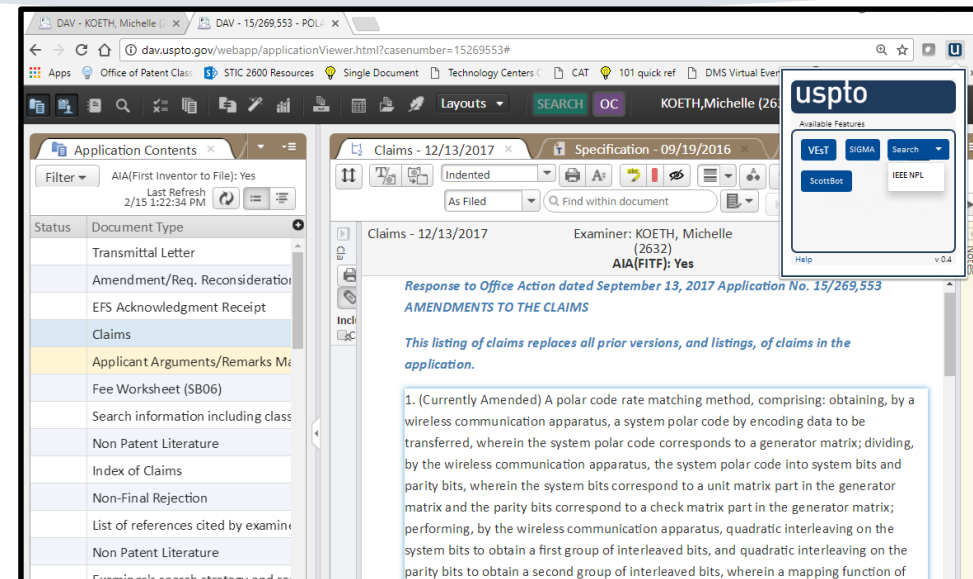


# 'U'nity

"A next-gen end-user platform for delivering intelligent micro-applications."

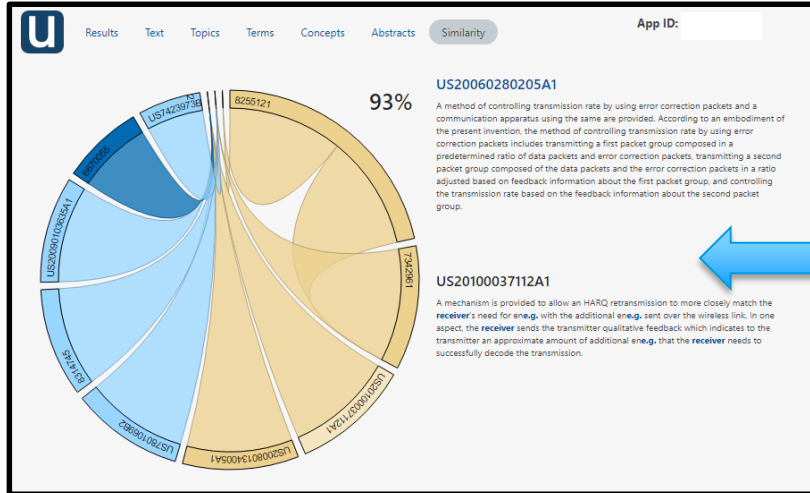


- **Prediction Based Apps**
  - Multi-Dimensional **Search**
    - Embedded **A.I.** Models
    - **Conceptual** Analysis
    - **Unique** Data Visualization



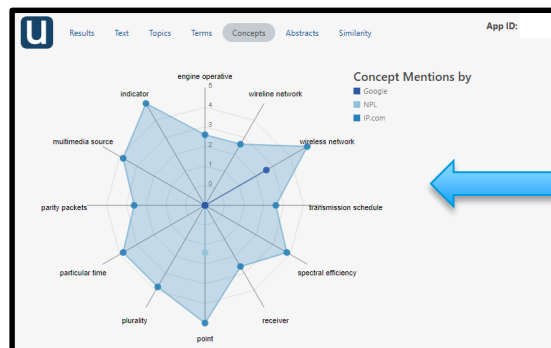
- Chrome extension provides extensible architecture to rapidly deliver 'BETA' features
- Cognitive assistant to augment PE2E or other web-based tools
- Integrated IDE to support business unit development of features

# Analysis of application to provide starting point for patent search/examination



# "One-Click" Patent, Pre-Grant, Foreign and NLP Through ensemble AI ranked relevancy federated search results

# AI search



## Application 15/

Metadata

**Title:** \_\_\_\_\_

**Status:** \_\_\_\_\_

**Examiner #:** \_\_\_\_\_

**Application #:** \_\_\_\_\_

**Inventors:** \_\_\_\_\_

**Effective Date:** \_\_\_\_\_

**Applicants:** \_\_\_\_\_

**USPC:** \_\_\_\_\_

**AIA:** \_\_\_\_\_

**Filing or 371:** \_\_\_\_\_

**Art Unit:** \_\_\_\_\_

### ▼ Prior Art Recommendations

#### Image Search

Doc ID	Figure	Title
20120213283	4	Method of decoding a sequence of encoded digital images
20130044331	7	Overlay metrology by pupil phase analysis
20120219064	2	Hierarchy of motion prediction video blocks
20150117531	4	Method of decoding moving pictures in intra prediction
9445127	4	Method of decoding moving pictures in intra prediction

#### Federated Search

Pub #	Source	Title
US20170005753	ipcom	Polar code rate matching method and rate matching apparatus
US20170012739	ipcom	Polar code rate matching method and apparatus
US20170012740	ipcom	Polar code rate matching method and polar code rate matching apparatus
EP3073660A1	ipcom	Polar code processing method and device

#### Global Dossier

Pub #	Title
CN101557283A	Approach and system for alternating retransmission bits
CN101442383A	Bit priority mapping method for high-step modulation
WO2008119048A2	CIRCULAR BUFFER BASED RATE MATCHING
US20090049359A1	CIRCULAR BUFFER BASED RATE MATCHING
CN101119182A	Bit priority selection method of high-order modulation

#### Non-Patent Literature

Source	Title
ieee	Circular Buffer Rate-Matched Polar Codes
ieee	HARQ Rate-Compatible Polar Codes for Wireless Channels
ieee	Bit-interleaved polar-coded OFDM for low-latency M2M wireless communications
ieee	BER comparison between Convolutional, Turbo, LDPC, and Polar codes
ieee	BER performance of a polar coded OFDM over different channel models

► Topics & Areas to Search

► Related Information

Back to top ↻

CPC Predictor

Results Text Chart

Search

Rank	CPC	Definition	Score
1	H05K5/0282	H05K5/00 -- Casings, cabinets or drawers for electric apparatus ~ H05K5/0256 -- of interchangeable modules or receptacles therefor, e.g. cartridge mechanisms ~ H05K5/0282 -- Adapters for connecting cards having a first standard in receptacles having a second standard	3.27
			3.06
			2.87
			2.27
			2.21

Explore Concepts

Text Review

A head mounted display for a user that uses a display screen to produce images comprising: a frame having a first face which holds the display screen, a second face which holds a first reflecting surface; a third face which holds a pair of lenses; a fourth face which holds a second reflecting surface and a fifth face having two eyeholes and a nose hole that is positioned on the nose of the user, with the eyeholes aligned with the eye of the user, the light emitted from the display screen is reflected by the first reflecting surface to the pair of lenses, which focuses the light as it passes through the lenses to the second reflecting surface, which reflects the focused light to the eyes of the user through the eyeholes, the pair of lenses have their optical centers biased away from their physical centers; and a strap which attaches to the frame and fits about the user's head to hold the frame to the user's head.

G02C2200/08 G02C1/08 A63B2033/004 A63B33/002

CPC Codes

CPC Predictor

Results Text Chart

G06 F13 385 1

Legend

- H05
- K5
- K1
- K2203
- G06
- K7
- K19
- S3
- K13
- H01
- R27
- R13
- G01
- R31
- Y10
- S345
- T229
- H04
- M1
- G11
- B33

1 Results

G06F13/00 -- Interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units ~ G06F13/382 -- using universal interface adapter ~ G06F13/385 -- for adaptation of a particular data processing system to different peripheral devices

Score:1.25

ID	Claim	CPC	Score	Sentence
1	1	G02C2200/08	0.1571	A head mounted display for a user that uses a display screen to produce images comprising: a frame having a first face which holds a first reflecting surface; a third face which holds a pair of lenses; a fourth face which holds a second reflecting surface and a fifth face having two eyeholes and a nose hole that is positioned on the nose of the user, with the eyeholes aligned with the eye of the user, the light emitted from the display screen is reflected by the first reflecting surface to the pair of lenses, which focuses the light as it passes through the lenses to the second reflecting surface, which reflects the focused light to the eyes of the user through the eyeholes, the pair of lenses have their optical centers biased away from their physical centers; and a strap which attaches to the frame and fits about the user's head to hold the frame to the user's head.

id: 1  
num: 1  
definition: G02C2200/00 -- Generic mechanical aspects applicable to one or more of the groups - and - and their subgroups.  
sentence:

A head mounted display for a user that uses a display screen to produce images comprising: a frame having a first face which holds a first reflecting surface; a third face which holds a pair of lenses; a fourth face which holds a second reflecting surface and a fifth face having two eyeholes and a nose hole that is positioned on the nose of the user, with the eyeholes aligned with the eye of the user, the light emitted from the display screen is reflected by the first reflecting surface to the pair of lenses, which focuses the light as it passes through the lenses to the second reflecting surface, which reflects the focused light to the eyes of the user through the eyeholes, the pair of lenses have their optical centers biased away from their physical centers; and a strap which attaches to the frame and fits about the user's head to hold the frame to the user's head.

Showing 1 to 4 of 4 rows

Ensemble Supervised/Unsupervised Machine learning explaining classification for any user selected text or document

Classification

Automatic application analysis for immediate discovery of related information

Application 15/

Metadata Analysis Cloud

Top Concepts Writing Levels Highly Similar Claims Readability

data blocks 10 Claim 10 18.77 Claim 1 11,916 Gunning-Fog 29.84

Claims

1. (Original) A method performed by an access point, the method comprising: receiving requests of a number of user devices, each of the requests indicating one or multiple requested data blocks of at least one file; determining a set of multicast groups based on the received requests, the multicast groups including a set of indices of one or multiple user devices and a set of indices of the data blocks which are indexed to the user devices in the multicast group and which are to be transmitted to the user devices; retrieving and encoding, for each multicast group of the set of multicast groups, the data blocks indexed in the multicast group, wherein a forward error correction method is used; and transmitting to the user devices indexed in the multicast group, for each multicast group of the set of multicast groups, the encoded data blocks indexed in the multicast group.

user devices data blocks correction method access number error

Writing Level 59.31 Broadness 77.02% Interesting Terms 9 Similar Claims 11916

Analysis Concepts Similar Rejected Claims: 102 102 103 CPC Codes Federated Search

2. (Original) The method according to claim 1, wherein at least some of the data blocks, which are indexed in the multicast groups of the set of multicast groups, are retrieved from one or multiple content servers, wherein in particular a reliable backhaul connection is used between the access point and the one or multiple content servers.

multicast groups multiple content connection backhaul method access point

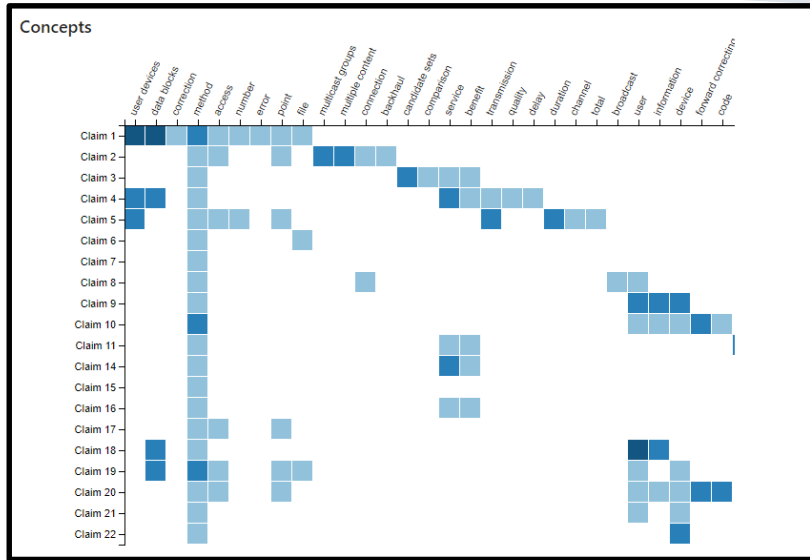
Writing Level 23.24 Broadness 76.21% Interesting Terms 7 Similar Claims 0

Analysis Concepts Similar Rejected Claims: CPC Codes Federated Search

3. (Currently Amended) The method according to any of the preceding claims claim 1, wherein multiple candidate sets are determined and the set of multicast groups is determined based on a comparison of an effective service benefit and effective multicast costs for each of the candidate sets.

candidate sets comparison service benefit method

Application analysis



Density of inventive features/phrases by claim

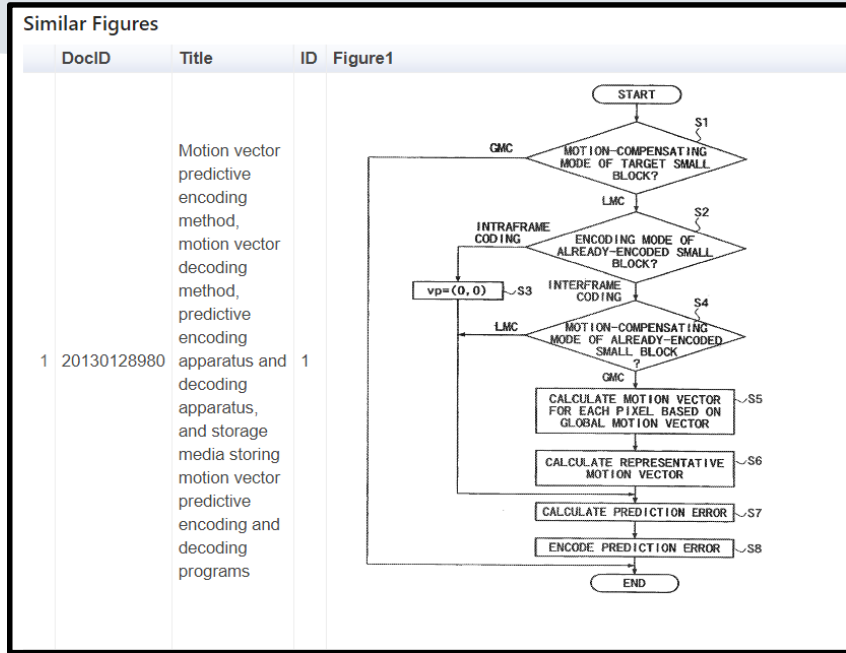


Figure similarity to other applications

**Claims**

1. (Original) A method pe requests indicating one o requests, the multicast gr indexed to the user devic multicast group of the se used; and transmitting to data blocks indexed in th

user devices   data block

**Writing Level**

Analysis   Concepts

Similar Rejected Claims: 102   102   103

Probability: 22.0%

ID: 14628773   Claim #: 19

A **method comprising: receiving**, by a computing device, information specifying **multicast groups** to which one or more **devices** are permitted **access**, the one or more **devices** being in communication with the computing device via an **access network**; using the information specifying **multicast groups** to which one or more **devices** are permitted **access** and first information describing current **data** traffic levels for the **access network** to determine whether there is sufficient bandwidth on the **access network** to begin **transmitting data** of a first **multicast group**; allowing the one or more **devices** to join the first **multicast group** if there is sufficient

Claims 19-21 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Tsuhara et al. (US 2006/0200561 A1; hereafter Tsuhara).

View Patent

ts of a number of user devices, each of the of multicast groups based on the received et of indices of the data blocks which are devices; retrieving and encoding, for each wherein a forward error correction method is oup of the set of multicast groups, the encoded

9   Similar Claims   11916

CPC Codes   Federated Search

Basis of similarly rejected claims



Application concepts



# The investment realized



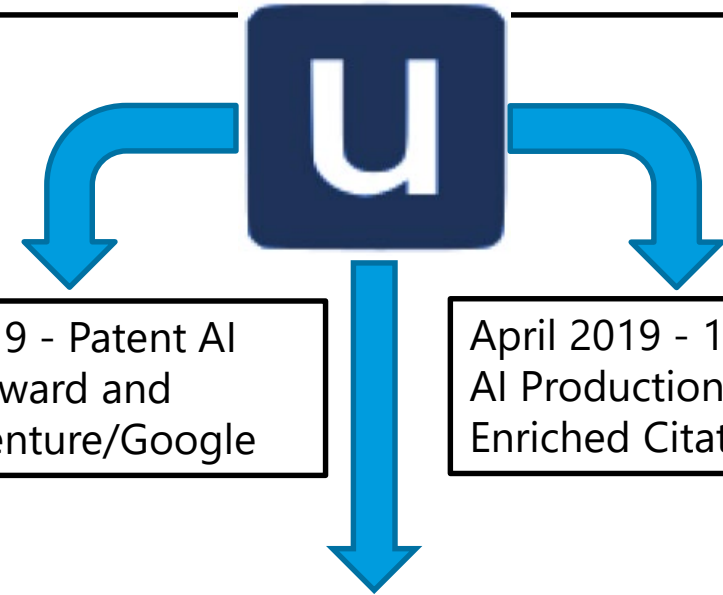
August 2018 – 1<sup>st</sup> PPAC Presentation on AI efforts

January 2019 – AI: Intellectual Property Policy Considerations Event

(Next Slide)

September 2018 – RFI to improve Patent search

The RFI aims to “explore developing market interest-capacity in supplying a lightweight plugin(s) and/or widget technology to augment current USPTO search capabilities.”



November 2019 - Patent AI Plugin (PAIP) award and codebase Accenture/Google

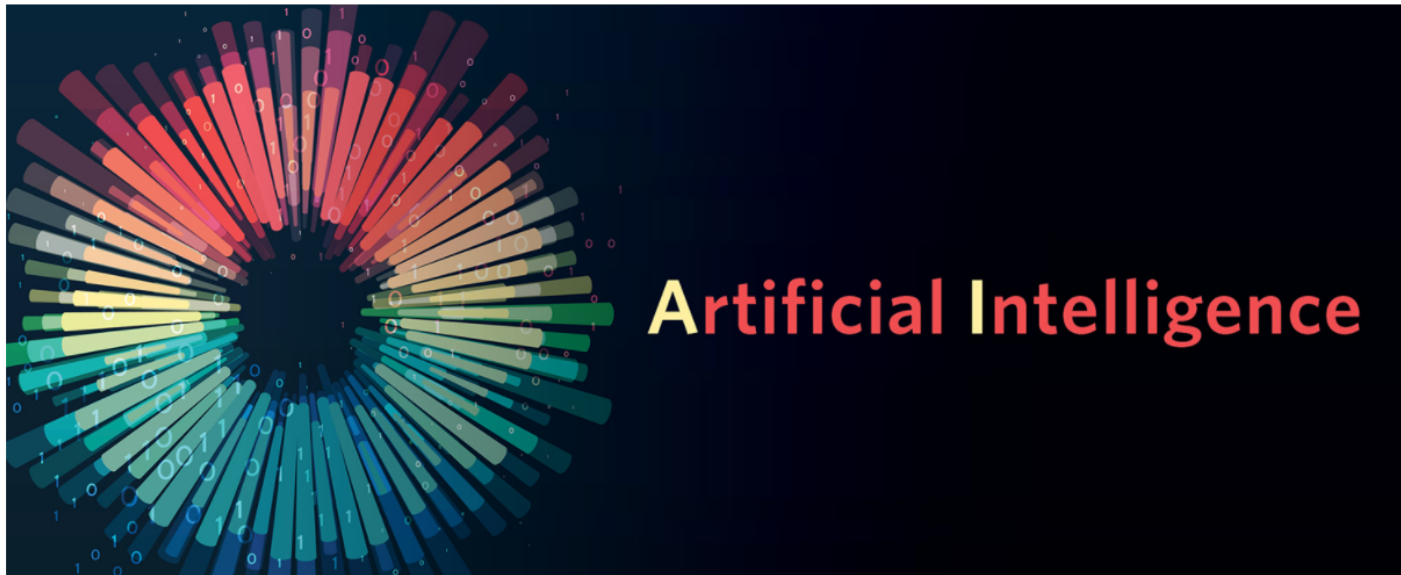
April 2019 - 1<sup>st</sup> USPTO AI Production delivery: Enriched Citation

December 2019 - Auto-classification production delivery

October 2021 – 1<sup>st</sup> AI Search feature examiner production delivery

# The investment realized

## Artificial Intelligence



## Artificial Intelligence

"The broad scope of new products and services that build on AI technologies suggests that AI has the potential to fundamentally change how people perceive the world around them and live their daily lives. This is the essence of technological progress, and realizing these changes happens through innovation." —[Inventing AI: Tracing the diffusion of artificial intelligence with U.S. patents](#)



### Engagement

Browse USPTO leadership's speeches, blogs, and events about AI and learn more about our approach.

> [View engagements/events](#)



### Reports

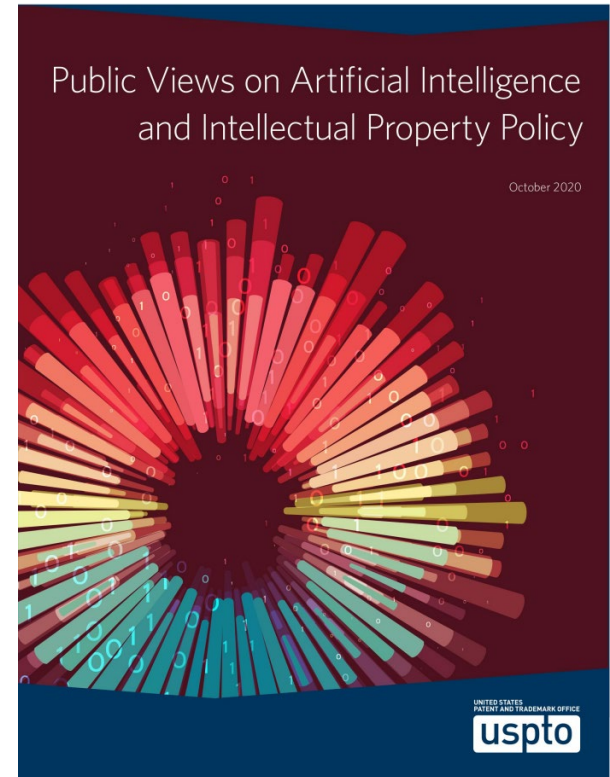
Find our reports, Federal Register Notices (FRNs), and other important USPTO actions concerning AI policy.

> [View reports and notices](#)



### Resources

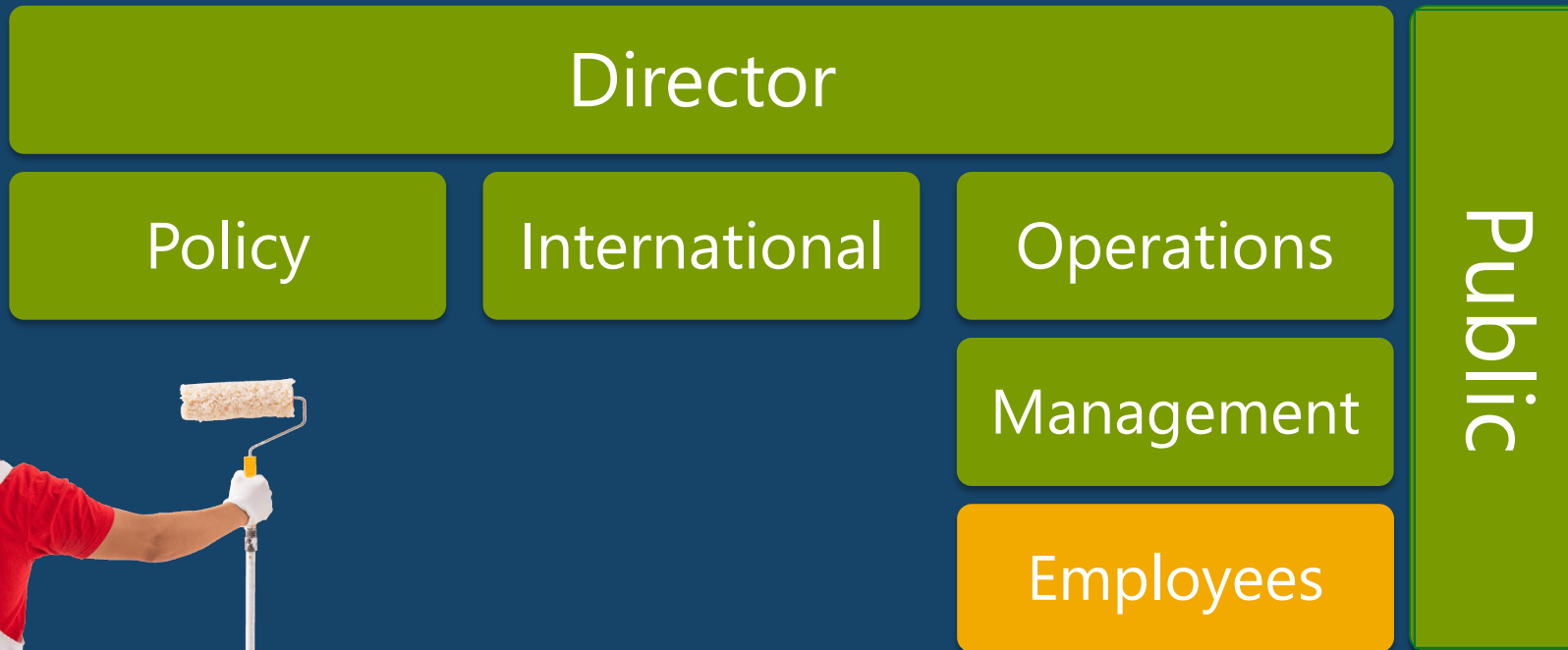
Discover AI-related patent resources and learn about cross-government goals shared by USPTO with other federal entities.



<https://www.uspto.gov/initiatives/artificial-intelligence>


# Melting the middle

Lesson #3: Innovation injections work





# Chapter four – The future

 **Aim for the moon.  
If you miss, you may hit a star.**

**W. Clement Stone**

uspto

# Chapter four – The future

“Good entrepreneurs don’t set out to disrupt”, Harvard Business Review, May 8, 2020

Jim McKelvey

The focus of the entrepreneur is on the horizon beyond the wall. If we glance at the system, it is neither to copy it nor to destroy it, but simply to see how much more can be done.

“Getting AI to Scale”, Harvard Business Review, May-June 2021  
Tim Fountaine / Brian McCarthy / Tamim Saleh

To capture the full promise of AI, however, companies must reimagine their business models and the way work gets done. They can’t just plug AI into an existing process to automate it or add insights.

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# Key lessons from the journey



1. Buy-in is never optional
2. Roadmaps will be fluid
3. Innovation injections work

<--- Your AI journey needs a platform to support change!

# Special thanks to travelers on the Journey

Ajay Kundaria  
Amanda Myers  
Chungchen Yen  
Darren Govoni  
Dominic Nguyen  
Don Cenkci  
Elaine Greene  
Gray Achiu  
Heather Hogue

Henok Mikre  
Jesse Frumkin  
Jill Leyden  
Jocelyn Ram  
Ketki Dhanesha  
Kiran Gunda  
Michelle Koeth  
Qiang (John) Lu  
Rob Harris

And many more!



# Thank you!

## Scott Beliveau

Chief of enterprise advanced analytics

Director of enterprise data architecture

Lead product owner for data and analytics

USPTO AI program lead

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571-272-7343

[www.uspto.gov](http://www.uspto.gov)