

METHOD AND SYSTEM FOR CUSTOM DECLARATION

TECHNICAL FIELD

[001] The present invention relates to a method and system for clearing customs when exporting or importing goods. More specifically, the present invention enables goods, especially to multiple destinations, to clear customs in a single process.

BACKGROUND

[002] Countries have varying requirements for the declaration of goods when importing or exporting the goods into or out of the country, and the basic procedure involves filling in the relevant forms with documentary evidence, and submitting these to the authorities for examination and review. If done manually, this can take a long time and be prone to mistakes and errors.

[003] Existing custom declaration systems are tailored towards the requirements of the individual countries and are done on a per consignment basis for each shipment. One issue when an exporter tries to export a product to multiple countries is that the exporter would have to deal with the individual systems, processes, forms, and procedures of each of the countries involved. This may mean that the same information would have to be presented in various ways and formats for each of the individual countries, which may range from the archaic paper versions to automated systems.

[004] This is exemplified in Figure 1, which shows a typical automated system for making customs declaration which is based on a workflow concept, each

workflow has one input and one output and its own requirements. The specific communication channels 110 would pass specific document types 120 to a specific parser for an account 130. Example of communication channels 110 are secure file transfer protocol (sFTP), file transfer protocol (FTP), XML, Web Service, etc. The predefined output format 140 would depend on the country requirement and sent via predefined output channels 150. Each workflow would have its own mapping for the parser that transforms the inputs into the required outputs. In the example, the form was in the form of XML 115 and the output is an email 155. Any changes in the requirements either in the input, the mapping or the outputs would require the entire mapping file to be updated. The workflows are rendered inflexible and a change or validation that can be applied across workflows would mean having to update individual workflows.

[005] In some automated customs systems, the relevant authorities have chosen to automate the process of submitting the declaration and subsequently accept it without further need to review manually the hard copies. The customs declaration is deemed done, with the importer/exporter bearing any legal consequences for any improper or untruthful declaration it has made to the system of automated clearance. Such systems can be prone to abuse, and also relies on the user (importer or exporter) to accurately submit the information in the format required by the relevant authority.

[006] Hence, there is a need for an automated system and method that is able to allow customs declarations to be submitted and processed quickly and efficiently with reduced or no errors in the forms.

SUMMARY

[007] The present invention provides a system and method for clearing customs when goods are imported or exported by the submission of a customs declaration over a communications network utilizing the existing infrastructure and hardware, as well as the existing association network. According to some embodiments, the method of clearing customs may include receiving a declaration from a source, where the declaration includes a field, storing the input in a database in the form of a table, then processing the table using a configuration engine, validating the table using a validation rule, transforming the table, and producing an output from the table and sending the output to a target, wherein the table is transformed based on a requirement of a destination country.

[008] In one aspect, the method also includes receiving a first declaration and a second declaration, where the first declaration is in a first file format and the second declaration is in a second file format, and the first file format and the second file format are different. Alternatively, another aspect includes receiving a first declaration from a first source and a second declaration from a second source, wherein the first source uses a first communication channel and the second source uses a second communication channel.

[009] In another aspect, the step of producing an output from the table also includes sending the output to a plurality of destination addresses.

[0010]In a further aspect, the method also includes a step of obtaining an approval from the destination country. In yet a further aspect, the method also includes sending a notification of the approval to the source.

[0011]In another aspect, the step of processing the table includes filling the field with a default value. In an alternative aspect, the step of processing the table includes replacing the first field with a lookup value based on a lookup table. In a further aspect, the lookup table is accessed and stored by the configuration engine.

[0012]In one aspect of the invention, the step of processing the table includes applying a formula to a first field and obtaining an outcome and replacing the first field with the outcome. In a further aspect, applying the formula to the first field is based on a second field.

[0013]In yet another aspect of the invention, the step of validating the table includes accessing a validation rule and applying the validation rule to the table. In a further aspect of the invention, the validation rule is stored in a database and accessed by the configuration engine.

[0014]In an aspect of the invention, the step of transforming the table includes a second declaration for a second destination country. In another aspect of the invention, the step of sending the output to the target is done via one of email, secure file transfer protocol, or xml page.

[0015]In one aspect of the invention, a system for clearing customs when goods are imported or exported is described, the system including a database, a server

with a communication channel capable of receiving a declaration from a source and storing the declaration in a table in the database, and a configuration engine capable of accessing table in the database and transforming the table, where the server is instructed to send the declaration to a destination for approval.

[0016] In another aspect of the invention, the configuration engine is capable of processing the table. In an alternate aspect, the configuration engine is capable of validating the table. In yet another aspect, the server receives a plurality of declarations via a plurality of sources. In a further aspect, the plurality of declarations include at least two different file formats. Alternatively, an aspect of the invention has the plurality of declarations are done via at least two different communication channels. In an aspect of the invention, the server is instructed to send the declaration to a plurality of destinations.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The accompanying drawings, which are incorporated herein and form part of the specification, illustrate various embodiments of the present disclosure and, together with the description, further serve to explain the principles of the disclosure and to enable a person skilled in the pertinent art to make and use the embodiments disclosed herein. In the drawings, like reference numbers indicate identical or functionally similar elements.

[0018] Figure 1 is an illustration of an existing customs declaration system.

[0019] Figure 2 is an illustration of a process flow for a customs declaration system in accordance with an embodiment of the invention.

[0020] Figure 3 is an illustration of how a table is created for a customs declaration system in accordance with an embodiment of the invention.

[0021] Figure 4 is an illustration of a pre-processing table for a customs declaration system in accordance with an embodiment of the invention.

[0022] Figure 5 is an illustration of an outcome of a customs declaration system in accordance with an embodiment of the invention.

[0023] Figure 6 is an illustration of a recommended record for a customs declaration system in accordance with an embodiment of the invention.

[0024] Figure 7 is a flowchart of a customs declaration system in accordance with an embodiment of the invention.

[0025] Figure 8 is a flowchart of a pre-process for a customs declaration system in accordance with an embodiment of the invention.

[0026] Figure 9 is a flowchart of processing the information for a customs declaration system in accordance with an embodiment of the invention.

[0027] Figure 10 is a flowchart of a post-process for a customs declaration system in accordance with an embodiment of the invention

[0028] Figure 11 is a flowchart of recommending inputs for a customs declaration system in accordance with an embodiment of the invention.

[0029] Figure 12 is illustrating a network communicatively connecting devices that perform the process that provide systems and methods for submitting custom declarations in accordance with an embodiment of this invention.

[0030] Figure 13 is illustrating a processing system in one or more of the devices that perform one or more processes for providing systems and/or method systems and methods for submitting custom declarations in accordance with an embodiment of this invention.

DETAILED DESCRIPTION

[0031] Some embodiments of the present invention provide a system and method for processing one or multiple customs declarations. The overall flow can be seen in Figure 2, where various communications channels 210 pass custom declarations as inputs in the form of various document types 220, for example Microsoft excel format, CSV format, or XML format. Parsers 230 would then parse these file formats to be stored in a pre-processing table 240. The pre-processing table 240 can be stored in a central location or a separate location. In an embodiment of the invention each parser may deal with a specific file format. The table 240 is accessed by a configuration engine 250 that handle workflow management, for example routing rules, data decisions, default values, lookup values, validation of data, transformation mapping, outbound routing, and notification rules. The outcome of the engine 250 would result in a post-processing table 260 that contains data populated, including default values, conversion of lookup values, and validation of data within the table. This is then routed to a workflow engine 270 that sends out through the various output channels in the required formats 280, 282, 284. In some embodiments of the invention, data analytics engine 245 may be applied to analyze previous entries and suggest new responses or new rules into the workflow. As the system is

hardware agnostic, there is no specific requirement in terms of hardware requirements. In an embodiment of the invention, the system is deployed as a software as a service and deployed using Amazon Web Services (AWS).

[0032] The configuration engine can configure how data flows, and lookup values to be used, and default values to be filled, the outbound mapping to be used, the designated destination for the transformed data, and the parties to be notified.

[0033] In some embodiments, the process (Figure 3) begins by processing the information received and this may be in the form of a file 310. The file types, transmitting protocols and formats may be different, and the multiple parsers 320 are designed to process these sources accordingly and populate a pre-processing table 340. In the dataset created 342, the various formats of the incoming files 310 are Excel, CSV and XML, and the relevant fields in the pre-processing table 340 are populated.

[0034] The data in the pre-processing table 340 is then processed and in an embodiment of the invention, the default values are filled into the table 440 and the configuration engine 450 may process the table. The configuration engine 450 may map or transform the values in the pre-processing table 440 to form the post-processing table 460. For example, the country in Column2 is stated in a different language, and this would be converted via a look-up table by the configuration engine 450 into a two-letter code "CN" as the lookup value. Another example may be the conversion of units, such as weight from imperial to metric units, and the configuration engine 450 would perform such a conversion of

Column4 based on the units in Column5 by applying a formula to the data and update both columns accordingly in the post-processing table 460. A further example may be the conversion of currency from one currency to another, and in some embodiments, the system may refer to an updated currency rate to apply in a formula against the data. Yet a further example may be the conversion of harmonized system (HS) codes that are used to classify goods for import and export, and the system may convert the HS code based on the countries involved accordingly.

[0035] The process of validating, mapping and/or transforming the data in the post-processing table 560 can be performed multiple times by the configuration engine or router 570 until a desired outcome is achieved and this may be in the form of an SFTP output, XML notification or email notification 580. The validation of the table would be carried out based on the validation rules accessed by the configuration engine. The validation rules may be stored in a central repository. A validation rule may be applied across multiple entries, records or workflows, thus ensuring that updating a validation rule would result in consistent approach across the table or records.

[0036] The table, whether pre-processed or post-processed would have a status field for each record or line as seen in the column "RecStatus", and depending on the record status, the configuration engine may carry out the requisite actions. With every status change, the configuration engine may check whether any validation, mapping or transformation needs to be carried out on the record or line. For example, where the RecStatus shows "0", an email would be drafted

according to the EmailTemplate column and sent to the party listed in the NotificationParty column. The outcome may differ depending on the trigger, for example, a trigger via Web Service would have a different format of output compared to a similar RecStatus but trigger via email.

[0037] In some embodiments, the system may include a data analytics engine 645 that assesses the data in the pre-processing table 660 to determine common incomplete fields or frequently mapped values and suggest these be included as added rules or conversions in the workflow to be used by the configuration engine 650. The data analytics engine 645 can also perform the analysis on the post-processing table. This analysis can be run periodically or triggered manually by an administrator. Specific columns to be analyzed can be set by the administrator for optimized performance. In some embodiments, the data analytics engine 645 may check the most frequent incomplete data against its frequently mapped to value, and when this hits a predefined percentage, this mapped to value can be suggested as the best default value to be mapped to. The administrator can control whether to accept or reject this suggested default value. When accepted, the suggested default value would be updated in the lookup table 647. In some embodiments, this process may be automated such that when the predefined percentage is hit, the suggested default value becomes the default value in the lookup table 647. For example, Default-003 occurred 57% of the time, and henceforth, the default value would be mapped to the appropriate column and record. The user may be notified that a default value has

been used for a particular field with options to review the record and accept or reject the recommended default value.

[0038] In accordance with some embodiments of the invention, the flowchart of the customs declaration system can be seen in Figure 7 with the main parts shown: Inbound 710 from multiple sources; Account specific inbox 720; xBS or configuration engine 730; and Outbound 740 via various channels. One of the forms of Inbound can take the form of a sFTP inbox 712 that can be configured for each account, which is then mapped by the engine 730 by retrieving a mapping reference 731 before processing the data from the file into the database pre-processing table 724. The pre-processing table may store the data as received from the source. The number of columns in the table may be flexible. Another form of Inbound can be taking data via an online form or a web service 714, and the received data is processed from the web service to the database pre-processing table 726. Web Service published input can be identified or associated with the caller through accountID or a unique identifier assigned and pre-processing is carried out accordingly. Once the pre-processing table is filled, it is stored in a database 732. Depending on the values that are stored in the pre-processing table, the lookup value 733 or default value 734 may be retrieved, and/or a formula may be applied 735 which would complete the pre-processing and result in a post-processing table 736. The post-processing table may then be validated 737 and the appropriate output mapping is retrieved 738, and sent either via an external Web Service call 741, an Electronic Data Interchange (EDI) 742 where data exchanged between parties are in a proprietary format, or via an

email possibly with an attachment 743. Should an error occur at any point in time, the appropriate email template is retrieved 751 and the email is generated 752 and sent 744. Another way of dealing with the error is to access the system via the portal 753, typically by an administrator, and make the appropriate intervention 745. The configuration engine may access, retrieve or update a database 739 accordingly, and this may include the status of the record. The database 739 may also access the relevant files containing data, rules, declaration requirements etc 73.

[0039] In some embodiments, the flowchart of how the system receives information can be seen in Figure 8, in relation to Figure 3. The system receives content, information or data from various sources that may be in various formats and file types such as Excel, CSV, XML, etc. The manner of receiving the content may also vary depending on the communication channel or transmitting protocol of the source, including sFTP, Web Service, API, Message Queue. In an embodiment, the flowchart begins 800 with the content, information or data being received in a file in a sFTP folder 805 and a parser is retrieved to process the received file 810. There may be multiple parsers designed to process different inbound sources. After a check that the appropriate parser is available 820, the system may parse the data into the pre-processing table or dataset structure 830 and populate the pre-processing table accordingly 835. Should a parser not be found, an email notification is retrieved together with the email template and the appropriate distribution list of addresses that the email would be sent to 840, and the master configuration data would be updated 845. The email would be sent

850 and the file would be moved to a folder dedicated to errors and records that do not have a matching parser 855 and the process ends 870.

[0040] In some embodiments, the flowchart of how the system processes the pre-processing table can be seen in Figure 9, in relation to Figure 4. The process begins 900 with checking the record with status listed as new in the pre-processing table 910. The relevant account related configuration may be retrieved 920 by accessing the centralized configuration database 925. The data in the record is checked against whether a default value configuration is recorded 930, and if so to retrieve the default value for the relevant column in the pre-processing table 935 and the post-processing table is updated with the default value 937. Another check that the system performs is whether a lookup value configuration is present 940 and retrieves the lookup value and applies the lookup value to the appropriate data column in the pre-processing table 945. The post-processing table is updated with the lookup value if required 937. The system may also check whether a formula configuration is present 950 and retrieves the formula and applies the formula to the appropriate data column in the pre-processing table 955. The post-processing table is updated with the updated data that has had the formula applied 937. The status of the record may be updated to pre-processed 960 and the process ends 970.

[0041] In some embodiments, the flowchart of how the system uses the post-processing table to produce an output can be seen in Figure 10, in relation to Figure 5. The process begins 1000 by checking the newly processed records in the post-processing table 1010. The transformation mapping is then retrieved

1020 from the mapping configuration database or file 1025. The mapping configuration database or file would contain the validation rules and may be stored centrally for easy access. The transformation mapping may also be based on the requirements of a destination or country of choice. Maintenance of the system can be done by updating the rules without having to access or change the configuration engine or data. The target data is then transformed or validated according to the mapping 1030 and the appropriate format is produced based on existing requirements in various file types 1035. The target data is produced 1040 and transported or sent according to the configuration requirement 1045. A notification may be sent according to the configuration set up to the destination address or addressee listed 1050 and the process ends 1070. The destination may be a customs server, email address or web page.

[0042] In accordance with some embodiments of the invention, a flowchart of an analytic engine within the system can be seen in Figure 11, in relation to Figure 6. The process begins 1100 with a pre-defined time period in which the analytic engine analyses the data 1110. The pre-processing table and post-processing table are accessed and compared with a user intervention table 1112, which may store the values for an entry at various stages such as at pre-processing, post-processing, before user intervention, or after user intervention. The analytic engine may compare the original values from the source (possibly in the pre-processing table) against mapped-to values 1114 and these values may be set either by the user or the administrator. The analytics configuration is then accessed 1116 and the appropriate table and/or column and/or record is checked

for periodic analytics 1118 and the data is updated accordingly in a post analytics table 1120. This may be subject to approval 1125 and in an automated path, the system may check the new transformation if the value can be mapped from the recommended value from the analytic engine 1130. The user is notified regarding the recommended value 1135 and may decide whether or not to accept the recommendation 1140. If the recommended value is used as the new value 1145, it is manually mapped by the user recorded in the database 1150. The system may show the user values that failed to map and prompted for inputs from the user to indicate the values and the record updated accordingly 1155. The system may prompt the administrator by triggering an email 1160 and the administrator would approve (or reject) a recommended record in the database or table 1162, and this is stored accordingly 1164 and the process ends 1170.

[0043]Turning now to Figure 12, a customs declaration system in accordance with an embodiment of the invention is illustrated. The system 1210 includes a server 1212. In other embodiments, the application server or server 1212 can be any processing device including a processor and sufficient resources to perform the process of making a customs declaration. The server 1212 is connected to an HTTP server 1214. The HTTP server 1214 uses HTTP or any other appropriate stateless protocols to communicate via a network 1216 such as the Internet, with any other device connected to the network 1216. In the illustrated embodiment, user devices include personal computers 1218, CE players, and mobile phones 1220. In other embodiments, user devices can include consumer electronic devices such as televisions, set top boxes, video game consoles, tablets, and

other devices that are capable of connecting to a server via HTTP and playing back encoded media.

[0044] Some process for providing methods and systems in accordance with embodiments of this invention are executed by a user device or user mobile device as shown in Figure 13. One skilled in the art will recognize that user device 1300 may include other components that are omitted for brevity without departing from the embodiments of the invention as described. The user device 1300 includes a processor 1305, a non-volatile memory 1310, and a volatile memory 1315. The processor 1305 is a processor, microprocessor, controller, or a combination of processors, microprocessor, and/or controllers that performs instructions stored in the volatile 1315 or non-volatile memory 1310 to manipulate data stored in the memory. The non-volatile memory 1310 can store processor instructions utilized to configure the user device 1300 to perform processes including processes in accordance with embodiments of the invention and/or data for the processes being utilized. In other embodiments, the user device software and/or firmware can be stored in any of a variety of non-transitory computer readable media appropriate to a specific application.

[0045] The communications network refers to any contact between the parties described and is accomplished through any suitable communication means, including, but not limited to, a telephone network, public switch telephone network, intranet, Internet, extranet, WAN, LAN, point of interaction device, point of sale device, personal digital assistant, cellular phone, kiosk terminal, automated teller machine (ATM), etc.), online communications, off-line

communications, wireless communications, satellite communications, and/or the like. One skilled in the art will also appreciate that, for security reasons, any databases, systems, or components of the present invention may consist of any combination of databases or components at a single location or at multiple locations, wherein each database or system includes any of various suitable security features, such as firewalls, access codes, encryption, de-encryption, compression, decompression, and/or the like. The system of the invention can fetch content from separate or remote locations, and store the data and create local databases for logging information. Connections may be created as two-way synchronous and non-synchronous connections to external servers to provide data and instructions.

[0046] As understood by one of ordinary skill in the art, the present invention can be implemented with special purpose computers, devices, and servers that are programmed to implement the embodiments described herein. Further, the system according to the embodiments disclosed herein is able accommodate many more combinations and permutations, or any other future developments. For example, the system according to the embodiments disclosed herein can accommodate containers or ships that transmit wirelessly an electronic manifest and clear customs automatically upon departure from or arrival at a prepared port. The present invention can use any database management system to manage the database. The alert may be sent to a mobile device, and the notification to the mobile device may be a push notification.

[0047] Thus, the present invention has been fully described with reference to the drawing figures. Although the invention has been described based upon these preferred embodiments, to those of skill in the art, certain modifications, variations, and alternative constructions would be apparent, while remaining within the spirit and scope of the invention. In order to determine the metes and bounds of the invention, therefore, reference should be made to the appended claims.

CLAIMS

1. A method for clearing customs when goods are imported or exported, the method comprising:
 - receiving a declaration from a source, said declaration comprising a field;
 - storing the input in a database in the form of a table;
 - processing the table using a configuration engine;
 - validating the table using a validation rule;
 - transforming the table; and
 - producing an output from the table and sending the output to a target,wherein the table is transformed based on a requirement of a destination country.
2. The method of claim 1 further comprising receiving a first declaration and a second declaration, wherein the first declaration is in a first file format and the second declaration is in a second file format, and the first file format and the second file format are different.
3. The method of claim 1 further comprising receiving a first declaration from a first source and a second declaration from a second source, wherein the first source uses a first communication channel and the second source uses a second communication channel.
4. The method of claim 1 wherein the step of producing an output from the table further comprises sending the output to a plurality of destination addresses.
5. The method of any one of claims 1-4 further comprising obtaining an approval from the destination country.

6. The method of claim 5, further comprising sending a notification of the approval to the source.
7. The method of claim 1 wherein the step of processing the table comprises filling the field with a default value.
8. The method of claim 1 wherein the step of processing the table comprises replacing the first field with a lookup value based on a lookup table.
9. The method of claim 8, wherein the lookup table is accessed and stored by the configuration engine.
10. The method of claim 1, wherein the step of processing the table comprises applying a formula to a first field and obtaining an outcome and replacing the first field with the outcome.
11. The method of claim 10, wherein applying the formula to the first field is based on a second field.
12. The method of claim 1, wherein the step of validating the table comprises accessing a validation rule and applying the validation rule to the table.
13. The method of claim 12, wherein the validation rule is stored in a database and accessed by the configuration engine.
14. The method of claim 1, wherein the step of transforming the table includes a second declaration for a second destination country.
15. The method of claim 1, wherein the step of sending the output to the target is done via one of email, secure file transfer protocol, or xml page.

16. A system for clearing customs when goods are imported or exported, the system comprising:

a database;

a server with a communication channel capable of receiving a declaration from a source and storing the declaration in a table in the database; and

a configuration engine capable of accessing table in the database and transforming the table,

wherein the server is instructed to send the declaration to a destination for approval.

17. The system of claim 16 wherein the configuration engine is capable of processing the table.

18. The system of claim 16 wherein the configuration engine is capable of validating the table.

19. The system of claim 16, wherein the server receives a plurality of declarations via a plurality of sources.

20. The system of claim 19, wherein the plurality of declarations include at least two different file formats.

21. The system of claim 19, wherein the plurality of declarations are done via at least two different communication channels.

22. The system of claim 16, wherein the server is instructed to send the declaration to a plurality of destinations.