



Solution Design Document

Automation of the **NegMemo** Process for M/OAA

July 16, 2021 - Version 2.0

US Agency for International Development

Office of the Chief Information Officer

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1.0 Introduction

1.1 Document Purpose

The Solution Definition Document (SDD) describes the automation solution for the business process, specifically how robotic process automation (RPA) tools can be leveraged to assist or replace a human's role in completing the process. Though high-level in nature, this document traces the data from its source(s) through the process and serves as a reference for developers and testers. The SDD also provides the steps required for completing the automated process solution; these may be different from the ones taken by the humans in the original manual version of the same process. This SDD should be used in conjunction with the Process Definition Document (PDD) when building or amending the solution, as well as the Functional Requirements Checklist and the Digital Workforce Manager's Guide artifacts.

1.2 Revision History

Date	Version	Contributor Name	Role	Org./Dept.	Comments
01/15/2021	1.0	Ryan Blair	RPA Architect & Developer	M/CIO (CTR)	Created draft document based on PDD and meetings with process stakeholders.
01/29/2021	1.1	Ryan Blair	RPA Architect & Developer	M/CIO (CTR)	Edited based on new developments in environmental requirements
07/16/2021	2.0	Ryan Blair	RPA Architect & Developer	M/CIO (CTR)	Revised solution based on availability of systems and other factors

1.3 Approval History

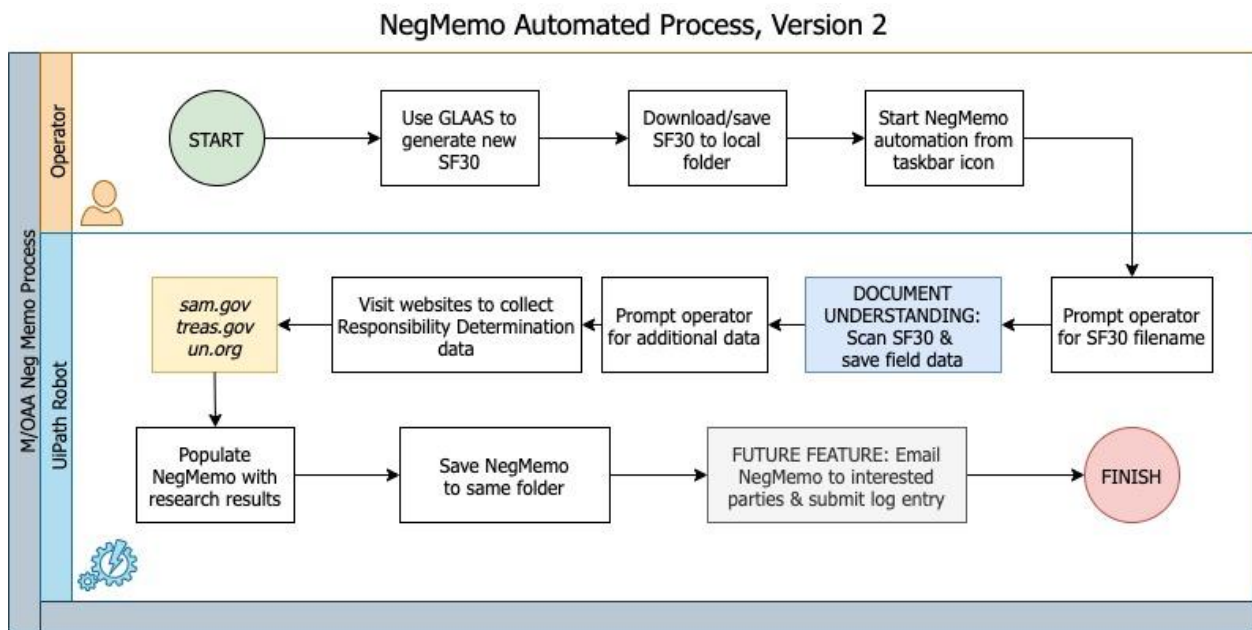
Version	Role	Name	Org./Dept.	Signature and Date:
2.0		Charity / Maggie	M/OAA	

Future State Process

1.4 Proposed Automation Solution: Process Map

There are two (2) proposed solutions at this time. The first is the long-term/ideal solution which can be achieved only after M/CIO is granted a full ATO (Authority to Operate), and subsequently, attended robot access to the GLAAS system front-end.

Until then, the second/intermediary solution will require more preparatory tasks by the operator. This solution is similar to Version 1 of the automation; the flowchart below shows the steps taken by the operator and the robot in this scenario.



1.5 Integrated Applications & Systems

The below table lists all applications and systems that are part of the solution.

#	System	Version	Language	Client Type	Access Method	Notes
1	Gmail	Latest	EN	Web App - SSO	USAID Login	Future feature
2	MS Word	Latest	EN	Native Client	N/A	
3	Chrome	Latest	EN	Native Browser	N/A	UiPath extension required
4	UiPath Attended Robot & License	2019.10	EN	Native Client	Orchestrator-managed access	Each operator will need an attended robot license
5	Google Drive	Latest	EN	Web App - SSO	USAID Login	Future feature
6	GLAAS	Latest	EN	Web App - SSO	USAID Logon	Future feature

1.6 Data Fields

The following link tracks each data field used by the automation along with any necessary information:

https://docs.google.com/spreadsheets/d/1d_GP1Dp3z0vjPP0HPXpgMOBw6XX4yy82yJeUFdK2wq4/edit?usp=sharing

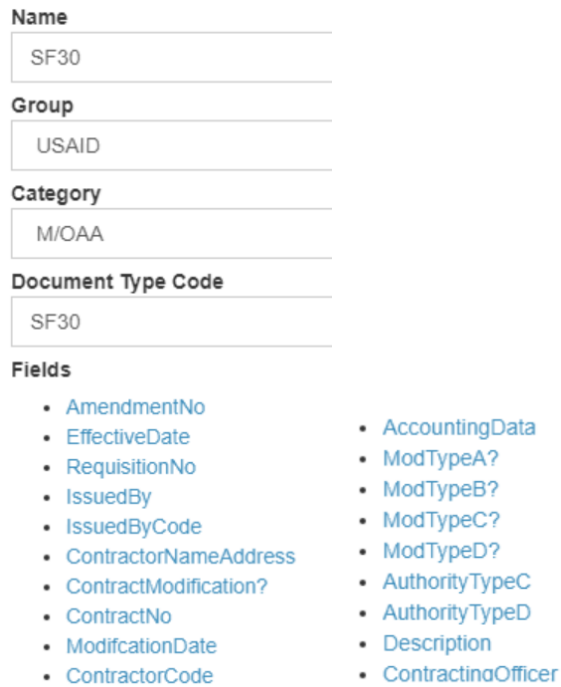


Diagram A: Current Document Understanding taxonomy

1.7 Parallel Initiatives / Projects

The following projects may impact or be impacted by the future state recommendation of this process. Some of these may be dependencies, prerequisites, or closely aligned initiatives that contain reusable components, competing technologies, or redundant efforts.

Project Name	Impacted Process Steps	Impact Details	Expected Completion Date / Timeline	Project POC Name & Email
N/A				

1.8 Process Exceptions

Listed below are the expected automated actions for known and unknown exceptions, business (BE) and system (SE). This includes errors, warnings, or notifications for which the robot must take action, as well as business issues that result in failed processes.

Exception	Action
Missing contractor name (or other critical data field) [BE]	Alert operator via pop-up window, allow for manual entry or process termination. If terminated, log as failed in report and instruct operator to either 1.) create NegMemo manually and/or 2.) enter missing data in GLAAS, export & save SF30, and re-run automation. OPTION A
Missing DUNS number [BE]	Alert operator via pop-up window, allow for manual entry or process termination. If terminated, log as failed in report and instruct operator to either 1.) create NegMemo manually and/or 2.) enter missing data in GLAAS, export & save SF30, and re-run automation.
Contractor could not be searched properly on one or more websites [BE]	Alert operator via pop-up window and ask whether to continue (expected result) or terminate process and create NegMemo manually.
One or more websites could not be accessed [SE]	After three attempts, alert operator via pop-up window and email, then terminate the process. Log as failed in report and instruct operator to create NegMemo manually.
Specified SF30 could not be found or file could not be classified as SF30 [SE]	Alert operator via pop-up window and email, allow for selection of alternate file and retry, or terminate the process. If terminated, log as failed in report and instruct operator to create NegMemo manually.
Specified NegMemo template could not be found [SE]	Alert operator via pop-up window and email, allow for selection of alternate file and retry, or terminate the process. If terminated, log as failed in report and instruct operator to create NegMemo manually.
Excel is already running	Any Excel windows are closed automatically without error.
UiPath robot cannot reach Orchestrator [FUTURE SE]	Automation is terminated and email alerts are sent to designated staff.
Cannot open or access Gmail and/or Exchange [FUTURE SE]	After three attempts, the automation continues [ends normally]. An alert pop-up is displayed for the operator, and a note is made in the report.
[System Error] Local hardware issues	Handled by Global Exception Handler. Result will be an unexpected termination of the process. [Note: When migrating to production, only install & execute on a GFE or VM with ample hardware resources.]

1.9 Reporting, Logs & Alerts

Listed below is a recommended list of reports, audit logs, and alerts the process will produce:

Report Type	Update Frequency	Details	Tool Used
FUTURE Process Log	Updated with each execution	Frequency and execution details from each process run since migration to production environment	UiPath Orchestrator
Results Report	[based on established frequency]	Number of reports processed during any given period	Created in Excel; stored in shared folder
Error Log	[based on established frequency]	Number of errors processed during any given period	Created inside Results report above on separate tab or column; stored in shared folder
FUTURE Efficiency Metrics	Monthly/Yearly	Statistics that show cost & time savings vs. pre-automation state	UiPath Orchestrator & Insights

2.0 Design Considerations

This automation is designed to run by one attended robot on a GFE or standard VDI, although it may be easily configured to run from a virtual desktop using an unattended license when such environments/licenses are available. The frequency will be determined by the operator(s), but it has been assumed that it will be run more often than once/day, depending on work demand. It will generate reports that are emailed to the process owner(s), saved in a local folder on the desktop, and distributed to others on the M/OAA Team as necessary. The resulting NegMemo report will also be saved locally in the desktop folder.

2.1 Systems

This automation requires access to three (3) websites, plus Gmail for Google Workspace and Excel. Google Workspace requires that the user be logged into a Windows session. A spreadsheet containing environmental variables is required for operation; this file (*config.xlsx*) is located inside the project folder along with the project files including *NegMemo.xaml* and *project.json*.

NOTE: The UiPath Extension for Google Chrome is required for this automation. Special exemption status via group policy may need to be requested and granted in order to complete the project.

NOTE: Gmail access may be secured and not easily configurable using UiPath activities which leverage the Google API. If this is the case, and special permission and/or policy change is time-consuming, the automation may need to rely on direct-button interaction via the browser.

2.2 Assets [FUTURE]

There is a set of global variables, or assets, which is required and located in the assets page of Orchestrator. These include URL's, filenames, file paths, email addresses and other global variables which are subject to occasional change. The digital workforce manager should maintain these assets and change them from the Orchestrator web portal when necessary. A list of assets will be provided to all stakeholders.

2.3 Naming Conventions

Variables within the project generally utilize camelCase names. The project in UiPath is titled NegMemo for short [and Orchestrator assets use all-caps and underscores]. All other naming conventions follow industry standards, with the notable exception of agency-mandated naming conventions, such as the NegMemo filename.

2.4 Release Notes

There are two completed releases for this project. Version 1 includes the main functionality for automating the scanning of the document, the website lookups, the basic NegMemo document creation, and saving the resulting document. Release 2 will enhance this functionality by allowing the operator to enter/validate more data via input dialogs, better data extraction & validation, and increased exception handling. The future Version 3 will incorporate the GLAAS front-end interoperability by the robot.

2.5 Risk Assessment

In coordination with cost-savings/avoidance reports, it is also recommended that the Enterprise Architecture conduct a risk analysis and report any/all potential risks introduced by building and releasing this automation into production. This includes ruling out certain perceived risks that RPA actually avoids or eliminates.

3.0 Appendix A: NegMemo Template

Source Selection Information – See FAR 2.101 and 3.104



MEMORANDUM TO THE FILE

CONTRACTOR:	contractorName
DUNS NUMBER:	dunsNumber
AWARD NUMBER:	sf30ContrNo
MODIFICATION NUMBER:	sf30AmendNo
REQUISITION NUMBER:	sf30ReqNo
PERIOD OF PERFORMANCE:	<<Period of Performance>>
TOTAL ESTIMATED COST:	\$ <<Total Estimated Cost>>
AMOUNT OBLIGATED BY THIS ACTION:	amountObligatedByThisAction
TOTAL OBLIGATED AMOUNT:	\$ <<Total Obligated Amount>>
REMAINING FUNDING:	\$ <<Remaining Funding>>
CONTRACTING OFFICER'S REPRESENTATIVE:	<<Contractor's Representative>>
NEGOTIATOR:	<<Negotiator>>
CONTRACTING OFFICER:	sf30ContrOff, <<Office>>

I. AUTHORITY

FAR Clause 52.232.18 Availability of Funds

II. PURPOSE

The purpose of this modification is to incrementally fund the Task Order in the amount of amountObligatedByThisAction

III. DISCUSSION

sf30DescrP1

<<Additional Details>>

Source Selection Information – See FAR 2.101 and 3.104

IV. RESPONSIBILITY DETERMINATION

rdResult1 rdResult2

V. RECOMMENDATION

Based on the discussion above, modification sf30AmendNo to sf30ContrNo has been determined fair and reasonable, in the best interest of the government, and therefore is taken to award and approved.

_____ todaysDate
<<Contract Specialist>> Date
<<Title>>
<<Office>>

_____ todaysDate
sf30ContrOff Date
Contracting/Agreement Officer
<<Office>>

Remove this text before finalizing:
The Agreement/Contracting Officer is responsible for reviewing and supplementing the negotiation memorandum as necessary to comply with Government regulations. To expedite the initial development of the negotiation memorandum; this is an auto generated document which relies on the accuracy of data the user provided in the SF30. If the data is inaccurate in the SF30, then the negotiation memorandum will be inaccurate.

Source Selection Information – See FAR 2.101 and 3.104

EVIDENCE OF RESPONSIBILITY DETERMINATION

[screenshots here]