NIST
National Institute of Standards and Technology

UiPath™

Process Design Document (PDD)

Office of Acquisition & Agreement Management

Vendor Responsibility Determination Bot

Document History

Date	**Version**	**Role**	**Name**	**Organization (Dept.)**	**Function**	**Comments**
08.25.2021	1.0	Author	Shahzada Saeed	*OFRM*	*Business Analyst*	Created document v 1.0

Document Approval Flow

Version	**Flow**	**Role**	**Name**	**Organization (Dept.)**	**Signature and Date:**
X.0	**Document prepared by**	*Business Analyst*	Shahzada Saeed	*OFRM*	
X.0	**Document Approved by:**	*Process Business Owner*	Todd Hill	*OAAM*	

Table of Contents

I. Executive Summary 3

II. Introduction 4

II.1 Purpose of the document 4

II.2 Objectives 4

II.3 Process key contact 4

II.4 Minimum Pre-requisites for automation 5

III. As-Is process description 6

III.1 Process Overview 6

III.2. Applications used in the process 8

III.3 As-Is Process map 8

III.4 Detailed As-Is Process Steps 0

IV. To-Be Process Description 0

IV.1 To-Be Detailed Process Map 0

IV.2 To-Be Process Steps in detail 1

IV.3 Parallel Initiatives/ Overlap (if applicable) 2

III.4 In Scope of RPA 2

IV.5 Out of Scope of RPA 3

IV.6 Business Exceptions Handling 3

IV.7 Application Error and Exception Handling 4

IV.8 Reporting 5

V. Other Observations 5

VI. Additional sources of process documentation 6

VII. Target/Draft Timeline 6

VIII. APPENDIX A -Bot Process Map 7

I. Executive Summary

The following Process Design Document contains the As-Is and To-Be process definition for a Vendor Responsibility Determination process. The To-Be process applies Robotic Process Automation (RPA) technology to automate the Office of Acquisition & Agreement Management Vendor Responsibility Determination process.

At a high level the As-Is process includes:

- **Search Vendor on DUNS at SAM.GOV website**
- **Search Vendor on DUNS at FAPIIS.GOV website**
- **Search Vendor on DUNS at SBA.GOV website**

The current process takes on average 1 hour to complete per contract and is performed at least twice before award. AMD processes about 3,200 contracts per year, which accounts for over 6,400 hours per year. The To-Be process's use of RPA will save OAAM valuable time by processing up to 10 DUNS in each email sent to geobot@nist.gov , with each check taking only 5 minutes to complete. This is a time savings of 45 minutes per contract, or 2,400 per year. Given that NIST is expecting to receive [more money/large appropriation] in FY22, and thus an increase in contracts, this time savings will be crucial for NIST's ability to manage the increased workload.

II. Introduction

II.1 Purpose of the document

The Process Definition Document outlines the business process chosen for automation using UiPath Robotic Process Automation (RPA) technology.

Robotic Process Automation (RPA, or Bot) software link applications, eliminating keying errors, and speeding up processes. RPA bots can be run as "attended bots," which augment employees' capabilities and require a manual start to the RPA process and some management of the Bot. Also, they can be run as "unattended bots" which move data in or out of a system. Lastly, RPA can be scheduled and managed/monitored before/after the bot runs

The document describes the sequence of steps performed as part of the business process, the conditions, and rules of the process prior to automation and how they are envisioned to work after automating it. This specifications document serves as a base for developers, providing them with the details required for applying robotic process automation to the selected business process.

II.2 Objectives

The business objectives and benefits expected by the Business Process Owner after automation of the selected business process are:

- Reduce processing time per item by 80%
- Better Monitoring of the overall activity by using the logs provided by the Bot.

II.3 Process key contact

The specifications document includes concise and complete requirements of the business process and it is built based on the inputs provided by the process Subject Matter Expert (SME)/ Process Owner.

The Process Owner is expected to review it and provide signoff for accuracy and completion of the steps, context, impact, and a set of process exceptions. The details are to be included in the table below.

Role	Name	Contact details (email, phone number)	Notes
Process SME	Hing Wong (Billy)	hingpan.wong@nist.gov 301-975-6289	Point of contact for questions related to process details & exceptions

Process Reviewer	Hing Wong (Billy)	hingpan.wong@nist.gov 301-975-6289	Point of contact for questions related to process details & exceptions
Process Owner/Approver for Production	Todd Hill	todd.hill@nist.gov 301-975-8802	Escalations, Delays etc.
RPA Launch Team	Greg Eichelberger, Rich McKay, Tina Rieger, Christine Simms, Shahzad Saeed		

II.4 Minimum Pre-requisites for automation

- Signed Off on Process Design Document
- Test Data to support development
- User access and user accounts creations (licenses, permissions, restrictions to create accounts for robots)
- Credentials (user ID and password) required to logon to machines and applications
- Dependencies with other projects on the same environment – N/A currently

III. As-Is process description

III.1 Process Overview

General information about the process selected for RPA prior to automation.

#	Item	Description
1	Process full name	Vendor Responsibility Determination
2	Process Area	Procurement/Acquisitions
3	Department	NIST/OAAM/AMD
4	Process short description (operation, activity, outcome)	User navigates to https://sam.gov/content/home and signs in. They then click on Search and enter the DUNS number. If they get a result, they can click on it and then click Download to get the Entity information. User navigates to https://www.fapiis.gov/fapiis/#/home, enters DUNS number and clicks Search. User saves data to PDF file. User clicks on "View Corporate Relationships" link. User saves data to PDF file. User navigates to https://web.sba.gov/pro-net/search/dsp_dsbs.cfm, enters DUNS number and clicks Enter key. If any Vendors comes up, user selects vendor and then saves data to PDF file.
5	Role(s) required for performing the process	An account on sam.gov. Nothing else is necessary to access FAPIIS and SBA and do searches
6	Process schedule and frequency	Daily
7	# of items processed /reference period	For each user, under 10 per day
8	Average handling time per item	Five to seven minutes (estimated about 6-7k requests per year with an average of 2 -3 DUNS per request, 18-21k times processed in a year)
9	Process execution time	M-F 7:00AM through 8:00 PM
10	Peak period (s)	4th Quarter of each FY (July-Sep)
11	Transaction Volume During Peak period	40-60 per day (Estimate)
12	Total # of FTEs supporting this activity	50 (Estimate)

13	Expected increase of volume in the next reference period	There should be a decrease in volume during the first and second quarter of the FY.
14	Level of exception rate	Exceptions only when websites are down
15	Input data	DUNS Numbers
16	Output data	Screenshots of FAPIIS and SBA results, download from SAM.gov

III.2. Applications used in the process

The table includes a comprehensive list of all the applications that are used as part of the process to be automated to perform the given steps in the flow.

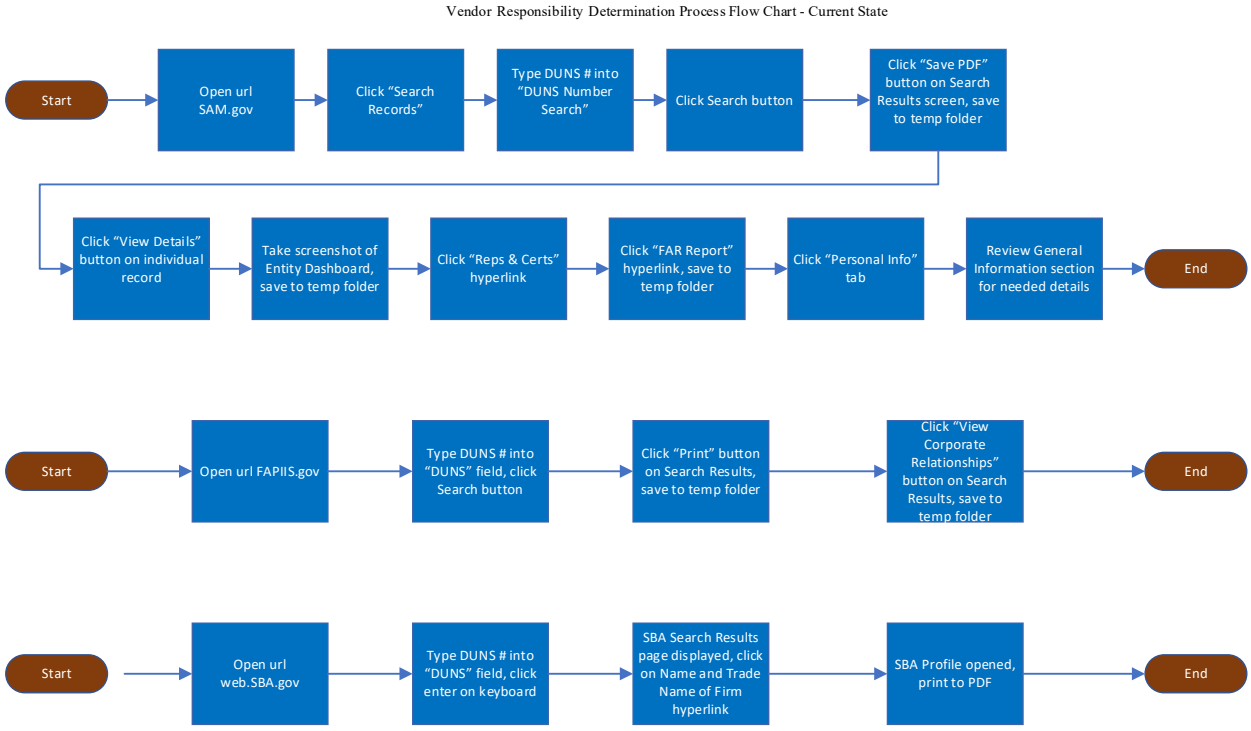
#	Application name & version	Type of Application	Environment/ Access method	Comments	As-Is or To-Be?
1	Outlook	Thick Client	Web Browser	Task management	Both
2	SAM.GOV	Web Application	Web Browser	Input and Output data	Both
3	FAPIIS.GOV	Web Application	Web Browser	Input and Output data	Both
4	SBA.GOV	Web Application	Web Browser	Input and Output data	Both
5	UiPath Assistant	UiPath Application	Windows (.net) Application	Software runs UiPath's Robotic Process Automation software	To-Be
6	Adobe	Windows	Windows Application	Read PDF file	Both

*Add more rows to the table to include the complete list of applications.

III.3 As-Is Process map

High Level As-Is Process Map:

This chapter depicts the As-Is business process at a High Level to enable developers to have a high-level understanding of the current process.

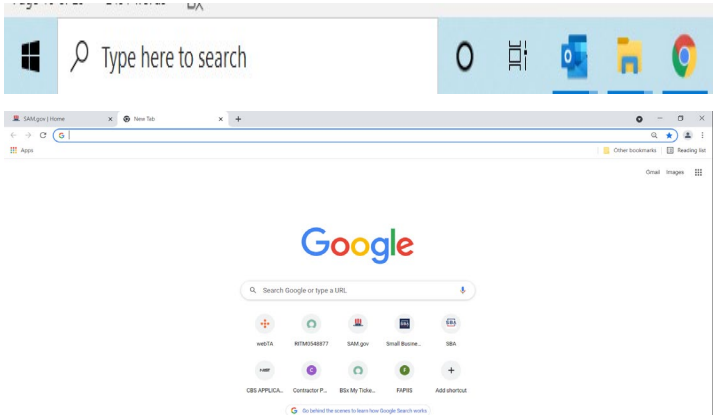


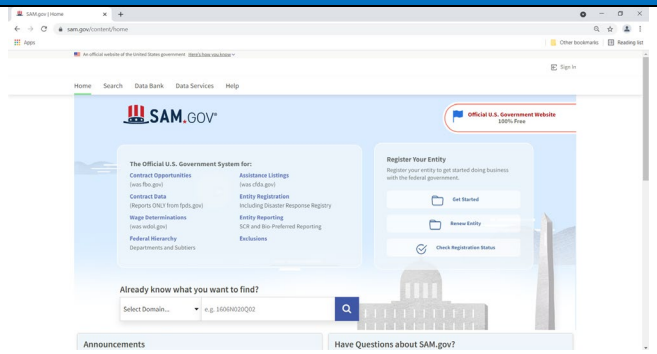
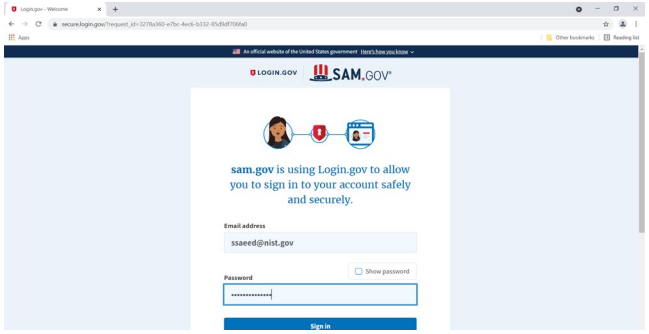
Legend: ***Blue****: Manual step performed by OAAM/AMD Group*

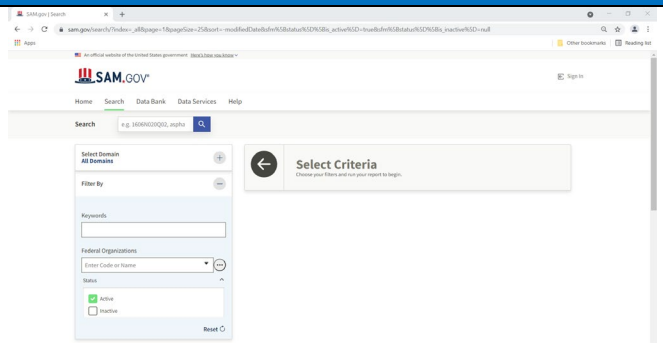
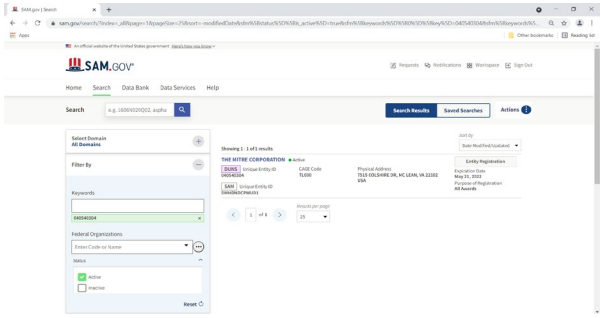
* Expecting UEI look-up in the future. *(Update by April 4, 2022)*

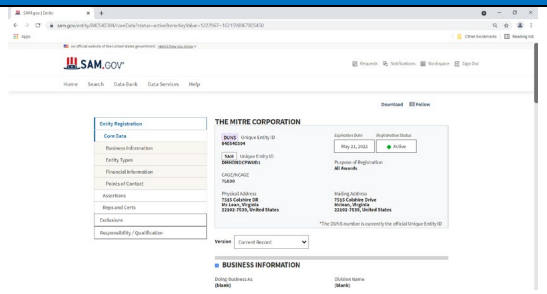
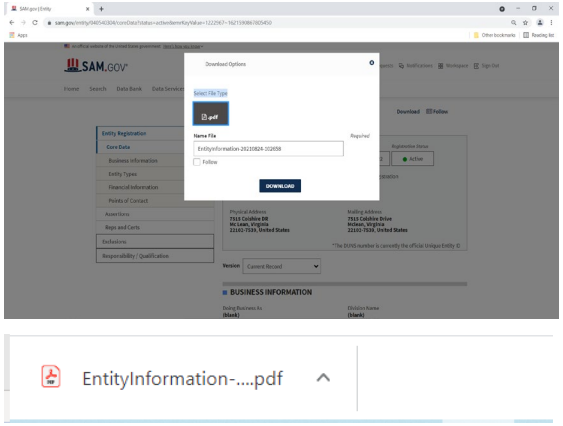
III.4 Detailed As-Is Process Steps

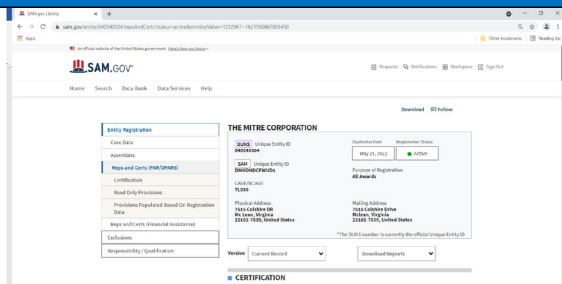
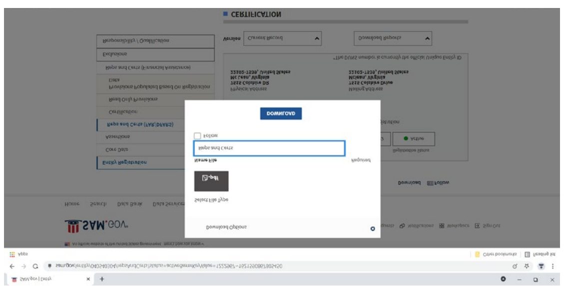
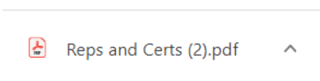
This chapter depicts the As-Is business process in detail to enable the Developer to build the automated process

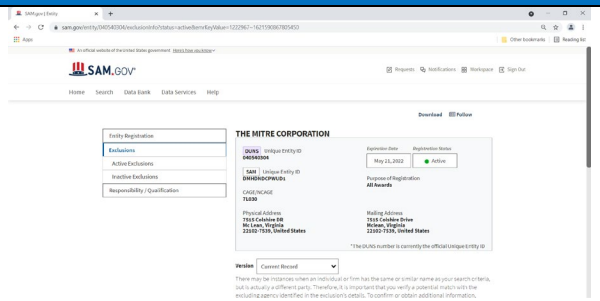
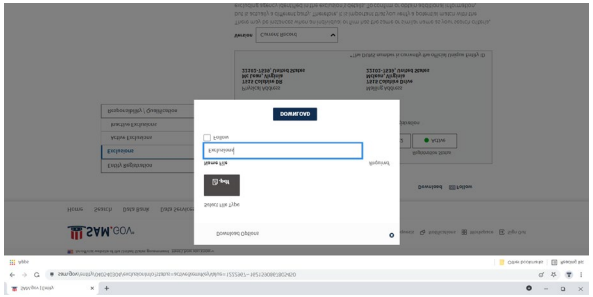
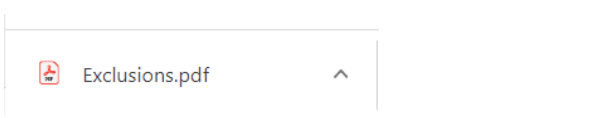
Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
1		Access google chrome from taskbar 				
2		User navigates to https://sam.gov/content/home and signs in.				

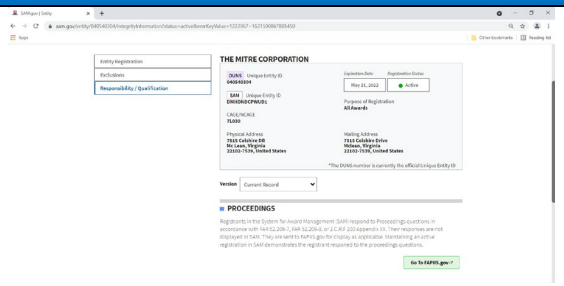
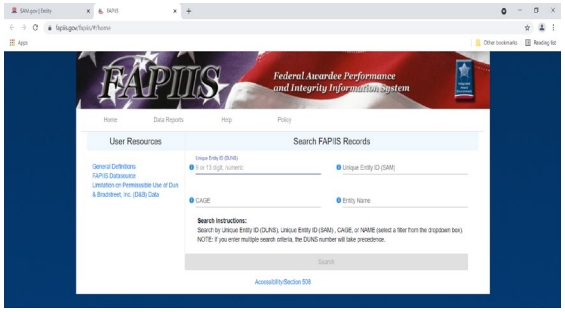
Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
		 				
3		Click on Search and enter the DUNS number				

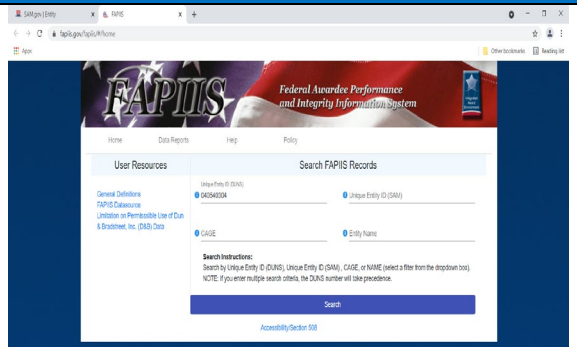
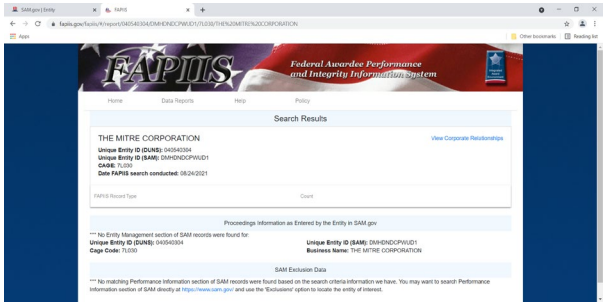
Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
						
4		Click on Vendor link 				

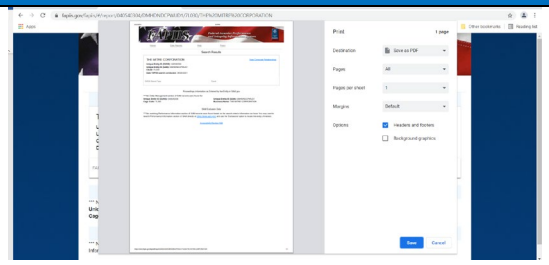
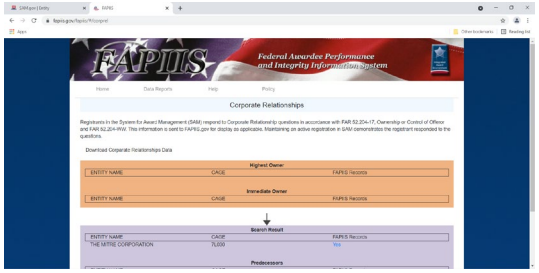
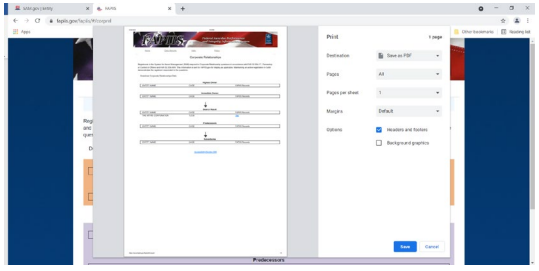
Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
						
5		Download and Save the Entity Information pdf  				
6		Access Reps and Certs (FAR/DFARS) Download and Save Reps and Certs				

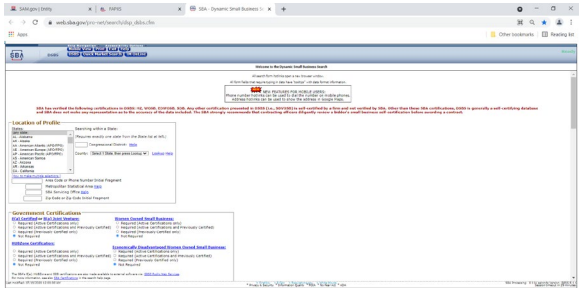
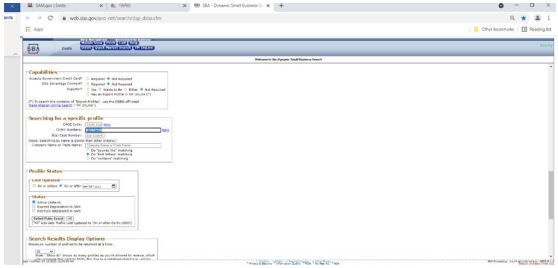
Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
		  				
7		Access Exclusions Download and Save				

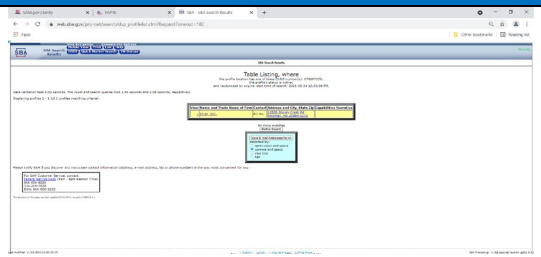
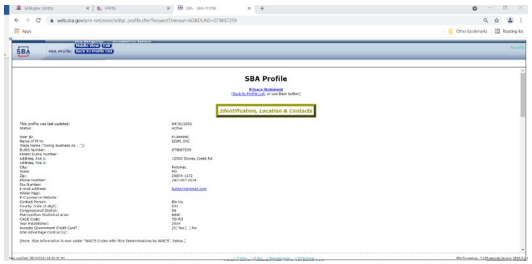
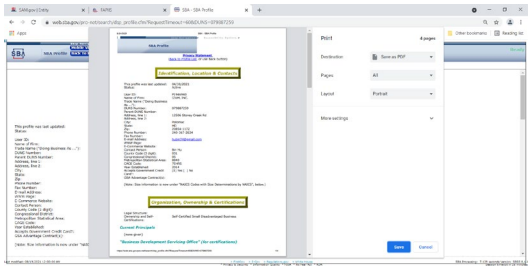
Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
		  				
8		Click on Go To FAPIIS.gov link below the page				

Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
						
9		Input DUNS and click on search 				

Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
						
10		Click on Print and Save data to pdf 				

Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
						
11		Click on Corporate Relationship link Ctrl +P and save data to pdf  				

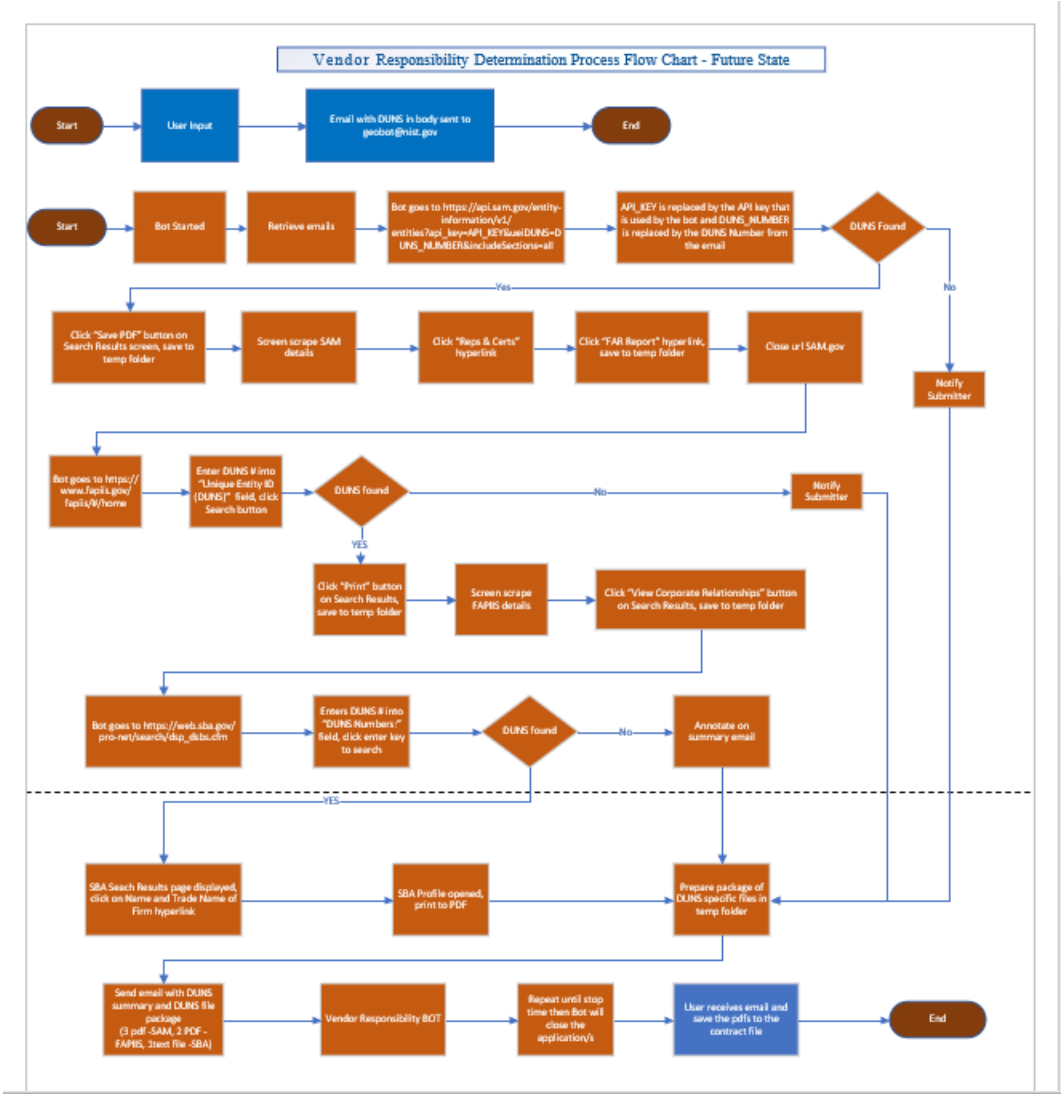
Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
12		Access https://web.sba.gov/pro-net/search/dsp_dsbs.cfm 				
13		Enters DUNS number and click on 'Search Using These Criteria' 				
14		Select vendor and then save data to PDF file				

Detailed As-Is Process Steps						
Step	**Input**	**Description**	**Details (Screen/ Document/ Video recording Index)**	**Exception Handling**	**Possible Actions**	**Business Rules Library Index**
		   				
15		Close browser				

IV. To-Be Process Description

This chapter highlights the expected design of the business process after automation.

IV.1 To-Be Detailed Process Map



Legend: ***Blue****: Manual step performed by OAAM/AMD Group,* ***Rust****: Automated by the Bot*

IV.2 To-Be Process Steps in detail

1. The bot will pull all unread emails from the geobot@nist.gov Outlook account.
2. Emails should have DUNS numbers listed and separated by semicolons if there is more than one, to a maximum of 10 DUNS numbers. It will process one DUNS number at a time.
3. Bot opens Chrome.
4. Bot goes to https://api.sam.gov/entity-information/v1/entities?api_key=API_KEY&ueiDUNS=DUNS_NUMBER&includeSections=all where API_KEY is replaced by the API key that is used by the bot and DUNS_NUMBER is replaced by the DUNS Number from the email. (API KEY will change every 90 days)
5. Bot saves these results – it is basically a text file.
6. The bot uses a template (SAM.gov_CoreData_template.docx) and populates that template with the text file that was produced in Step 5. It then saves the updated template to return to the user and save as pdf.
7. The bot goes to https://api.sam.gov/SAM/file-download?api_key=API_KEY&pdfType=1&ueiDUNS=DUNS_NUMBER where API_KEY is replaced by the API key that is used by the bot and DUNS_NUMBER is replaced by the DUNS Number from the email.
8. Bot saves these results, which is the FAR Report in pdf.
9. Bot goes to https://www.fapiis.gov/fapiis/#/home. It enters the DUNS number in the field labelled "Unique Entity ID (DUNS)" and hits the Enter key to search.
10. When the data is pulled up, the bot uses the hot key Ctrl-P to print with the Destination set to "Save as PDF" and clicks the Save button.
11. Now the bot is back on that FAPIIS screen, and it clicks the "View Corporate Relationships" link.
12. When the data is pulled up, the bot uses the hot key Ctrl-P to print with the Destination set to "Save as PDF" and clicks the Save button.
13. Bot goes to https://web.sba.gov/pro-net/search/dsp_dsbs.cfm. It enters the DUNS number in the field labelled "DUNS Numbers:" and hits the Enter key to search.
14. If there is an SBA record, the bot will double-click on the firm name and print the results to a PDF using hot key Ctrl-P and printing with Destination set to "Save as PDF".
15. Send Email to the users with 5 pdf's (3 -SAM, 2 -FAPIIS) and 1 text file (SBA) with DUNS summary in the body of email
16. Repeat until stop time then Bot will close the application/s.
17. User will save the electric contract file/s

*Mention below if process improvements were performed on the To-Be design and provide details.

	Description
	With the To-Be process, the OAAM/AMD Group is no longer required to access each site manually to get results and save them manually. The Bot Output Report/s (5pdf's and 1text) will capture all the DUNS processed with DUNS summary in the body of email and the corresponding status of Success or Failure to denote the state of the DUNS processed. OAAM/AMD will send emails to a functional account email queue ("geobot@nist.gov)

	• AMD sends one email with up to 5 DUNS number Bot: BSx will be required manually start the Bot. If session times-out, manual restart of the Bot is required AMD Attended User Bot Run • For the entire day 7 AM – 8 PM on a loop • Every 5 minutes check for new email **If new email**: obtain DUNS number from email • Bot Check 1: GSA (API: < 1 min) • Bot Check 2: FAPIIS (Website RPA check: 1 min – *assuming no site outages*) • Bot Check 3: Small Business Administration (Website RPA check: 1 min) Upon completion, send email back to sender with DUNS number check results Repeat above process until no additional emails. If no new emails, **sleep** Bot process and run again in 5 minutes If new email and DUNS number not found: • Send email results back to AMD customer, e.g. • If site issue, take screenshot and send back to customer. • Other webpage messages will be captured by the Bot and sent back to the customers Logging: • "Sent email" from the functional account can be used for logging to AMD customer • No "Bot Outcome Reports" are expected/needed to be generated.

IV.3 Parallel Initiatives/ Overlap (if applicable)

This chapter covers the proposed Business, Process & System changes in near future and their impact.

S.No	Initiative Name	Process Step(s) where it is identified	Impact on current automation request? How?	Expected Completion Date	Contact person for more details
	n/a				

III.4 In Scope of RPA

The activities in scope of RPA, are listed here:

1. See above process maps and Steps 1-17, Bot will run this process on daily basis from 7:00 AM (EST) to 8:00 PM (EST) on a loop.

IV.5 Out of Scope of RPA

The activities **Out of scope of RPA**, are listed here:

Sub-process (if applicable)	Activity (step)	Reasons for Out of scope*	Impact on the To-Be	Possible measures to be taken into consideration for future automation
	More then 10 DUNS in an Email	*This activity would not add significant value at this time and would slow the process*		

*Add more rows to the table to reflect the complete documentation provided to support the RPA process.

IV.6 Business Exceptions Handling

The Business Process Owner and Business Analysts are expected to document below all the business exceptions identified in the automation process. These can be classified as:

Known	Unknown
Previously encountered. A scenario is defined with clear actions and workarounds for each case.	New situation never encountered before. It can be caused by external factors. Cannot be predicted with precision, however if it occurs, it must be communicated to an authorized person for evaluation.

Known Exceptions

The table below reflects all the business process exceptions encountered during the process evaluation and documentation. These are **known exceptions** that occurred before. For each of these exceptions, define a corresponding expected action that the robot should complete if it encounters the exception.

BE #	Exception name	Step	Parameters	Action to be taken

Unknown Exceptions

For all other unanticipated or unknown business (process) exceptions, the robot should:

IV.7 Application Error and Exception Handling

A comprehensive list of all errors, warnings or notifications should be consolidated here with the description and action to be taken, for each, by the robot.

Errors identified in the automation process can be classified as:

Area	Known	Unknown
Technology/Applications	Experienced previously, an action plan or a workaround available.	Never encountered before or may happen independently of the applications used in the process.

Known Errors or Exceptions

The table below reflects all the errors identified in the process evaluation and documentation.

For each of these errors or exceptions, define a corresponding expected action that the robot should complete if it is encountered.

#	Error name	Step	Parameters	Action to be taken
1	If there is an error, the developer will get an email of a failure with a screenshot for reference	Upon starting the NIST Vendor Responsibility Bot	Error Message	If any of the site is down and BOT can not access the site Solution: BOT will have to start when site is available
2	If the user submits a bad DUNS number, they will get an email as well	After staring the search Process	Error Message	User will have to provide a correct DUNS

Unknown Errors and Exceptions

For all the other unanticipated or unknown application exceptions/errors, the robot should:

Log the error in the Bot Outcome Report but continue to process the remainder of the DUNS check

IV.8 Reporting

#	Report type	Update frequency	Details	Monitoring Tool to visualise the data
1	Execution logs	Each time	In case of an issue	Log notepad
2	Transaction logs	Each time	A file called Stats.xlsx which pulls each email that is processed	Excel File
3	Error	Each time	If there is an error, the developer will get an email of a failure with a screenshot for reference	Error message
4	Error	Each time	If the user submits a bad DUNS number, they will get an email as well.	Error message
5	Error	Each time	If FAPIIS is down or SBA is down (Portal Issue)	Error message

* For complex reporting requirements, include them into a separate document and attach it to the present documentation

V. Other Observations

Include below any other relevant observations you consider needed to be documented here.

Example: Specific Business monitoring requirements (audit and reporting) etc.

VI. Additional sources of process documentation

If there is additional material created to support the process automation please mention it here, along with the supported documentation provided.

Additional Process Documentation		
Video Recording of the process (Optional)	n/a	Insert any relevant comments
Standard Operating Procedure (s) (Optional)	n/a	Insert any relevant comments
Business Rules Library (Optional)	n/a	Insert any relevant comments
Other documentation (Optional)	n/a	Insert any relevant comments

*Add more rows to the table to reflect the complete documentation provided to support the RPA process.

VII. Target/Draft Timeline

The following are next steps for the Vendor Responsibility Bot

- **Update Process Design Document:** Shahzada 2 weeks: Aug 16th thru Aug 27th
    - **Tina update as**-is process flow and to-be flow. Meeting with Billy/Debbie
- **Functional Account setup activities** (see above): Rich targeting 2 weeks: Aug 16th thru Aug 27th
- **Complete User sign-off** with Debbie Turner, Billy Wong
- **Proof of Concept** Initial/proactive development, piloting new API: Aug 16th thru Aug 27th
- **Development Target** complete: Aug 30th thru (internal target) Sept 10th, More likely thru Sept 30th

- **Testing:** Targeting Sept 10th to start thru TBD (~1 week), possibly longer if development rework is required.

- **Create User Guide:**

    - Must include what AMD is expected to send the Bot in email.

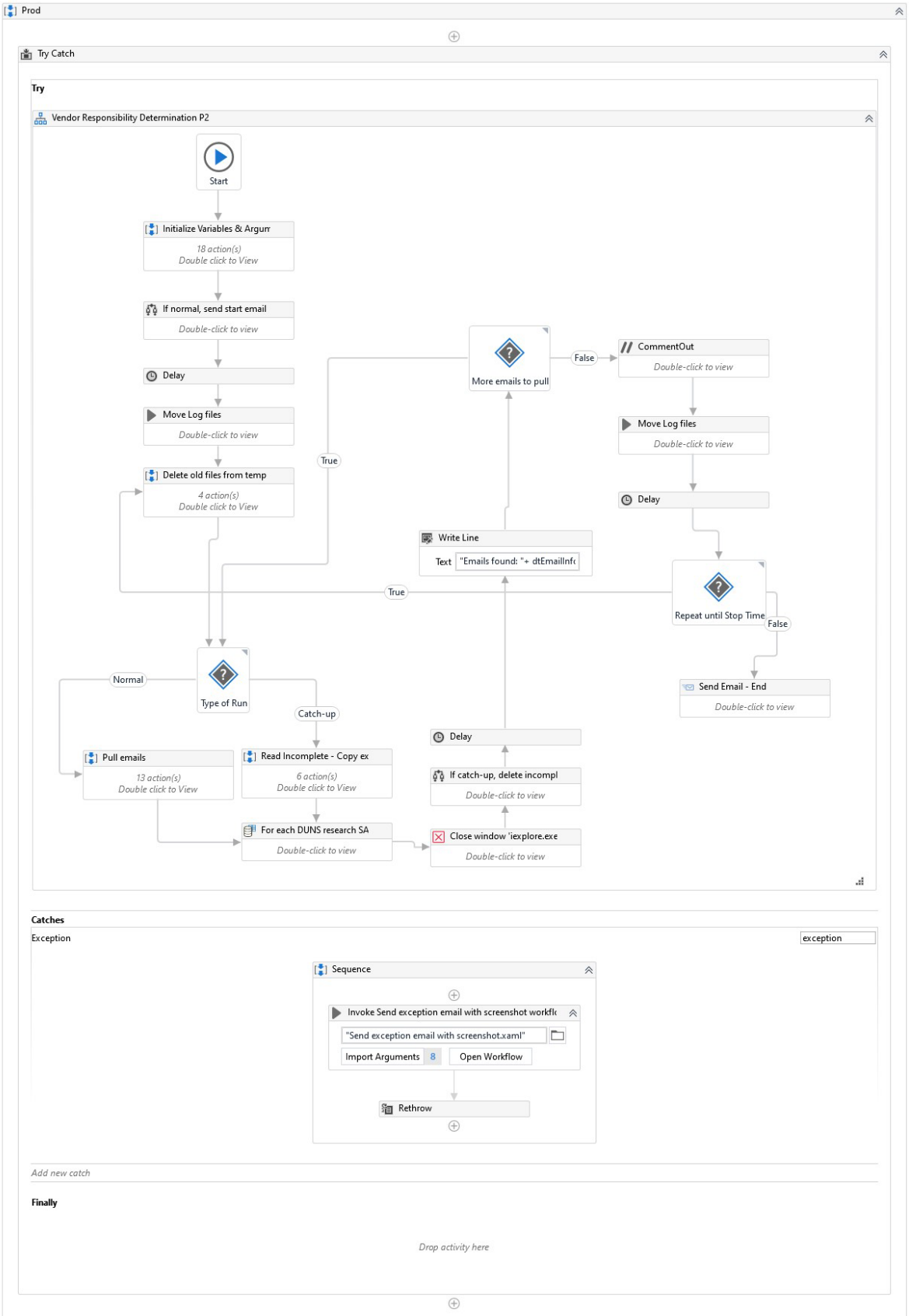
    - Also, must include guidance for who runs the Bot.

- **Schedule complete UAT:** Please check with Bill for availability. Review user guide. Confirm who will run the Bot in production.

- **Promote to Prod:** May be October depending on Billy's availability

- Need Attended Bot Production license (Greg):

VIII. APPENDIX A -Bot Process Map


Prod
Try Catch
Try
Vendor Responsibility Determination P2
Start
Initialize Variables & Argum
18 action(s)
Double click to View
If normal, send start email
Double-click to view
Delay
Move Log files
Double-click to view
Delete old files from temp
4 action(s)
Double click to View
More emails to pull
False
CommentOut
Double-click to view
Move Log files
Double-click to view
Delay
True
Write Line
Text
"Emails found: "+ dtEmailInf
True
Repeat until Stop Time
False
Send Email - End
Double-click to view
Normal
Type of Run
Catch-up
Pull emails
13 action(s)
Double click to View
Read Incomplete - Copy ex
6 action(s)
Double click to View
Delay
If catch-up, delete incompl
Double-click to view
For each DUNS research SA
Double-click to view
Close window 'iexplore.exe
Double-click to view
Catches
Exception
exception
Sequence
Invoke Send exception email with screenshot workfl
"Send exception email with screenshot.xaml"
Import Arguments
8
Open Workflow
Rethrow
Add new catch
Finally
Drop activity here