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**LEVELING UP:**  
5 LEVELS OF BUSINESS PROCESS  
MANAGEMENT AT THE U.S. PATENT AND  
TRADEMARK OFFICE

*Featuring Camunda*

SEPTEMBER 27, 2023

*Note: This Presentation Does Not Represent An Endorsement Of Camunda By USPTO*

## TEAM INTRODUCTIONS



**DAN  
RAGAN**

- 20 years of experience in digital solutions delivery and legacy system decommissioning
- Modernizes and automates mission-critical business processes for Federal and Commercial customers including USMC, VA, USPTO, and Dept. Of Ed.
- 13 years of Lean Scaled Agile leadership and program transformation



**HOLLY  
GILES**

- 20 years of experience in business analysis, both technical and operational
- Lead process analyst in multiple modernization and automation efforts for government clients including VA and USPTO
- Expertise in process modeling, decision modeling, and process streamlining / improvement



**MATT  
PRICE**

- 17 years of experience in software development with almost half utilizing BPM tooling
- Lead Developer at USPTO modernizing legacy systems for the Trademark Exam products
- Remembers the day when BizFlow was the latest and greatest



**JON  
BECKER**

- 12 years of experience in developing large enterprise systems, software modernization and digital transformations
- Technical Lead for the USPTO TRAM Decommissioning efforts for the Trademark Trial and Appeal Board and Trademark International Products
- Expertise in Agile methodologies for rapid development and rapid delivery

## 5 LEVELS OF BPM AT USPTO

**LEVEL 1** = Business Process Model and Notation (As-Is Business Process Analysis)

**LEVEL 2** = Decision Model and Notation (TRAM COBOL Translation)

**LEVEL 3** = Batch Orchestration (TRAM Batch Replacement Demo)

**LEVEL 4** = BPMS Migration (BizFlow to Camunda Migration w/ Strangler Fig Pattern)

**LEVEL 5** = Modernized, Orchestrated End-to-End Workflow (To-Be Business Process Analysis)

	
<b>Word Mark</b>	CAMUNDA
<b>Translations</b>	The wording "CAMUNDA" has no meaning in a foreign language.
<b>Goods and Services</b>	IC 009. US 021 023 026 036 038. G & S: (Based on Use in Commerce and Based on 44(e)) Computer software for use in business process management and workflow automation; computer software for use in business process management and workflow automation that may be downloaded from a global computer network. FIRST USE: 20080318. FIRST USE IN COMMERCE: 20080318  IC 035. US 100 101 102. G & S: (Based on Use in Commerce) Assistance and advice regarding business organization and management, namely, assisting and advising on business process management and workflow automation; assistance to industrial or commercial enterprises in the running of their business, namely, assistance in business process management and workflow automation; business consultation services in the field of business process improvement and enterprise architecture design. FIRST USE: 20080318. FIRST USE IN COMMERCE: 20080318  IC 042. US 100 101. G & S: (Based on Use in Commerce) Software development in the field of business process management and workflow automation; technical consulting services in the field of business process management and workflow automation software; software development and product development consulting in the field of business process management and workflow automation; software as a service (SAAS) services featuring software for the field of business process management and workflow automation. FIRST USE: 20080318. FIRST USE IN COMMERCE: 20080318
<b>Standard Characters Claimed</b>	
<b>Mark Drawing Code</b>	(4) STANDARD CHARACTER MARK
<b>Serial Number</b>	86328706
<b>Filing Date</b>	July 3, 2014
<b>Current Basis</b>	1A;44E
<b>Original Filing Basis</b>	1A;44E
<b>Published for Opposition</b>	November 24, 2015
<b>Registration Number</b>	4897105
<b>Registration Date</b>	February 9, 2016
<b>Owner</b>	(REGISTRANT) camunda services GmbH gesellschaft mit beschränkter haftung (gmbh) FED REP GERMANY Zossener Straße 55-58 Berlin FED REP GERMANY 10961
<b>Attorney of Record</b>	David A. Copland
<b>Type of Mark</b>	TRADEMARK. SERVICE MARK
<b>Register</b>	PRINCIPAL
<b>Affidavit Text</b>	SECT 15. SECT 8 (6-YR).
<b>Live/Dead Indicator</b>	LIVE

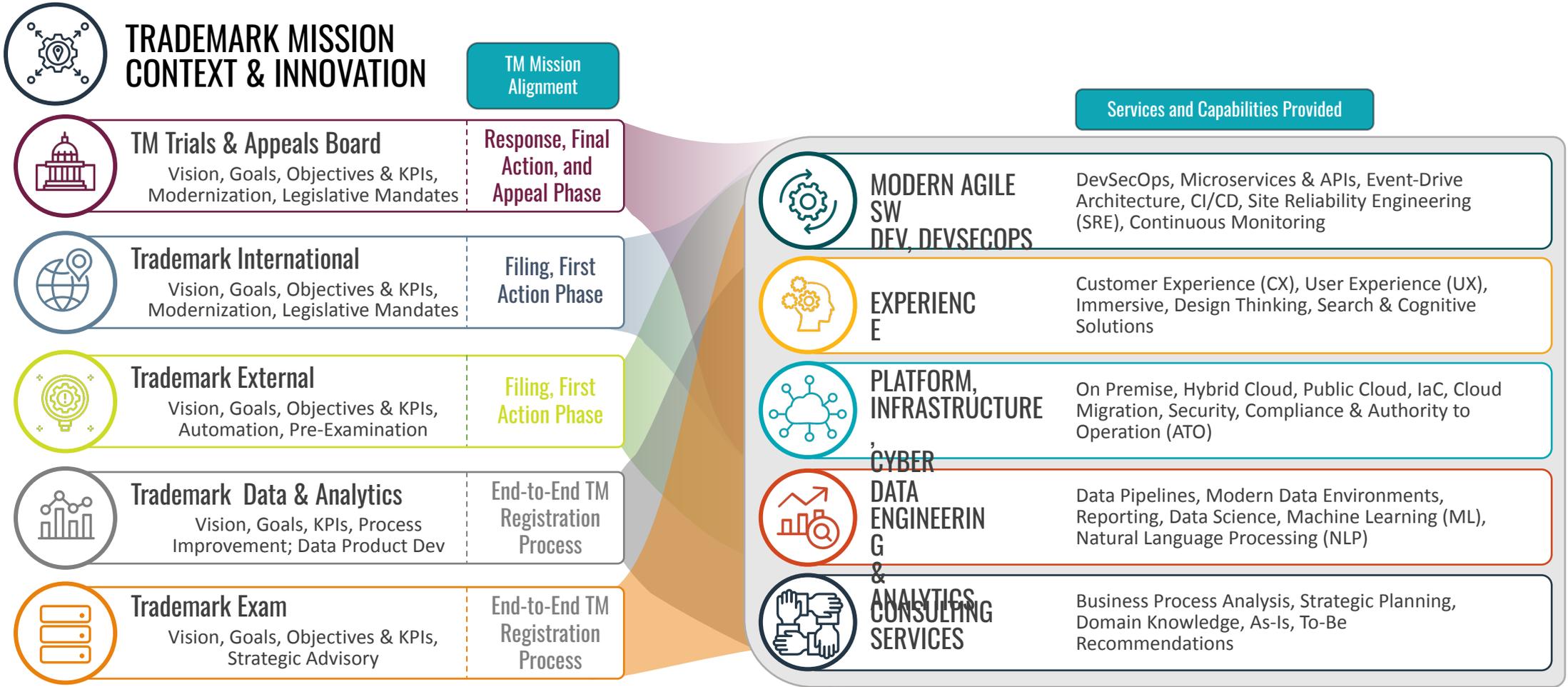
## WHAT IS A TRADEMARK?



<b>Goods and Services</b>	<p>IC 009. US 021 023 026 036 038. G &amp; S: Downloadable computer programs for data processing; Downloadable software for workflow visualization for business processes; Downloadable integrated software packages for visualization of business processes; Downloadable software for diagnostics and troubleshooting of business processes; Downloadable business process management software; Downloadable software for workflow visualization for business processes; Downloadable software for the analysis of business data; Downloadable big data management software; Downloadable on-premise management software for visualization of business data; Downloadable business workflow management system software</p> <p>IC 035. US 100 101 102. G &amp; S: Business data analysis services; business research services; business information services; Technical writing of business project studies for others; Project studies for businesses, namely, business process feasibility studies; Business consultancy and advisory services</p> <p>IC 042. US 100 101. G &amp; S: Software development, programming and implementation; IT consultancy, advisory and information services; Rental and maintenance of computer software; IT project management; Computer project management in the field of electronic data processing (EDP); Maintenance and updating of computer software; Advice and development services relating to computer software; Computer software consultancy; Conducting technical project feasibility studies in the field of software design; IT consulting services; Information technology consultancy</p>
<b>Mark Drawing Code</b>	(2) DESIGN ONLY
<b>Design Search Code</b>	15.07.01 - Cog wheels ; Gears 26.09.21 - Squares that are completely or partially shaded
<b>Serial Number</b>	88306409
<b>Filing Date</b>	February 19, 2019
<b>Current Basis</b>	44E
<b>Original Filing Basis</b>	1B;44D
<b>Published for Opposition</b>	December 24, 2019
<b>Registration Number</b>	6040037
<b>Registration Date</b>	April 28, 2020
<b>Owner</b>	(REGISTRANT) Camunda Services GmbH gesellschaft mit beschränkter haftung (gmbh) FED REP GERMANY Zossener Strasse 55-58 Berlin FED REP GERMANY 10961
<b>Attorney of Record</b>	David A. Copland
<b>Priority Date</b>	January 12, 2019
<b>Description of Mark</b>	The color(s) red is/are claimed as a feature of the mark. The mark consists of a square figure in the color red with rounded corners featuring stylized incomplete cog wheels positioned inside the figure at the bottom left and top right corners. The color white represents background, outlining, shading and/or transparent area and is not part of the mark.
<b>Type of Mark</b>	TRADEMARK. SERVICE MARK
<b>Register</b>	PRINCIPAL
<b>Live/Dead Indicator</b>	LIVE

# U.S. PATENT AND TRADEMARK OFFICE TRADEMARK PRODUCT LINE (TMPL)

## OUR PRESENCE SUPPORTING NEW WAYS OF WORKING



# LEVEL 1 BPMN AS-IS ANALYSIS

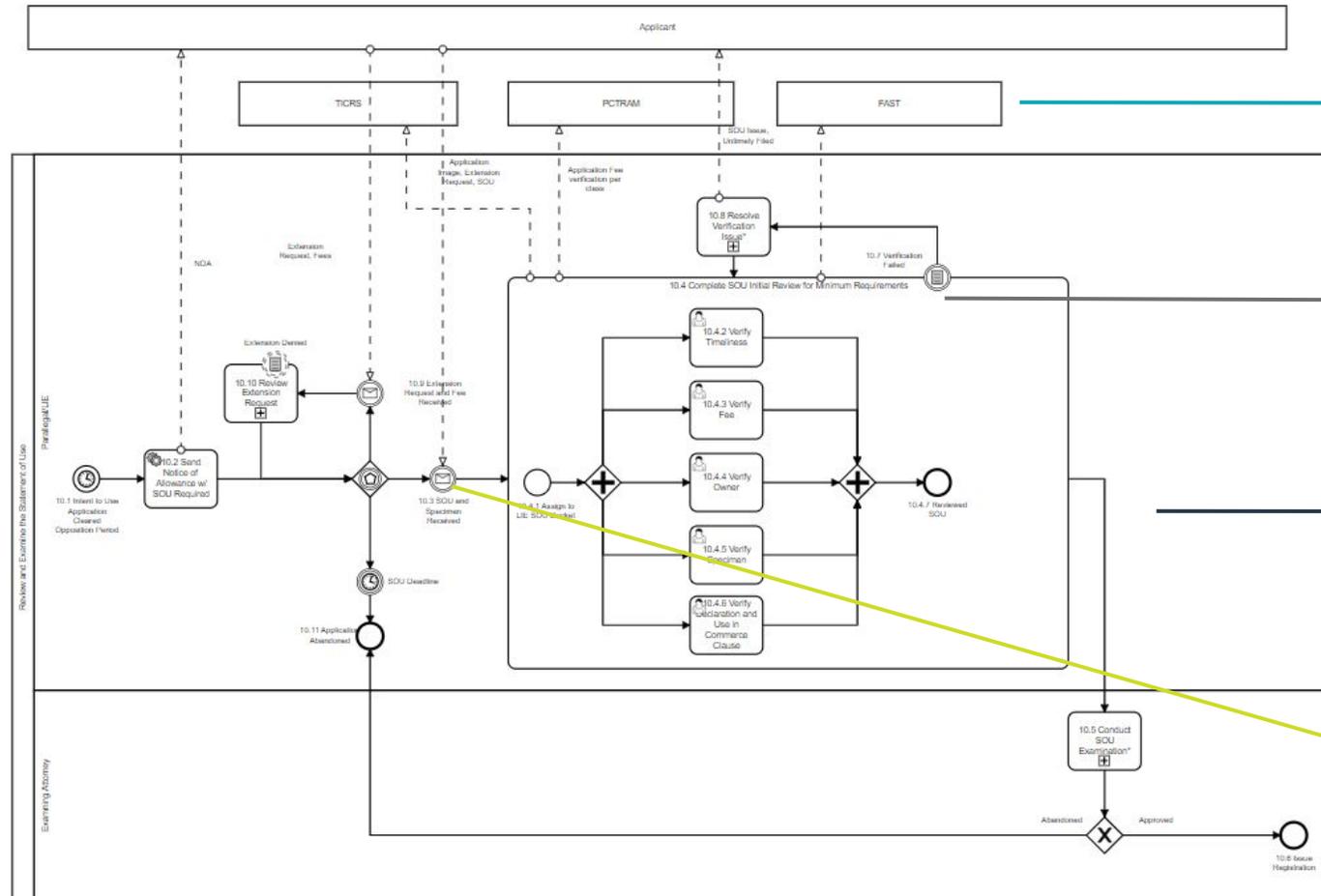
## SKILLS NEEDED:

### Business Analysis

- Stakeholder Interviewing
- Research and Document Mining

### Business Process Modeling

- BPMN Modeling
- Model Validation



**ONE JOB, MULTIPLE SYSTEMS**  
Minimum of three systems to assign work, view images, verify/approve data

**VISUAL USER VALIDATION**  
Manual verification of data that is objectively correct or incorrect

**MANUAL WORK PROCESSING**  
User-driven application status updates due to lack of system integration and applicant self-service

**MANUAL WORK ASSIGNMENT**  
User-based pull system based on batch timing triggers

## LEVEL 2

### DMN ANALYSIS TO SUPPORT MAINFRAME RETIREMENT

#### SKILLS NEEDED:

##### Business Analysis

- Stakeholder Interviewing
- Document Research and Mining
- Requirements Analysis
- Rule Verification

##### Reverse Engineering

- Code Analysis

##### Business Rules Modeling

- DMN Modeling
- FEEL, JUEL, Groovy, etc.
- Rule Validation
- Test Execution

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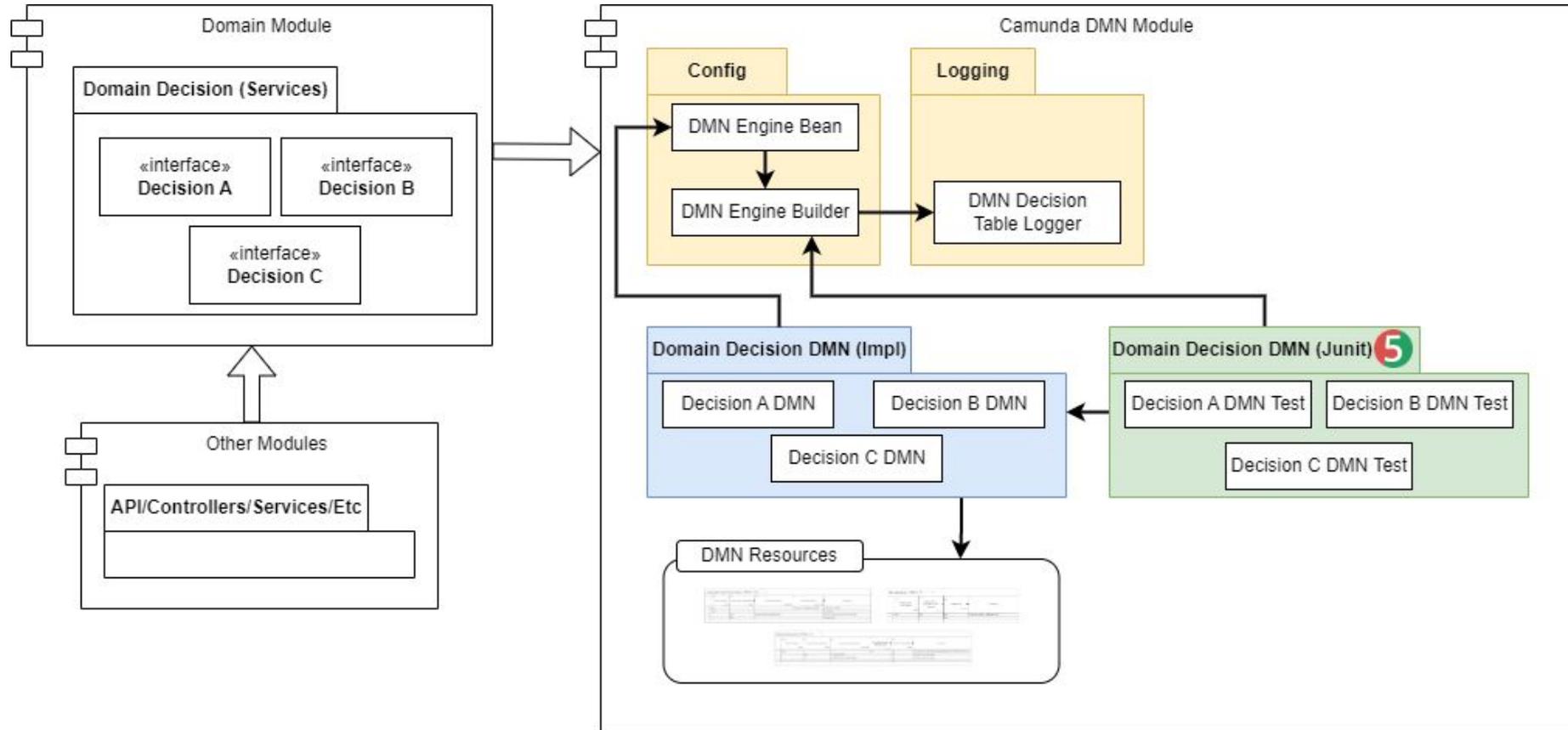
MOVE WS-IN-DATE          TO TRANSACTION-DATE.
IF IU-RECORD-FOUND
  MOVE IU-DT-NOA          TO FREEZE-END-DT
ELSE
  MOVE 0                  TO FREEZE-END-DT.
MOVE SPACE               TO CM-FOUND-SW.
SET CM-SET2              TO BEGINNING
  ON EXCEPTION
    DISPLAY "FATAL EXCEPTION ON SET OF CM TO BEGINNING!!!!!"
    DISPLAY "CATEGORY: " DMSTATUS(DMCATEGORY)
    DISPLAY "TYPE: " DMSTATUS(DMERRORTYPE)
    PERFORM STANDARD-EXCEPTIONS.
PERFORM FIND-CM-APPROVAL-FOR-PUB UNTIL CM-FOUND OR
CM-NOT-FOUND.
IF CM-FOUND
  MOVE CM-ENT-DT          TO FREEZE-BEG-DT
ELSE
  MOVE ZERO               TO FREEZE-BEG-DT.

IF IU-RECORD-FOUND AND
CM-NOT-FOUND
  MOVE "YES"              TO EDIT-ERROR-SW
  STRING "NOA DT PRESENT BUT CANT FIND APP FOR PUB DATE, "
        "CONTACT OIS, STOP WORK" DELIMITED BY SIZE
  INTO HOLD-ERROR-MESSAGE
  GO TO EDIT-TRANSACTION-DATE-EXIT
ELSE
IF IU-RECORD-FOUND AND
TRANSACTION-DATE > FREEZE-BEG-DT AND
TRANSACTION-DATE < FREEZE-END-DT
  MOVE "YES"              TO TRANS-DT-FREEZE-SW
  MOVE "TRANSACTION DATE IS WITHIN THE FREEZE PERIOD!!!!!"
        TO HOLD-ERROR-MESSAGE
  GO TO EDIT-TRANSACTION-DATE-EXIT
ELSE
IF AM-FLG-DSPL AND
(NOT IU-RECORD-FOUND)
  MOVE "YES"              TO TRANS-DT-FREEZE-SW
  MOVE "THIS CASE IS CURRENTLY IN THE FREEZE PERIOD"
        TO HOLD-ERROR-MESSAGE
  GO TO EDIT-TRANSACTION-DATE-EXIT.

```

## LEVEL 2

### DMN CREATION FROM LEGACY COBOL VALIDATION RULES – DECISIONS AS A SERVICE



## LEVEL 2

### DMN CREATION FROM LEGACY COBOL VALIDATION RULES – EXAMPLE DMN

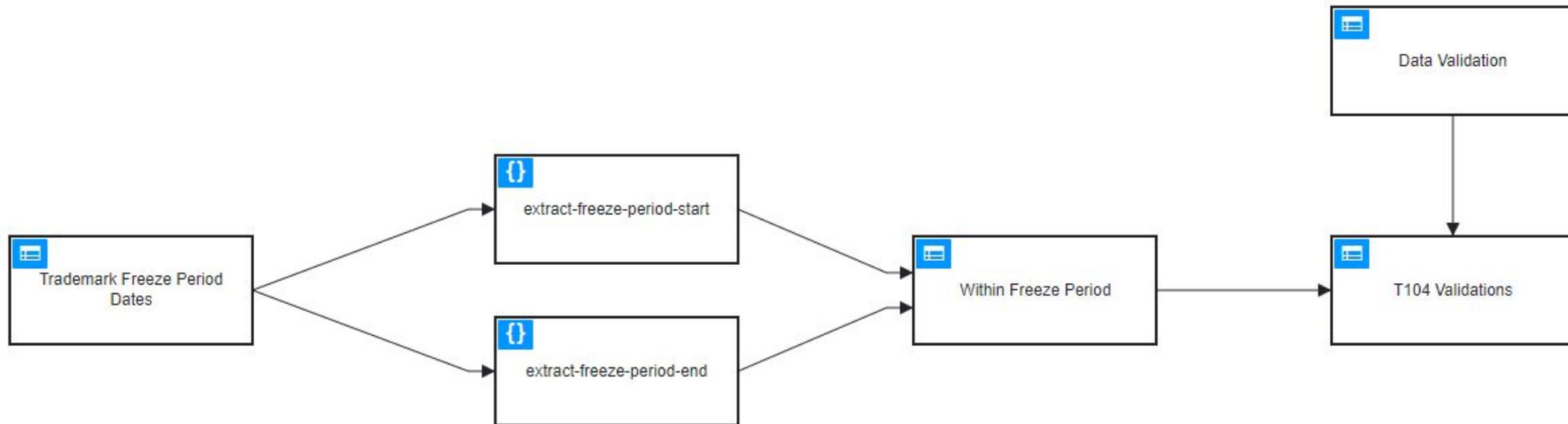
Trademark Freeze Period Dates   Hit Policy: <input type="button" value="Collect"/>					
	When	And	Then	And	
	IU Record Exists <small>boolean</small>	Approved for Publication <b>+</b> <small>boolean</small>	Freeze Period Start <small>custom-date</small>	Freeze Period End <b>+</b> <small>custom-date</small>	Annotations
1	true	-		trademark.noticeOfAllowanceDate	Notice of Allowance Date
2	false	-			No Freeze Period End Date
3	-	true	approvedForPublicationEvent.date		Prosecution History Event for Approval for Publication
4	-	false			No Freeze Period Begin Date
<b>+</b>	-	-			

Within Freeze Period   Hit Policy: <input type="button" value="First"/>						
	When	And	And	And	Then	
	IU Record Exists <small>boolean</small>	Freeze Period End Exists <small>boolean</small>	Currently in Freeze Period? <small>custom-date</small>	Examining Attorney Disposal Count <b>+</b> <small>boolean</small>	Within Freeze Period <b>+</b> <small>boolean</small>	Annotations
1	false	-	-	true	true	Examining Attorney Disposal Count
2	-	false	>= freezePeriodStart	-	true	After Start of the Freeze Period with no End
3	-	true	[freezePeriodStart..freezePeriodEnd]	-	true	Within the Freeze Period
4	-	-	-	-	false	
<b>+</b>	-	-				

## LEVEL 2

### DMN CREATION FROM LEGACY COBOL VALIDATION RULES – EXAMPLE DMN

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# LEVEL 2

## DMN CREATION FROM LEGACY COBOL VALIDATION RULES – EXAMPLE DMN

T104 Validations											
Hit Policy: <input type="text" value="First"/>											
	When	And	And	And	And	And	And	And	And	And	Then
	Invalid Data	Trademark Status	Assigned Employee Numbers	Check Law Office Director (Disabled)	Amendment To Use Date	Approved for Publication	Within Freeze Period	IU Record Exists	Already Filed?	Error	Annotations
	boolean	integer	list	string	custom-date	boolean	boolean	boolean	boolean	string	
1	true	-	-	-	-	-	-	-	-	"Invalid Data Encountered"	
2	-	-	-	-	-	-	-	true	-	"12. 05006 IU RECORD IS ALREADY PRESENT, NO AMENDMENT PROCESSING WILL BE ALLOWED!"	
3	-	[500..510]	-	-	-	-	-	-	-	"6. 00500 APPLICATION IS IN A SUSPENDED STATUS"	Inviad statuses [AM-STAT]caseStatusCode]
4	-	688, 616	-	-	-	-	-	-	-	"Invalid status"	688 NOTICE OF ALLOWANCE - ISSUED REVIVED - AWAITING FURTHER ACTION This is different from 6104 616
5	-	[718-722], 724, 725, [730..734]	-	-	-	-	-	-	-	"Invalid status"	718 REQUEST FOR FIRST EXTENSION - FILED 719 REQUEST FOR SECOND EXTENSION - FILED 720 REQUEST FOR THIRD EXTENSION - FILED 721 REQUEST FOR FOURTH EXTENSION - FILED 722 REQUEST FOR FIFTH EXTENSION - FILED 724 EXTENSION REQUEST REFUSAL - COUNTED 725 EXTENSION REQUEST REFUSAL - MAILED 730 FIRST EXTENSION - GRANTED 731 SECOND EXTENSION - GRANTED 732 THIRD EXTENSION - GRANTED 733 FOURTH EXTENSION - GRANTED 734 FIFTH EXTENSION - GRANTED
6	-	-	not(list contains(?,"98999"), list contains(?,"98998"), list contains(?,"88888"), list contains(?,"88889"))	not("A","B","C")	-	-	-	-	-	"13. 00013 INPUT EXAMINER NUMBER INVALID, NOT FOUND IN TRAM DATABASE 14. 00020 EXAMINER LAW OFFICE NOT FOUND IN TRAM DATABASE 15. 00021 DIRECTOR FOR EXAMINER'S LAW OFFICE NOT 'A' OR 'B'"	Can't find new field names for Director of LO. May not need: Code looks like it looks for D also PERFORM 040-LOOK-LAW  There are various new values for CM_END_DT so not sure

# LEVEL 2

## DMN CREATION FROM LEGACY COBOL VALIDATION RULES – EXAMPLE DMN

T104 Validations   HIT Policy: First			And	And	And	And	And	Then
When	Invalid Data	And	Amendment To Use Date	Approved for Publication	Within Freeze Period	IU Record Exists	Already Filed?	Error
	boolean	Trademark St	custom-date	boolean	boolean	boolean	boolean	string
1	true	-						EXAMINER NUMBER INVALID, NOT FOUND IN TRAM DATABASE 14. 00020 EXAMINER LAW OFFICE NOT FOUND IN TRAM DATABASE 15. 00021 DIRECTOR FOR EXAMINER'S LAW OFFICE NOT 'A' OR 'B'"
2	-	-						
3	-	[500..510]						
4	-	688, 616						
5	-	[718-722], 724, 725, [730	< date and time("1989-11-16T10:31:10@UTC")					"16. INVALID TRANSACTION DATE"
			> now()					"17. TRANSACTION DATE CAN NOT BE GREATER THAN TODAY'S DATE"
			< trademark.filingDate					"19. TRANSACTION DATE CAN NOT BE LESS THAN FILING DATE"
6	-	-			true			"18. THIS CASE IS CURRENTLY IN THE FREEZE PERIOD or 23. TRANS DATE IS IN FREEZE PERIOD, CAN NOT PROCESS THIS TRANSACTION"
							true	"26. AU HAS ALREADY BEEN FILED, TRANSACTION CAN'T BE REPEATED"

## LEVEL 2.5

### BPMN/DMN ANALYSIS W/DATA ANALYSIS

#### SKILLS NEEDED:

##### Business Analysis

- Customer Interviewing
- Research and Document Mining
- Requirements Analysis
- Rule Verification

##### Reverse Engineering

- Code Analysis

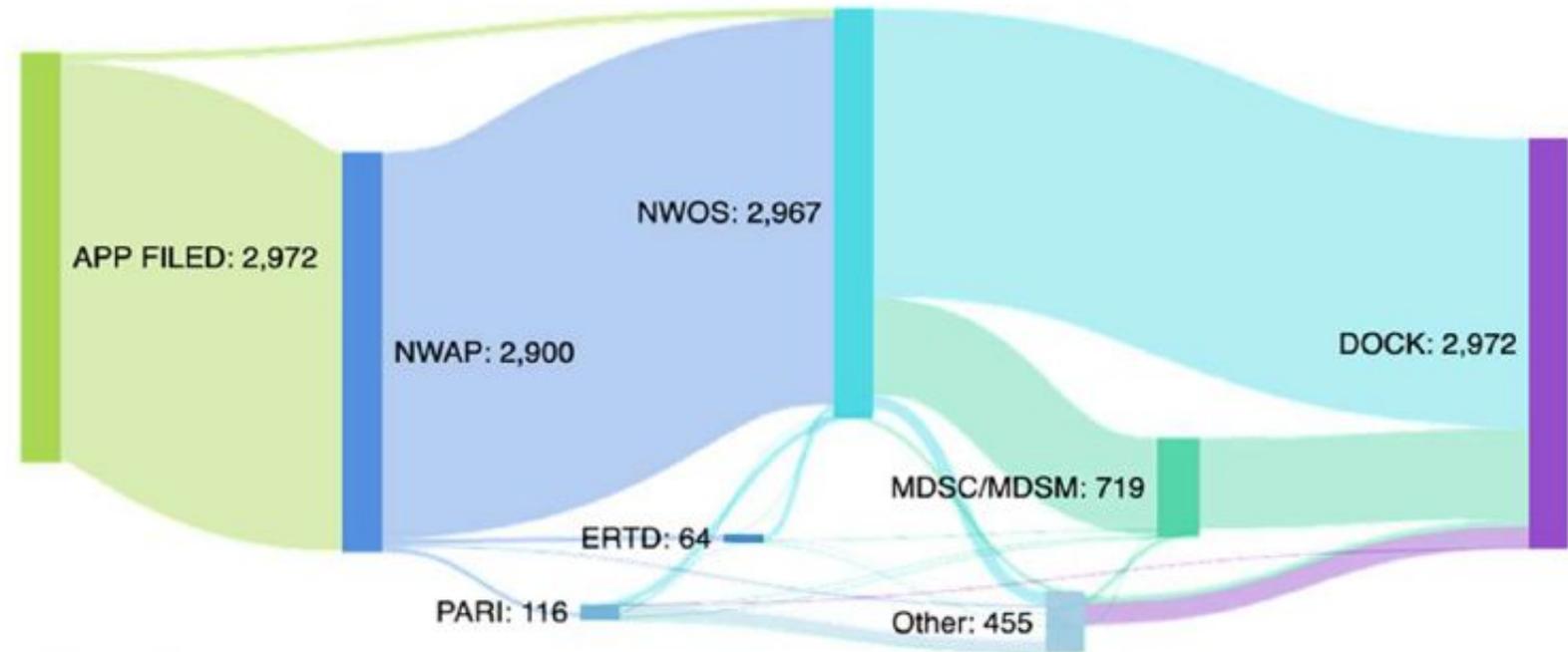
##### Business Process Modeling

- BPMN Modeling
- Model Validation

##### Business Rules Modeling

- DMN Modeling
- FEEL, JUEL, Groovy, etc.
- Rule Validation
- Test Execution
- Data Analysis/Data Science

#### Filing to Docket (Pre-Examination) Prosecution Events



**EVENT DICTIONARY** NWAP-New application entered in TRAM | NWOS-New application office supplied data entered in TRAM | DOCK-Assigned to examiner | MDSM/MDSC-Notice of Design Search Code e-mailed | PARI-TEAS voluntary amendment received | ERTD-TEAS request to divide received

## LEVEL 3

### MODERNIZED BATCH PROCESSING

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#### SKILLS NEEDED:

##### Business Analysis

- Customer Interviewing
- Research and Document Mining
- Requirements Analysis
- Rule Verification

##### Reverse Engineering

- Code Analysis

##### Business Process Modeling

- BPMN Modeling
- Model Validation

##### Business Rules Modeling

- DMN Modeling
- FEEL, JUEL, Groovy, etc.
- Rule Validation
- Test Execution

##### Solution Architecture

- Development, Integration, Glue Code

##### Business Process

##### Improvement/ Optimization

DEMO TIME!

# LEVEL 4 BPMS MIGRATION

## SKILLS NEEDED:

### Business Analysis

- Customer Interviewing
- Research and Document Mining
- Requirements Analysis
- Rule Verification

### Reverse Engineering

- Code Analysis

### Business Process Modeling

- BPMN Modeling
- Model Validation

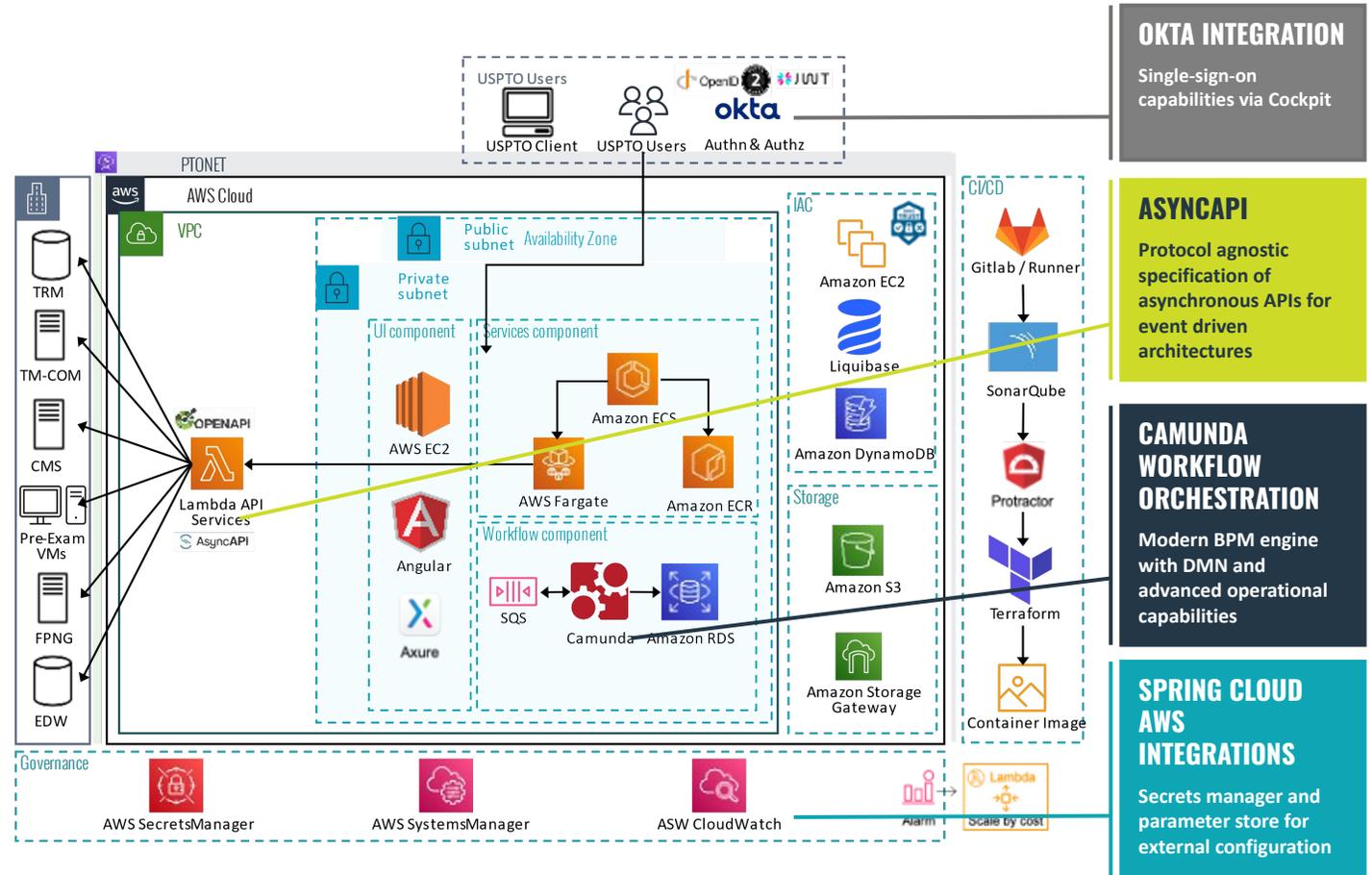
### Business Rules Modeling

- DMN Modeling
- FEEL, JUEL, Groovy, etc.
- Rule Validation
- Test Execution

### Solution Architecture

- Decommissioning Patterns (e.g., *strangler fig*)
- Development, Integration and Glue Code
- Microservice Orchestration

### Business Process Improvement/ Optimization



# LEVEL 5 WORKFLOW MODERNIZATION AND AUTOMATION

## SKILLS NEEDED:

### Business Analysis

- Customer Interviewing
- Research and Document Mining
- Requirements Analysis
- Rule Verification

### Reverse Engineering

- Code Analysis

### Business Process Modeling

- BPMN Modeling
- Model Validation

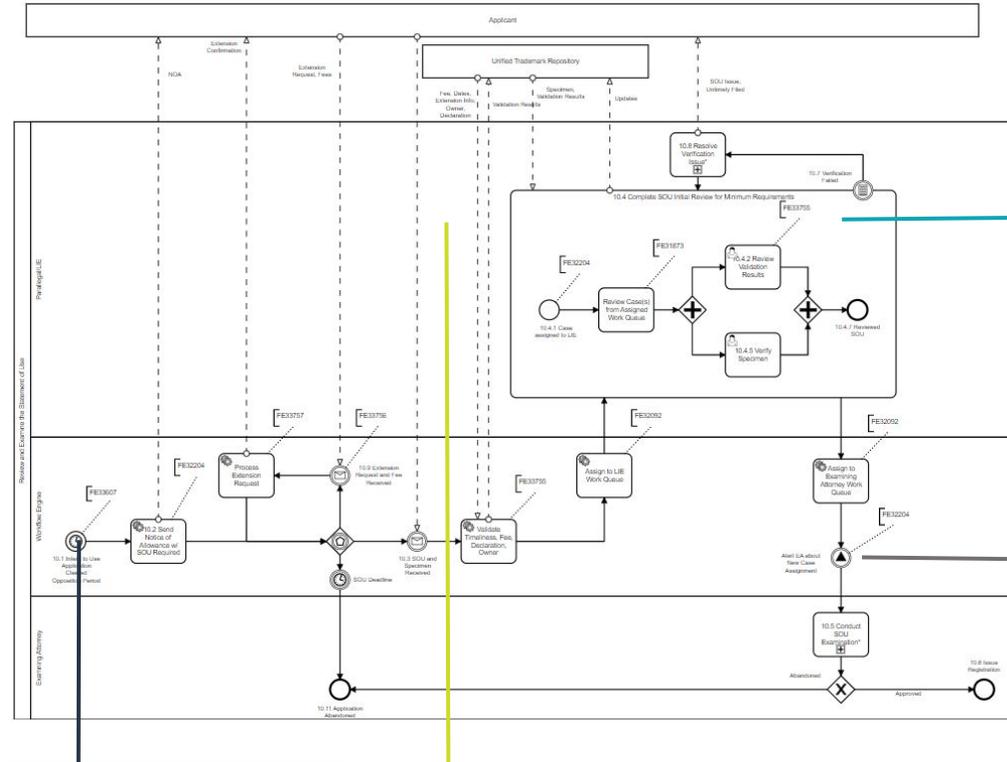
### Business Rules Modeling

- DMN Modeling
- FEEL, JUEL, Groovy, etc.
- Rule Validation
- Test Execution

### Solution Architecture

- Decommissioning Patterns
- Development, Integration, Glue Code
- Assistive Technologies
- Modern Automation Solutions (e.g., AI, RPA, ML)

### Business Process Improvement/ Optimization



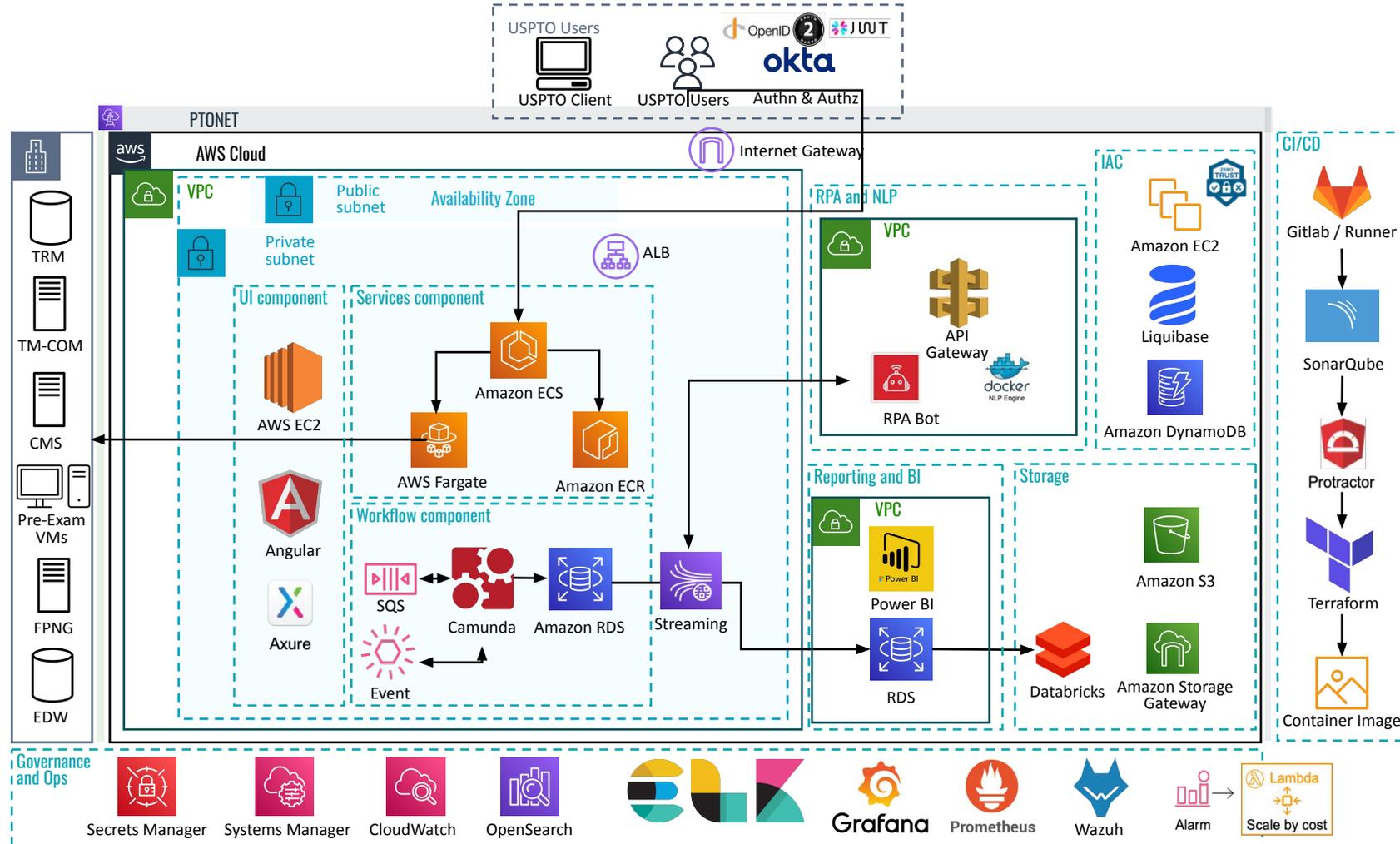
**PROCESS EVENT TRIGGERS**  
Workflow driven by application events, with configurable delays

**UNIFIED USER EXPERIENCE**  
One Job, One System to gather the required information and make the required updates

**ATTENDED AUTOMATION VALIDATION AND HUMAN JUDGEMENT**  
Tasking transition to validation of automated outcomes and knowledge worker expertise

**WORKFLOW ORCHESTRATION**  
An Automation Engine to manage system integrations, business rules, and business process, routing work automatically to the correct user

# FUTURE STATE TMPL MODERNIZATION REFERENCE ARCHITECTURE



# LEVEL 5

## MIGRATING TO CAMUNDA 8 AND ADOPTING ADDITIONAL CAPABILITIES

### WHY UPGRADE?

Scalability and Business Transaction Load Distribution Simulation and Visualization w/Play

Accelerated Delivery

Outbound Connectors

- Amazon EventBridge Service Connector
- Amazon SNS Outbound Connector
- Amazon SQS Connector
- AWS Lambda Connector
- Kafka Produce Connector
- Microsoft Teams Connector

Inbound Connectors

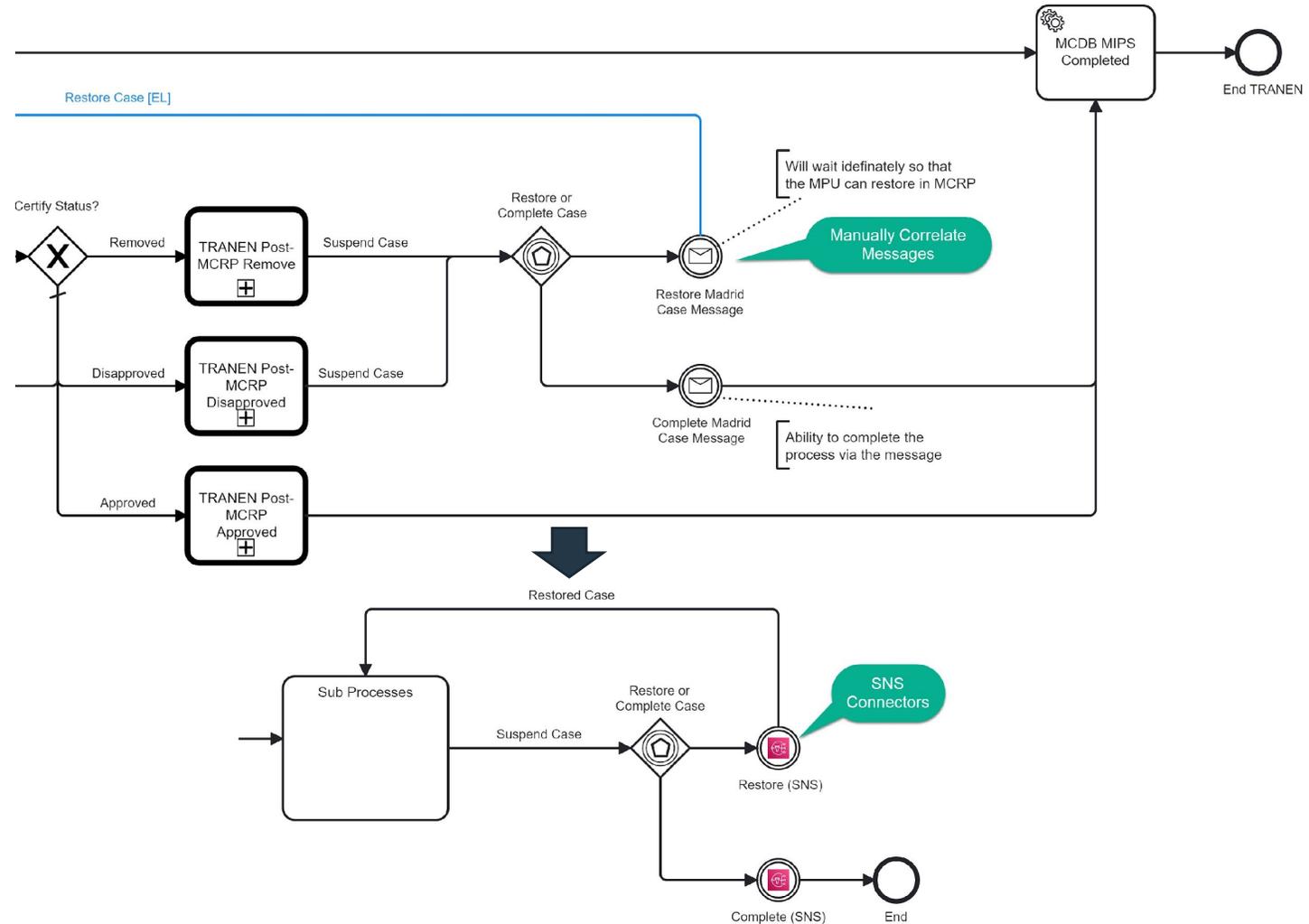
- Amazon EventBridge Webhook Connector
- Amazon SNS Inbound Connector
- Amazon SQS Connector
- Kafka Consumer Connector

Protocol Connectors

- REST Connector

Custom (?) Connectors

- Amazon S3 Connector
- Service Now Connector



QUESTIONS?

# THANK YOU!

MORE INFORMATION @:

[HTTPS://WWW.BOOZALLEN.COM/C/INSIGHT/THOUGHT-LEADERSHIP/PROCESS-AUTOMATION-H  
ELPS-VA-SERVE-VETERANS-FAMILIES.HTML](https://www.boozaallen.com/c/insight/thought-leadership/process-automation-helps-va-serve-veterans-families.html)