

ACCESA

Process Definition Document

Trading Robot

Document history

Date	Version	Role	Name	Organization/ Department	Function	Comments
08.01.2022	1.0	Author	Moldovan Andrei	Babeş-Bolyai University	Student	Definitive version
08.01.2022	1.0	Author	Moldovan Ioana Ilinca	Babeş-Bolyai University	Student	Definitive version

Contents

Contents.....	2
1.....	Introduction
.....	4
1.1Purpose of the document	4
1.2Automation objectives	4
1.3Process key contacts	4
1.4Automation prerequisites	5
1.5Process overview	5
1.6Process volumetry	5
1.7Applications used in the process	6
2.To-Be Process Description	6
.....	6
2.1To-Be process map	6
2.2To-Be process steps	7
3.Solution Overview	11
.....	11
3.1List of packages (H)	11
3.2Solution diagram of the process (H)	11
3.3Solution description of the process	12
.....	12
3.3.1 State machine general Overview (H).....	12

3.3.2	Detailed workflow description	13
3.4	Business exceptions handling	14
3.4.1	Known exceptions.....	14
3.5	Application exceptions handling	15
3.5.1	Exceptions.....	15

1. Introduction

2. Purpose of the document

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

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 automation, be it partial or complete. This specifications document serves as a base for developers, providing them with the details required for applying robotic automation to the selected business process.

3. Automation objectives

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

- [Get a list of stock trading decisions for predefined tokens via email daily](#)

4. Process key contacts

This specifications document includes concise and complete requirements of the business process and is based on the input provided by both RPA Consultant and Process Owner. The Process Owner is expected to review and sign-off on the document, to ensure an accurate and complete description of the steps, the context, the impact and the complete set of process exceptions. Other roles involved in the automation of the business process are listed and described below:

Role	Name	Notes
Developer	Andrei Moldovan	Design and implementation
Developer	Ioana Ilinca Moldovan	Design and implementation

5. Automation prerequisites

- Filled in Process Definition Document (PDD)
- Excel application must be installed
- As-Is Process Description

6. Process overview

General information about the process selected for RPA.

#	Item	Description
1	Process full name	Trading robot
2	Process area	Babeş-Bolyai University
3	Department	Babeş-Bolyai University
4	Process brief description	Selecting the action decisions for predefined trading tokens, sending them via email
5	Role(s) required for performing the process	Trader

7. Process volumetry

General quantitative information on the selected process prior to automation.

#	Item	Value
1	Process schedule and frequency	Daily
2	Average no. of items processed per month	28-31
3	Average handling time per item	42 seconds
4	Number of employees performing the task	1
5	Total time/year spent (FTEs)	Not applicable

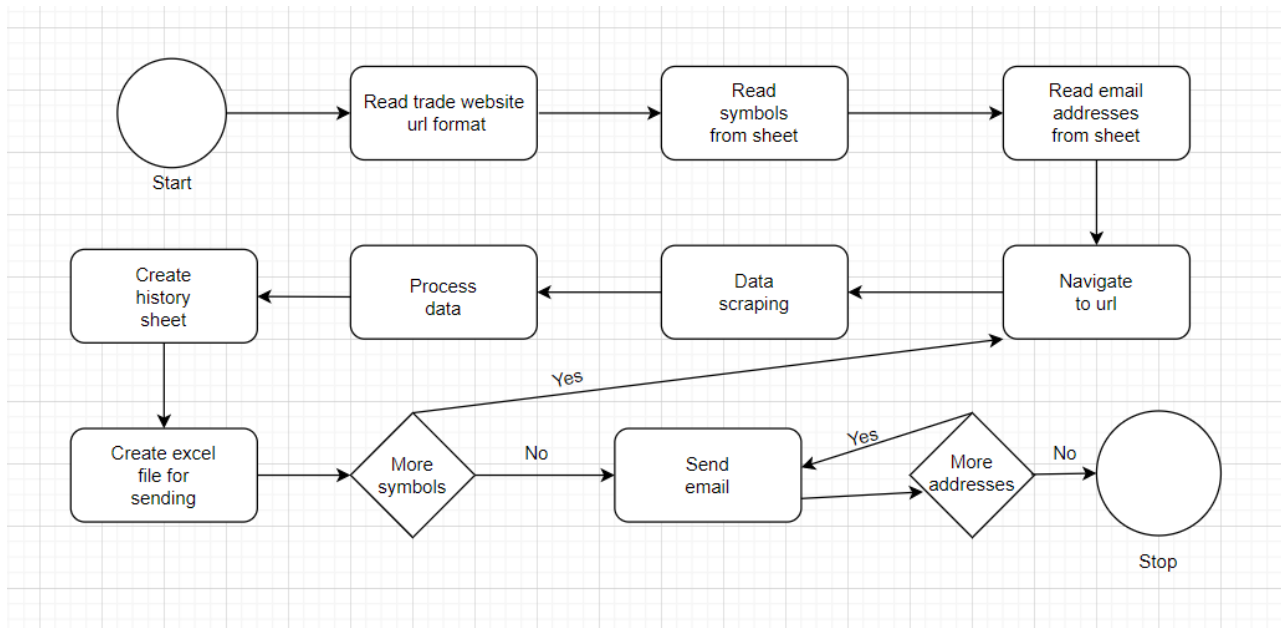
8. Applications used in the process

The table includes a comprehensive list of all the applications that are used as part of the automated process, at various steps in the flow.

#	Application name	System language	Login module	Environment / Access method	Comments, incl. URLs
1	Google Chrome	EN	-	Browser	
2	Excel	EN	-	Application	

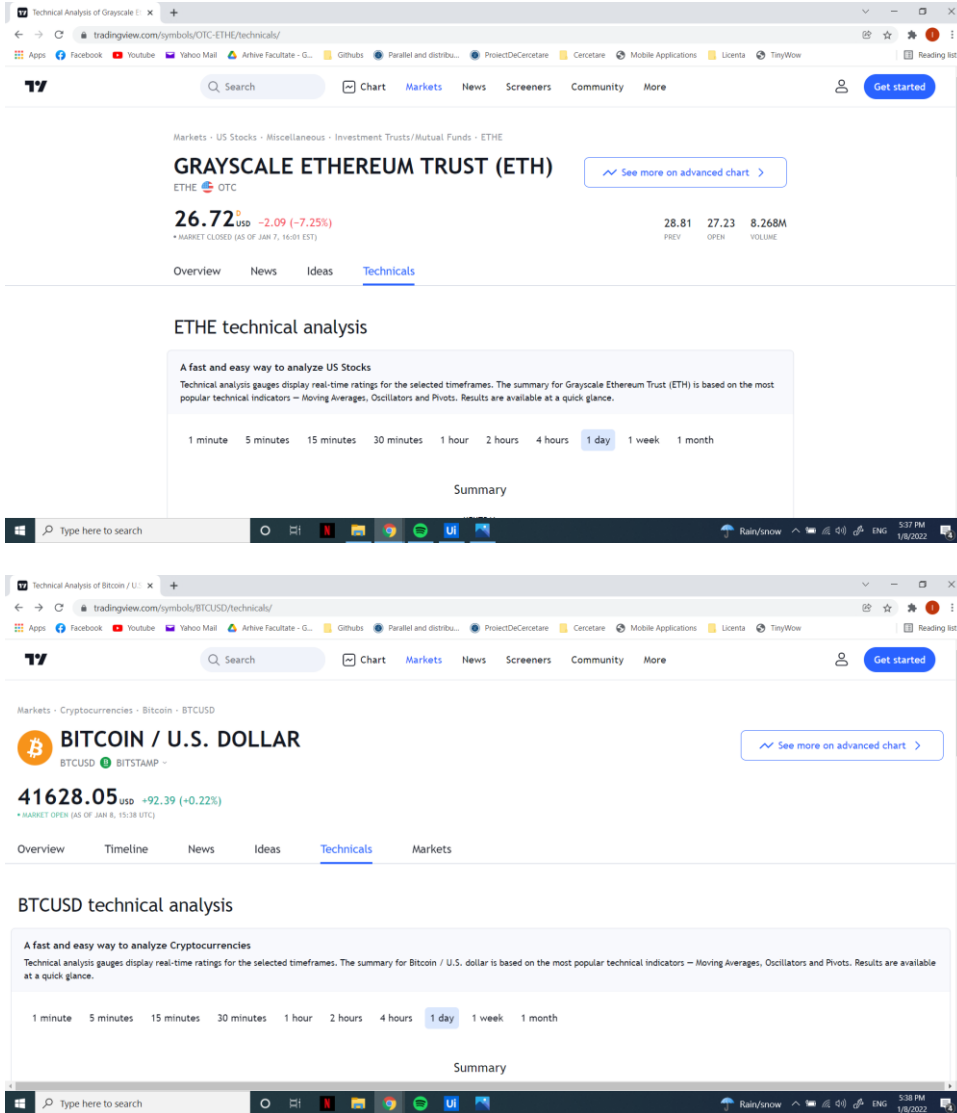
9. To-Be Process Description

10. To-Be process map

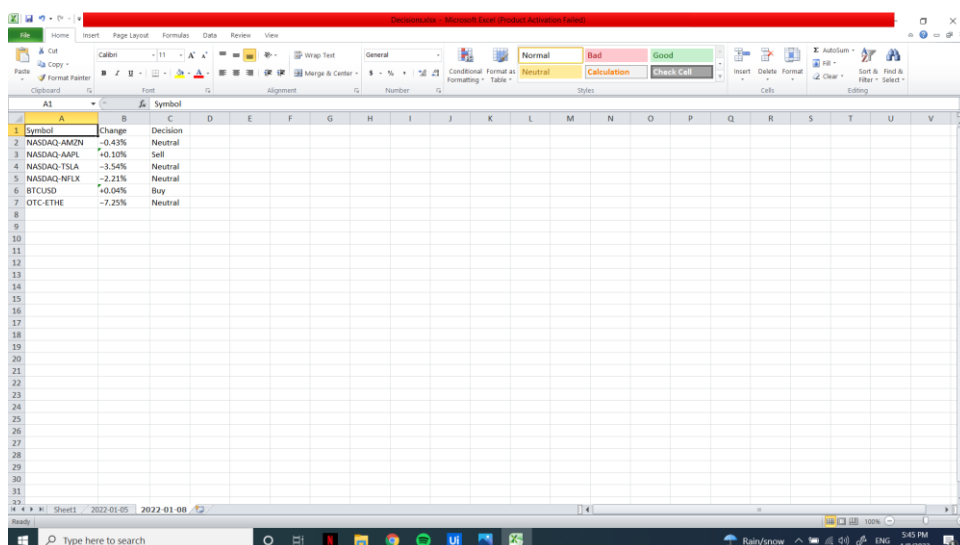


11. To-Be process steps

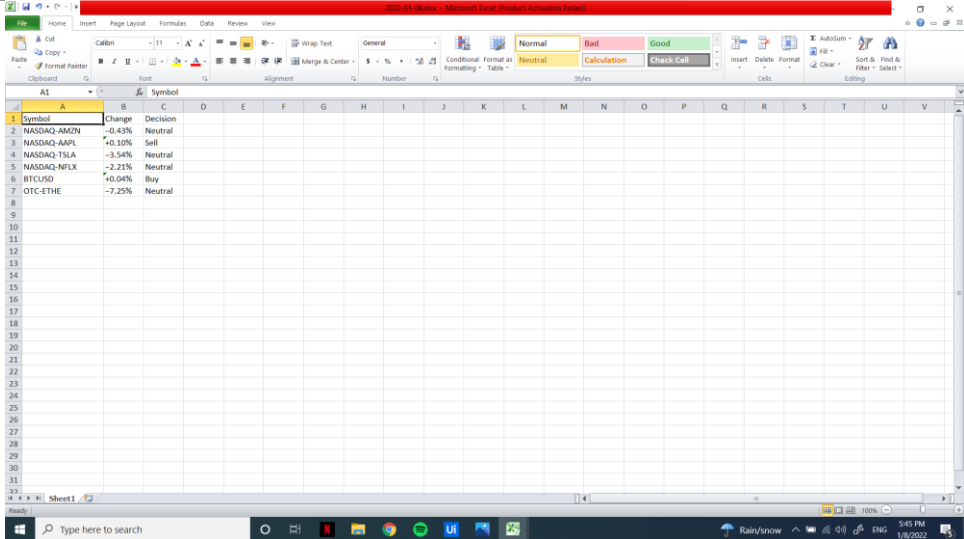
#	Brief description of key process steps	Step owner

1	Open the inputs file and reads the website url format	Robot
2	Reads symbols from excel, creates browser	Robot
3	Creates formatted urls for each symbol	Robot
4	Opens the website, navigates to the url corresponding to the current symbol	Robot
	 <p>The screenshot shows two TradingView technical analysis pages. The top page is for Grayscale Ethereum Trust (ETH) with a price of 26.72 USD, down 2.09 (-7.25%). The bottom page is for Bitcoin / U.S. Dollar (BTCUSD) with a price of 41628.05 USD, up 92.39 (+0.22%). Both pages show technical analysis summaries and timeframes (1 minute to 1 month).</p>	
5	Scrapes the percentage and the buying decision from the website	Robot

	<div> <div>05 USD +92.39 (+0.22%)</div> <div>JAN 8, 15:38 UTC)</div> <div>SELL</div> </div>	
6	Repeat step 3 and 4 for each symbol	Robot
7	Generate today's history sheet	Robot
8	Generate today's document	Robot



Symbol	Change	Decision
NASDAQ-AMZN	+0.43%	Neutral
NASDAQ-AMPL	+0.10%	Sell
NASDAQ-TSLA	-3.54%	Neutral
NASDAQ-NFLX	-2.21%	Neutral
BTCUSD	+0.04%	Buy
OTC-ETHE	-7.25%	Neutral

		
9	Reads all email addresses from the input file	Robot
10	Send an email with today's document to all addresses	Robot
11	Done	Robot

12. Solution Overview

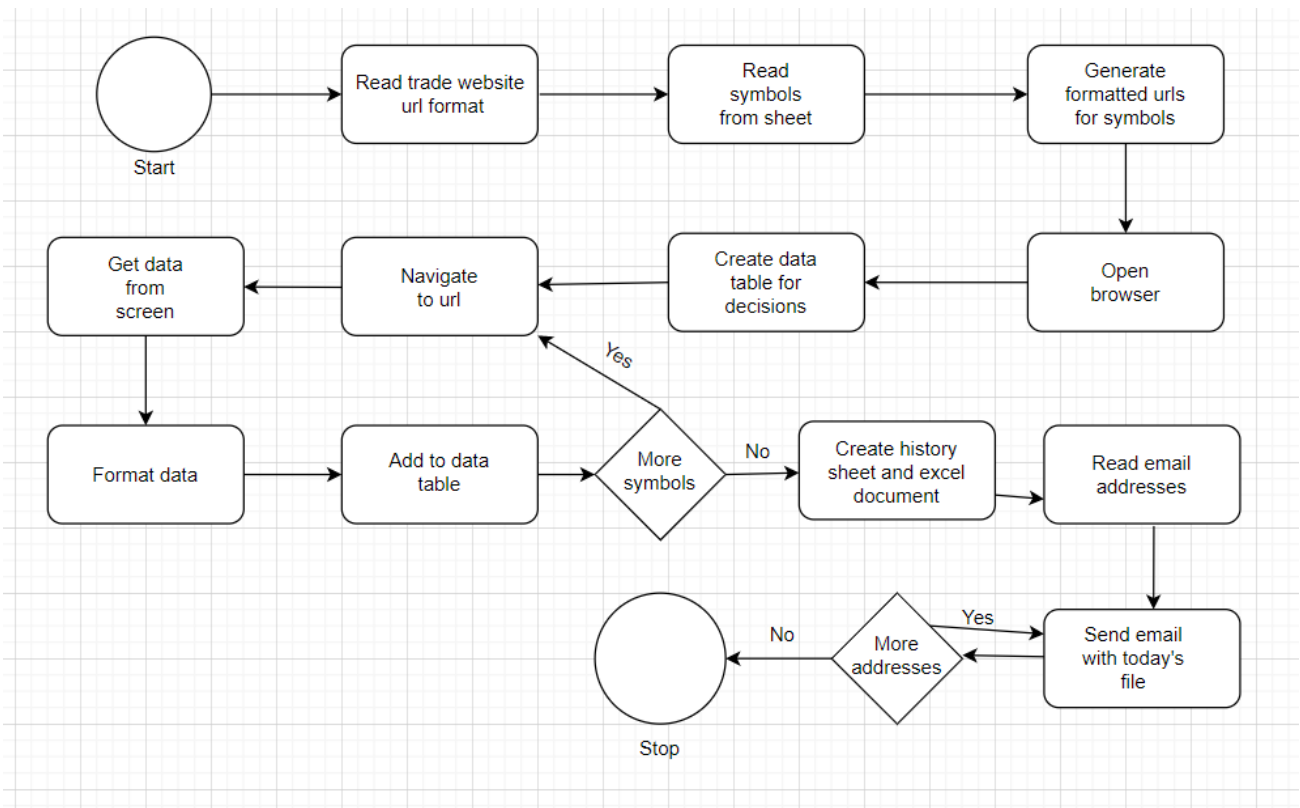
13. List of packages (H)

Describe how the business process is structured in packages and sub-processes. Fill this out for the high-level solution design.

#	Package Name	Description
1	Current process	Select inputs, scrape data from provided website, generate history sheet and daily decisions document for the provided tokens, send emails with the decisions document as an attachment.

14. Solution diagram of the process (H)

The solution diagram, an overview of the process, displays the interaction between components (packages, robots, Orchestrator queues) in running order. Fill this out for the high-level solution design.



15. Solution description of the process

16. State machine general Overview (H)

For each package, describe which major activities are handled in which state machine part. Fill this out for the high-level solution design.

State	Description
Initialisation The robot gets the necessary inputs	Robot does the following: <ul style="list-style-type: none"> • Open Inputs.xlsx file • Saves the website url format, and generates a formatted url for each symbol name
Get Decision Data The data scraping step – the robot collects the decisions	<ul style="list-style-type: none"> • The robot collects the index and the marker form the website • The aforementioned action is performed for each symbol • Data is stored in a DataTable

Write And Send Decisions The collected data is written to an excel file which has the current name as a date and added as a sheet to the history file. Then, the decision file is sent via email	<ul style="list-style-type: none"> • Write to history file • Create new sending file • Read all email addresses • Compose email to send to each of the collected email addresses • Attach file to email and send
End Process	<ul style="list-style-type: none"> • Close all

17. Detailed workflow description

Describes all elements used within the process.

18. Workflow details of Trading Robot

Describe each Element of a package briefly.

#	Element (Workflow file name)	Description	Input Arguments	Output Arguments
1	Main	Starts the app, writes the necessary excel info	n/a	n/a
2	Email	Invokes ReadEmails, send emails to each of the resulting addresses with today's document attached	mailSheet - String, the name of the email sheet from the excel file	n/a

3	ProcessSymbolValues	Reads the symbols from excel, creates browser, invokes ScrapeData and stores its results in a DataTable.	n/a	decisionsTable – DataTable, the table with the decisions
4	ReadEmails	Extracts the email addresses from excel, returns them as collection	n/a	emailOutputs – List of Strings
5	ReadSymbols	Extracts the symbols from excel and the url format, returns a collection of the formatted URLs for each symbol	n/a	urls – List of Strings
6	ScrapeData	Collects the change percentage and the decision from the website and formats it	url – String, website address browser – Browser	decision – String, the strong sell, sell, keep, buy, strong buy collected result percentageChange - String, the fluctuation of the stock

19. Business exceptions handling

Business exceptions identified prior to or during the automation process are documented below:

20. Known exceptions

#	Exception name	Step	Parameters	Action to be taken
1	Fallen website	Data scraping	Decision result	Wait for resource to be available

21. Application exceptions handling

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

22. Exceptions

#	Exception name	Step	Parameters	Action to be taken
1	Undefined decisions on trading website	Data scraping	Decision result	Surrounding try-catch block