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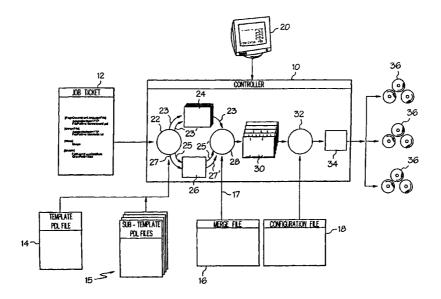
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#### (57) Abstract

A computer implemented method includes the steps of: a) generating a template PDL (14) specification defining how the template data is to appear on a printed page; b) generating a plurality of sub-templates PDL (15) specifications; c) interpreting the template specification so as to generate bitmap or commands (display list); d) saving the bitmap or commands into memory; e) associating the variable data identifier with the sub-template specifications; f) accessing a first sub-template specification; g) processing the first sub-template specification to generate bitmap or commands; h) accessing the bitmap or commands; and i) merging plurality of rendering commands (16), if necessary. The steps may be repeated, as necessary, to generate a plurality of merged bitmaps.

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# METHOD AND SYSTEM FOR MERGING VARIABLE TEXT AND IMAGES INTO BITMAPS DEFINED BY A PAGE DESCRIPTION LANGUAGE

#### **CROSS-REFERENCE TO RELATED APPLICATIONS**

The present patent application is a Continuation-In-Part of U.S. Patent Application, S/N 08/896,899, filed January 18, 1997; which is a Continuation-In-Part of U.S. Patent Application, S/N 08/373,582, filed January 18, 1995 and issued as U.S. Patent No. 5,729,665.

#### **BACKGROUND OF THE INVENTION**

The present invention relates to the high-speed printing industry, and more particularly, to a system and method for merging variable data and images into a template image defined by a page description language file in a high speed printing environment.

Application programs, such as wordprocessors, illustrators, and computer aided design systems are software packages used to create a document (text and graphics) on a computer screen and to simultaneously generate a page description language ("PDL") specification, which is to be transferred to the printer, or to any other type of raster device or output device for creating a hard copy or copies of the document. Alternatively a PDL specification can be generated by a programmer without the assistance of an application program.

The printer executes the PDL specification to generate a bitmap of the document, or a raster-data representation of a document, and eventually transfers the bitmap or raster-data to a physical medium such as paper. A typical PDL language, such as PostScript (a registered trademark of Adobe Corporation) defines a page of the document as containing a number of data areas, where each data area contains either graphic or alphanumeric data. Each data area is defined by a "graphic state," which is a collection of parameters or attributes for controlling the representation and appearance of text and graphics. For example, the graphic state can include a set of text attributes such as scale factor, type font, etc. In postscript an example of a PDL command used to build a graphic state can be:

20 rotate /Times-Roman findfont 14 scalefont setfont

Examples of PDL commands used to define the graphic or alpha-numeric data that is displayed in the data area include:

0 0 moveto and (ABC) show

The entire group of PDL commands used to define a document is hereinafter referred to as the "PDL specification." Furthermore, the entire graphic state, or any particular attribute or combination of attributes included in a graphic state, or any similar attribute contained in a PDL specification for defining or controlling the representation, location and/or appearance of text and graphics in a final bitmap or raster image is hereinafter referred to as "graphic attributes."

In variable data printing each printed document shares a common template and there is at least one area in the template that changes for each printing of the template. Typical PDL languages are not designed for high-speed variable data printing because, with PDL languages and interpreters, even if a single item of data in the document changes, an entirely new PDL specification must be created and interpreted. For example, if 100,000 copies of a mass mailing advertisement were to be printed (i.e., each copy of which is identical except for the mailing address) it is typically necessary to generate a new PDL specification for each copy to be printed. Hence, to generate 100,000 advertisements, it would be necessary to generate 100,000 PDL specifications, even though each advertisement is virtually the same except for the variable data area. The processing time required to interpret and render 100,000 PDL specifications is enormous, significantly slowing the entire printing system.

Furthermore, typical PDL languages do not include the capability of rapidly merging variable images or bitmaps (such as company logos, coupons, charts, and the like) along with variable text data into the template bitmaps. Accordingly, there is a need for a high-speed printing operation having the ability to merge variable data (which includes variable text data and bitmap images) into a template defined by a PDL specification.

# **SUMMARY OF THE INVENTION**

It is an object of the present invention to provide as system and method for merging variable text and bitmap images into a PDL specification in high-speed printing operation. It is a further object of the present invention to provide the ability to generate a plurality of merged bitmaps, which are each essentially a copy of the template, except for at least one portion of the template into which the variable data has been merged. In this portion, each merged bitmap can contain a different set of variable data merged into it. The template is defined by a PDL specification, and this template specification only needs to be processed or interpreted once before creating all of the merged bitmaps, thus providing an extremely high-speed variable data printing operation. The variable images to be merged into the template may also be defined by "sub-template" PDL specifications, which also need only be processed or interpreted once. Such sub-template specifications may also allow for variable data or images to be merged into them as well, before being merged into the primary template.

A computer implemented method for merging variable data into an image defined by page description language specification ("PDL specification"), according to the present invention, generally comprises the steps of: processing (interpreting) the template PDL specification to produce a template; processing the sub-template specification (defining the variable bitmap image) to produce a sub-template; identifying a variable data identifier in the template specification; associating the sub-template with the variable data identifier; and merging the sub-template into a copy of a template to generate a merged bitmap.

More specifically, a computer implemented method of the present invention comprises the steps of: a) generating a template PDL specification, the template specification including template data and associated graphic attributes (i.e., graphic states) defining how the template data is to appear on a printed page, the template specification including at least one variable data identifier; b) generating a plurality of sub-template PDL specifications, each sub-template specification including sub-template data and associated graphic attributes defining how the sub-template data is to appear on a portion of a printed page; c) interpreting the template specification so as to generate a template bitmap or a plurality of template rendering commands (display list), and during the interpreting

step, identifying the variable data identifier; d) saving the template bitmap or the plurality of template rendering commands into memory; e) associating the variable data identifier with the sub-template specifications; f) accessing a first sub-template specification from the plurality of sub-template specifications; g) processing the first sub-template specification so as to generate a sub-template bitmap or a plurality of first sub-template rendering commands; h) accessing a copy of the template bitmap or the plurality of template rendering commands from memory; i) merging the copy of the template bitmap or template rendering commands with the sub-template bitmap or sub-template rendering commands so as to provide a first merged bitmap or first merged plurality of rendering commands; j) generating a first merged bitmap from the first merged plurality rendering commands (if necessary); k) accessing a next sub-template specification from the plurality of sub-template specifications; 1) processing the next sub-template specification so as to generate a next subtemplate bitmap or plurality of next sub-template rendering commands, m) accessing a copy of the template bitmap or template rendering commands from memory; n) merging the copy of the template bitmap or template rendering commands with the next sub-template bitmap or sub-template rendering commands so as to provide a next merged bitmap or next plurality of rendering commands; and o) generating a next merge bitmap from the next merged plurality of rendering commands, if necessary. The steps k-o may be repeated, as necessary, to generate a plurality of merged bitmaps.

The method of the present invention is accomplished by executing a control task in conjunction with a PDL interpreter program. The control task generates a template display list based upon the PDL commands in the PDL specification. The display list includes a plurality of rendering commands, where each rendering command designates a particular data area or object to be rendered, the graphic states to be applied to the data area and the offset address at which the rendered object, if any, in the data area is to be over written onto the final bitmap. The graphic states for each data area re set forth in the PDL specification, and pertain to the print attributes that describe how particular graphic or alpha-numeric data is to appear on the printed page. These attributes can include size, font, position, orientation, location and the like. The control task also generates display lists for each of the sub-template PDL specifications.

The control task, during the PDL interpretation procedures, monitors the data areas defined by the PDL specifications to watch for variable data identifiers defined by the PDL code. If the control task identifies a data area or object as being (or including) a variable data identifier, it reserves the graphic states associated with that variable data identifier in a cache and continues on with the interpretation procedure, preferably without adding the rendering commands for that variable data area into the display list. In this identification step, the control task will also watch for attributes associated with the variable data identifier. Such attributes may define the variable data identifier as identifying a subtemplate bitmap, which is to be merged into the bitmap represented by the PDL specification. If the interpreter detects such an attribute, rather than saving off the graphic states associated with this variable data area, the control task will instead store a "place holder" in the graphic states cache corresponding to the sub-template PDL specification identified in the variable data identifier string. In certain embodiments of the invention, the control task may include certain graphic attributes associated with the variable data identifier in the cache, along with the place holder, such as a graphic attribute defining the location of the variable data identifier (which may be used to determine where to merge the sub-template bitmap into the template bitmap).

Once the interpreter program completes its interpretation of the PDL specifications, the control task saves each display list in memory without dispatching a bitmap of the template or sub-template to the printer. Subsequently, the merge task is initiated which accesses a copy of the template display list from memory and begins processing the rendering commands in the display list to create a bitmap of the template. Also, the merge task accesses a variable data record from a merge file; associates the variable data record to the graphic states in the cache and creates bitmaps for the data in the variable data record by applying the reserved graphics states to the data in the variable data record these bitmaps may be merged into the template bitmap or rendered directly onto the template bitmap during, before, or after the rendering of the template bitmap. When the merge task reaches the place holder in the cache associated with the sub-template display list, the merge task will access and begin processing the rendering commands in the sub-template display list to create a bitmap of the sub-template, which is then merged onto the template bitmap. When finished with the rendering commands of the sub-template display

list, the merge task will return to the processing of the variable data record by applying the reserved graphic states thereto and merging the resulting bitmaps into the template bitmap. The merge task is repeated for each variable data record in the merge file to create a plurality of the merged bitmaps.

Therefore, the PDL specifications of the template and sub-templates need only be interpreted once, saving significant processing time for the variable printing operation, because the reserved graphic states may be utilized over and over again to create the variable bitmaps for each variable data record contained in the merge file. Similarly the display lists of the templates and sub-templates may be used over and over again to create the multiple merged bitmaps.

In its simplest form a sub-template is a collection of graphic states or graphic attributes taken from another source (such as a PDL specification) and used collectively as a variable element inserted into a template PDL page. The sub-templates may be used to add variable graphics/logos, or other static images to a page; to add formatted pieces (such as graphs, charts, images, etc.), including any number of additional variable fields to a page, a page of variable coupons directly marketed to the end receiver, and the like. The sub-template is really just another PDL page used as an element drawn somewhere on another page. For example, one coulde have a PDL page that had a company logo drawn on it. One could then use that logo on demand whenever a printed page calls for it. Taken further, one could have several different logos, each drawn as a separate PDL page, which one could add (or not) to any page printed during the processing job.

#### BRIEF DESCRIPTION OF THE DRAWINGS

- Fig. 1 is a schematic, block diagram representation of a high-speed printing system according to the present invention;
- Fig. 2 is a schematic flow diagram illustrating the method of the control task according to the present invention;
- Fig. 3 is a schematic flow diagram representing the method of the merge task according to the present invention;
  - Fig. 4 is an example of a job ticket file for use with the present invention;

Fig. 5 is an example of a merge file for use with the present invention;

Fig. 6 is an example of a sub-template file for use with the present invention.

Fig. 7 is an example of a template file for use with the present invention; and

Fig. 8 is an example of a merged page created by the process of the present invention using the PDL specification of Fig. 7, the job ticket of Fig. 4, the sub-template specifications of Fig. 6 and the merge file of Fig. 5.

#### **DETAILED DESCRIPTION**

As shown in Fig. 1, a system for performing the method of the present invention includes a printer controller 10 having access to a job ticket file 12 a page description language ("PDL") file of a template 14, a plurality of PDL files for subtemplates 15, a source of variable data such as a merge file 16 and an optional printer configuration file 18. The system also contains an operator control terminal 20 for providing operator controls such as indicating the name and path of the job ticket file 12 for the specific print job.

The job ticket file 12 contains the guidelines for the print job which can include the names and locations of the PDL files 14, 15, the merge files 16, the configuration files 18, etc.; and may also include special instructions pertaining to the print job such as identifying and locating sub-templates, defining additional graphical attributes for variable data areas identified during the process, and the like, all of which is described in greater detail below. The PDL files 14, 15 are preferably PostScript\* specifications created by an application program such as a wordprocessor, illustrator, or computer aided design system. The merge file 16 contains platform independent data, such as text data, image data, bar-code data and the like, which is to merged into a template bitmap defined by the PDL template specification 14 or the PDL sub-template specifications 15 during the merging task, as will be described in detail below. The configuration file 18, defines the print engines and the post processing equipment and other options to be executed.

Initially, the path and name of the job ticket file 12 is specified by the operator using the operator control terminal 20. The printer controller 10 retrieves the job ticket file 12 and then retrieves the PDL files 14, 15 specified in the job ticket file. Next,

the controller 10 initiates a control task 22 in conjunction with a page description language interpreter program.

The control task 22 interprets the PDL specifications from the PDL files 14, 15 and monitors data areas defined in the PDL specifications to watch areas defined by the specifications to become variable. If the control task identifies a data area as being a variable data area, it reserves the graphic states and/or other associated graphic attributes 23 of that variable data area in a cache or memory 24 and then moves on to the next data area defined by the particular PDL specification, usually without allowing any data defined by the variable data area to be added to the template bitmap. The control task also looks for predetermined attributes defined in the data areas to determine if the data area is defining the importation of a sub-template bitmap. If the control task detects such an attribute, rather than storing the graphic states associated with the data area in the cache 24, it stores a placeholder 23' in memory, which will instruct the merge task that a subtemplate is to be incorporated into the present template or sub-template bitmap during the merge task 28, and will also include information identifying the one or a group of the subtemplates that may be merged into the present template or sub-template bitmap. Once the control task completes its processing of the particular PDL specification, the control task saves the template display list 25 or sub-template display list 27 in memory 26. The template and sub-template display lists 25, 27 will include a plurality of rendering commands for the static data defined in their respective PDL specifications. Each rendering command designates a particular static data area or object to be rendered, the graphic states and/or graphic attributes to be applied to the static data area and the offset address at which the rendered object, if any, in the static data area is to be over written onto the final bitmap.

Next, a merge task 28, having access to the variable data records 17 from the merge file 16 is executed to apply the reserved graphic states and/or graphic attributes 23 to the variable data records 17, creating rendering commands for that variable data record as defined by the graphic states. The merge task 28 retrieves a copy 25' of the template display list from the memory 26 and merges the variable data rendering commands with the template display list to create a merged display list 30. The merge task will also look for place holders 23' among the graphic states stored in the memory 24 during this merging

operation. If a place holder 23' is detected, the merge task will access a copy 27' of the display list of the sub-template corresponding to the place holder and will then merge the rendering commands from the display list of the sub-template 27' with the merged display list 30. It is noted that the sub-template may also include an associated cache of graphic states and/or graphic attributes corresponding to variable data areas (or even additional levels of sub-templates) defined within the sub-template. Therefore, if such a cache is present with a particular sub-template, the merge task will apply such stored graphic states and/or graphic attributes to the present variable data fields in the variable data record 17 linked to the graphic states to therefore create rendering commands for such variable data fields. These rendering commands are also merged into the display list 30.

Once the merged display list 30 is created, the controller 10 performs a rendering task 32 to render the merged display list 30 into a plurality of bitmap bands 34 for dispatching to at least one print engine 36. A general method for performing the above control task is described in U.S. Patent No. 5,729,665, the disclosure which is incorporated herein by reference. A method and system architecture for performing the above merging, banding and dispatching operations are respectively described in U.S. Patent Nos. 5,594,860 and 5,796,930, the disclosures of which are also incorporated herein by reference.

As shown in Fig. 2, a graphical flow diagram representation of the control task is illustrated. As discussed above, the primary function of the control task is to monitor a PDL interpreter program which interprets the PDL specifications for the template (14) and the sub-templates 15 to create display lists 25, 27, containing the rendering commands for the static data in the PDL specifications, and a cache of graphic states and/or graphic attributes corresponding to the variable data areas identified by the PDL specifications. While the PDL specifications are typically in the form of a list of PDL commands (as described above) the specifications 14, 15a and 15b shown in Fig. 2 are shown, for clarity, as they would have appeared to the artist using the application program (such as QuarkXPress\*) to create such PDL specifications.

As shown in Fig. 2 the template PDL file 14 includes a plurality of static data areas 38 and a plurality of variable data areas 40. The variable data areas are identified by the control task as a text string surrounded by special characters, " < < " and

">> ". The phrase or word within the special characters corresponds to the field name for the particular variable data area. These strings may also be followed by an attribute command string 42, which may define special attributes to be applied to the particular variable data area. With respect to the template PDL file shown in Fig. 2, the variable data identifier with the field name "PICTURE" is followed by the attribute command string "SELECT", which, as will be discussed below, informs the control task that the particular variable data area corresponds to the insertion of a sub-template.

As discussed above, the rendering commands for the static data areas 38 in the template PDL file are stored in a template display list 25 and the graphic states 23 of the variable data areas 40 are stored in a cache 24. As also discussed above, and as will be discussed in detail below, the graphic state stored in the cache for the variable data area having the "select" attribute string is merely a place holder 23', which will instruct the merge file to insert a sub-template bit map into the template bit map being rendered.

The control task will also interpret the sub-template PDL files 15a, 15b, shown as sub-template "A" and sub-template "B" in Fig. 2. Sub-template "A" 15a includes two static data areas 38, and therefore a sub-template display list 27a is created for the sub-template "A" PDL file, including the rendering commands for such static data areas. The sub-template "B" PDL file 15b includes a static data area 38 and a variable data area 40. Therefore, the control task will create a sub-template display list 27b, including the rendering command for the static data area and will cache the graphic states 23' for the variable data area. It is noted here that the variable data identifiers in the sub-template PDL specifications may also include attribute strings for special processing, such as specifying additional levels of sub-template files. For the purposes of simplicity, the present example is shown with only one level of sub-templates.

As shown in Fig. 3, the merge task will access a copy 25' of the template display list and will also access a first record 46 from the merge file 16. Note that the first record has record fields, in the form of text strings, for each of the field names VAR1, VAR2, VAR3 and VAR4. For the field name PICTURE, the record includes a name (in this example either A or B) corresponding to the sub-template to be inserted for the variable data identifier 40 having the field name "PICTURE." The merge task accesses the rendering commands from the copy of the template display list 25' to add to a merged

display list 30. Such rendering commands will be processed by the rendering task 32 to generate the bit maps 48 for the static data areas from the template PDL specification 14 to appear in the merged bitmap 52. The merge task will link the cached graphic states 23 to the to the record fields by matching the field names associated with the cached graphic state to the field names in the merge file. For example, the cached graphic states for the variable data identifier 40 having the field name "VAR1" will be linked to the record fields in the merge file under the field name "VAR1." Once linked, the merge task will apply the graphic states 23 to the data in the associated record field to create rendering commands for such data, which are to merged into the merged display list 30. Such rendering commands will be processed by the rendering task 32 to generate the bit maps 50 in the merged bitmap 52. This is done for each of the graphic states in the cache.

When the merge task reaches the place holder 23' in the template graphic states cache, it will link the place holder 23' to the to the record fields by matching the field name associated with the place holder 23' to a field name in the merge file. For example, the he place holder 23' for the variable data identifier 40 having the field name "PICTURE" will be linked to the record fields in the merge file under the field name "PICTURE." The field name in the record will identify which of the sub-templates to merge into the merged display list 30 and eventually into the merged bitmap 52. Because the merge record 46 indicates that the sub-template "B" is to be used, the merge task accesses the sub-template display list 44b and merges its rendering commands into the merged display list 30. Such rendering commands will be processed by the rendering task 32 to generate the bit maps 54 in the merged bitmap 52. The merge task also accesses the associated cache of graphic states for the sub-template, and applies the graphic states to the record fields linked to the graphic states so as to generate rendering commands for the data of the record fields that are to be merged into the merged display list 30. Such rendering commands will be processed by the rendering task 32 to generate the bit maps 56 in the merged bitmap 52.

Note that if this sub-template "B" included a further level of sub-templates, the cache graphic states for the sub-template would also include a place holder, and the merge task would access the sub-templates associated with this place holder for another level of sub-template processing.

The final merged big map 52 includes the static data bitmaps 48 defined by the template PDL file 14, the static data bitmaps 54 defined by the sub-template "B" PDL file 15b, the variable data bitmaps 50 having the graphic attributes corresponding to the cached graphic states for the variable data identifiers 40 in the template PDL file 50, and the variable data bitmaps 56 having the graphic attributes corresponding to the cached graphic states for the variable data identifiers 40 in the sub-template "B" PDL file 15b. The location of the bit maps 54, 56 from the sub-template "B" PDL specification can be defined by the job ticket file (see the Appendix to this disclosure). Furthermore, it is within the scope of the invention to include a graphic state or graphic attribute with the place holder that corresponds to the location of the variable data identifier (this graphic attribute may also include other information such as orientation, size, etc.). This additional graphic attribute may be stored with the place holder and applied to the bit map data from the subtemplate file during the merging operation. For example, a graphic state corresponding to the location of the variable data identifier having the attribute 42 corresponding to the subtemplate may be stored with the place holder in the graphic state cache to direct the merge task to place the bit maps from the sub-template in the merge bit map 52 in the location directed by the stored graphic state.

An embodiment of the present invention is illustrated by way of example in Figs. 4-8. As illustrated in Fig. 4, the job ticket file 12 contains a group header 60 "[PageDescriptionLanguageFile]" indicating that the phrases below that group header 60 are the names of page description language files to be processed by the control task. In the present example, there are two page description language files: a file "letter\_master" 62 and a file "all\_maps" 64. The job ticket file 12 includes a group header 66 "[letter\_master]," under which are defined the location and attributes for that PDL file. Note that with this PDL file no attributes are defined and only the path location for the file is indicated.

Another group header 68 "[all\_maps]" defines the path and attributes for the all\_maps PDL file. Note that an attribute string 70 "SubTemplate = true" indicates that this file is a subtemplate file and the attribute string 72 "Templates = South, East, West, Midwest" indicates that the file includes four sub-templates, named South, East, West and Midwest.

The job ticket also includes a group header 74 "[MergeFiles]" identifying the names of the merge files to be used in the merge task. In the present case a single merge

file 76 is named "merge." Below that, a group header 78 "[merge]" is given, under which the attributes and location of the merge file is set forth. The attribute strings for this merge file indicate that the merge file is delimited and includes merge headers. The attribute strings also indicate that the records are delimited by a carriage-return/line-feed character and the particular fields in each record are delimited by a tab character. A complete description of the different attributes that can be defined for the PDL files is described in detail in the Appendix below.

As illustrated in Fig. 5, the merge file 16 has a platform-independent data file that contains the "variable" data to be merged into the path defined in the PDL specification, and also includes names associated with the sub-templates to be merged into the PDL specification during the merge task. The merge file in the present example includes a plurality of rows of merge records separated by carriage-return/line space characters, where each record includes the following fields: "fname," "lname," "prefix," "title," "company," "address," "zip," "region," "city" and "state." As will be described below, the data in the field "region" doubles as variable data and also as a name of a sub-template to be merged into the final bit maps.

As illustrated in Fig. 6, the designer will utilize an application program to create a document containing static data and variable data identifiers. The application program will then be directed to create a PDL specification of the document by the designer. The variable data identifiers 80 each include a field name surrounded by special characters, " < < " and " >> ", and may also include an attribute string 82 following the field name and special characters. The attribute string will be described below. The PDL specification generated by the application program will include the graphic states of the variable data identifiers 80. These graphic states can include the font size (i.e., 12 point), the type-font (i.e., Helvetica), the orientation (i.e., horizontal), the location such as x and y coordinates, and the like. As discussed above, the control task will create a display list with the rendering commands for the static data in the PDL specification and will cache the graphic states for the variable data identifiers without transferring the rendering commands for the variable data identifiers to the display list. The variable data identifier in the bottom center portion of the page includes the "select" attribute, indicating to the control task that a sub-template bit map is to be inserted into the document. The field name "region"

associated with this variable data identifier indicates that the sub-template name will be under the heading "region" in the merge file.

Referring to Fig. 5, the regions named in the merge file are South, East, West and Midwest. Therefore, referring to Fig. 4, the sub-templates having the name South, East, West and Midwest are found in the PDL file defined under the "all\_maps" group header (68) in the job ticket. Note that the attributes defined under the "all\_maps" group header do not include an attribute directing the location of the sub-template. Therefore, the lower left-hand corner of the sub-template merged into the final document will be directed by the locational graphic states of the variable data identifier stored along with the place holder in the graphic state cache.

Fig. 7 illustrates the sub-template PDL file 15, including the four sub-templates: South 84a, East 84b, West 84c and Midwest 84d. The merge task will access a variable data record 86 from the merge file 16 and a copy of the display list for the template PDL file 25. As discussed above, the merge task will generate rendering commands for the variable data records in the merge file by applying the cached graphic states linked to the variable data records. These rendering commands will be merged into the merged display list along with the rendering commands from the display list for the template PDL file. The merge task will also merge the rendering commands from the display list of the sub-template named by the variable data records into the merged display list. The rendering task will process the rendering commands in the merged display list to generate the final merged bit map for the present variable data record 86. This bit map appears in Fig. 8.

Referring to Figs. 5, 6 and 8, the merge task will apply the cached graphic states linked to the variable data fields in the variable data record 86 as follows. The first graphic state in the cache will be for the first variable data identifier 80a. The field name for this variable data identifier 80a is "fname," which in the particular variable data record, corresponds to "Shannon." Therefore, the final merged bit map will include a bit map of the text, "Shannon" 88a, having the graphic states for the variable data identifier 80a. Likewise, the second cached graphic state will be for the variable data identifier 80b which includes a field name "Iname," corresponding to the term "Janzen" in the particular variable data record 86. Therefore, the final merged bit map will include a bit map of the text, "Janzen" 88b, having the graphic states for the variable data identifier 80b.

Correspondingly, the remaining graphic states, except for those of variable data identifier 88m, which is the variable data identifier including the sub-template attribute 82, will be processed in the same way resulting in bit maps 88c-88n in the merged bitmap.

When the merge task reaches the place holder in the graphic state cache associated with the variable data identifier 80m, it will refer to the merge record for the name of the sub-template under the field name "Region," which in the present example is "South." Referring to Fig. 7, the sub-template having the name "South" is sub-template 84a. Accordingly, the merge file will then merge the rendering commands from the display list of the sub-template 84a into the merged display list. Some or all of these rendering commands will also be modified by a graphic attribute corresponding to the location that the sub-template is to be merged into the merged bit map. As discussed above, this graphic attribute may be taken from the graphic state of the variable data identifier 80m or may be defined in the job ticket file.

The present invention also provides for the flowing of sub-templates into a path defined by the template specification. Such a feature is based upon the invention disclosed in U.S. Pat. App. Ser. No. 08/897,467, filed July 18, 1997. Specifically, the feature includes the steps of: associating a path defined by the template PDL specification with the variable data identifier with the "sub-template" attribute string; and merging the sub-template(s) into the path according to the path boundary and according to a predefined flow rule (as will be defined in the job ticket). The path may be associated with the attribute string, for example, by having the PDL command for the path immediately follow the PDL command for the attribute string in the PDL specification, or by having the PDL command for the path "grouped" with the PDL command for the attribute string using a GROUP command provided by the application program.

The following Appendix provides a preferred compilation of commands and parameter definitions that can be specified in the job ticket file 12 for the sub-template application as described above. Each entry provides a particular command header, the syntax for the command, any relevant remarks for the use of the command, examples, etc. As will be appreciated by one of ordinary skill in the art, the present invention includes any and all additional functions, features and attributes detailed in the Appendix.

## **APPENDIX**

# [PageDescriptionLanguageFile]

A group that provides a list of tags which you create to describe the PDL file(s) to be used in the print job. Each tag will become a user-defined group to give additional information about a specific PDL file.

**Syntax** 

[PageDescriptionLanguageFile]

PDL File Tag A

PDL File Tag B

Remarks

Required

The number of tags listed equals the number of PDL files that VariScript is to interpret during the job. Every tag that appears under this initial [PageDescriptionLanguageFile] group will become a new group name in succeeding sections of the Job Ticket.

**Explanation** 

PDL File Tag A

Create a descriptive name for the first PDL file used in the print job. This tag is for use within the Job Ticket only and is not used outside of that context.

PDL File Tag B

Create a descriptive name for the next PDL file used in the print job. This tag is for use within the Job Ticket only and is not used outside of that context.

**Example** 

[PageDescriptionLanguageFile]

Cover Form

Contents Form

Letter Form

A user-defined tag name for a group that provides information about a PDL file and corresponds to a descriptive tag that you created under the initial [PageDescriptionLanguageFile] group.

**Syntax** 

[PDL File Tag]

File Path =

<other host access parameters>

< VariScript rendering parameters >

Templates =

Sub Template =

Sub Template Area =

See Also

**Templates** 

Remarks

A separate [PDL File Tag] group is required for each descriptive tag listed under the initial [PageDescriptionLanguageFile] group.

Case sensitivity of the values that you define depends on the host operating system.

**Explanation** 

[PDL File Tag]

Take the descriptive tag under the initial [PageDescriptionLanguageFile] group and write it here as a group name within brackets [].

#### File Path =

Write the drive, path, and file name for the PDL file being described. The format of your notation is dependent on your host computer. See the FilePath element description in Chapter 3.

#### <other host access parameters>

Define values for any other host access parameter for which the default value is not accurate for access to this PDL file. See the element descriptions in Chapter 3.

#### < VariScript rendering parameters >

Define a value for any VariScript rendering parameter which will be applied to all of the templates in this specific PDL file. These elements include PSAnchor, PSLength, PSN Planes, PSOrientation, PSResX, PSResY, PSRotation, PSScale, PSScaleX, PSScaleY, PSTranslateX, PSTranslate Y, and PSWidth. See the element descriptions in Chapter 4.

Applying a VariScript rendering parameter here will override the definition of the same parameter in the configuration file and in the [JobSetup] group This definition, in turn, can be overridden by the definition of the same parameter in the [Template Tag] group.

#### Templates =

See the Templates element description.

#### SubTemplate =

See the Sub Template element description.

# SubTemplate Area =

See the Sub Template Area element description.

**Example** 

[Cover Form]

File pate = forms/cover.ps

Templates = tempA, tempB, tempC, tempD

#### **TEMPLATES**

An element that provides a list of descriptive tags which you create to represent the names of the templates in a PDL file.

**Syntax** 

Templates = Template Tag A, Template Tag B, Template Tag Z

Remarks

Templates is an element within the user-defined [PDL File Tag] group.

NOTE: Each descriptive template tag that you create is for use within the Job Ticket only and is not used outside of that context.

The template tags <u>must be unique within the print job</u> and must appear <u>in the order</u> in which the templates are defined in the PDL file(s). A template that requires no further definition can be represented by a blank tag.

Each tag that appears as a parameter of Templates may become a user-defined group name listed elsewhere in the Job Ticket. The Templates statement simply lets VariScript know that it is to look for user-defined groups and then provides the names (tags) of these groups.

Therefore, in theory, a PDL file with ten pages could have up to ten template tags listed within the Templates element. If any templates need not be named, the order of templates can be preserved by inserting blank template tags into the list.

**Explanation** 

#### Template Tag A

Create a descriptive name for the first template in this PDL file. This tag is for use within the Job Ticket.

# Template Tag B

Create a descriptive name for the next template in this PDL file. This tag is for use within the Job Ticket.

And so on.

**Example** 

Templates = tempA, tempB, ,tempD

#### **SUBTEMPLATE**

An element that identifies the templates within the specified PDL file as being subtemplates.

**Syntax** 

SubTemplate = {True | False}

Remarks

Optional.

A subtemplate is a template or PDL page that is used as an object to be inserted on another page.

A default value for SubTemplate is False.

**Explanation** 

{True | False}

If all (or most) of the templates within the specified PDL file are to be identified as subtemplates, type **True**.

If all (or most) of the templates within the specified PDL file are NOT subtemplates, type **False**.

**Example** 

SubTemplate = True

#### SUBTEMPLATE AREA

An element that assigns a subtemplate name and describes the portion of a template to be used as a subtemplate.

**Syntax** 

SubTemplate Area = Name " < SubName > " X < Units > < Unit Type >  $\setminus$ 

Y < Units x Unit Type > Width < Units > < Unit Type > \
Height < Unit > < Unit Type >

See Also

**SubTemplate** 

Remarks

Optional if SubTemplate = True. Ignored if SubTemplate = False.

This element may be used to specify what part of a template should be used as a subtemplate and to give that extracted portion a subtemplate name.

When this element is defined at a PDL file level, the system will recognize the same extracted portion of each template in the file as being a subtemplate.

**Explanation** 

Name "<SubName>"

This value assigns a specific name to the subtemplate.

Type the word Name followed by a space. For "<SubName>", type the name to be assigned to this subtemplate. Enclose the subtemplate name in double quotation marks (" ").

NOTE: A subtemplate will be known by the official name of the template, unless it is given another name through the SubTemplate Area element.

> The official template name is defined by the method of highest precedence. The template name of lowest precedence is the default system-generated template name, followed by the template name you physically define on the PDL template. Of highest precedence is the template name defined using the NewName element in the [Template Tag] group.

Example: Name "mysubl"

X < Unit > < Unit Type >

This value identifies the subtemplate's offset, the horizontal distance between the left side of the template and the area to be extracted.

Type the character X followed by a space. For  $\langle Units \rangle$ , type the horizontal distance from the template's left side to the beginning of the area to be extracted.

> An X value of 0 represents a location flush along the left side of the template. Increasing the value of X locates the area to be extracted the defined distance to the right.

This value is expressed in unitized format if the unit type is different from the default unit type defined in the Units element. Possible <Unit Type> values are:

for centimeters cm

for decimeters dm

dots for dots

ft

for feet in for inch (default value)

m for meters

for mils mils

for millimeter mm

for nanometers nm

for pixels pixels

for points pts

pulses for pulses

for yards yds

The default value for X is O.

#### Y < Units > < Unit Type >

This value identifies the vertical distance between the bottom of the template and the area to be extracted.

Type the character Y followed by a space. For  $\langle Units \rangle$ , type the vertical distance from the bottom of the template to the beginning of the area to be extracted.

A Y value of 0 represents a location flush along the bottom of the template. Increasing the value of Y locates the area to be extracted the defined distance above the bottom of the template.

The Y value is expressed in unitized format if the unit type is different from the default unit type defined in the Units element. Possible **Unit Type** values are listed above.

The default value for Y is 0.

#### Width < Unit > < Unit Type >

This value identifies the width of the portion to be extracted (starting at the X, Y coordinates).

Type the word **Width** followed by a space. For **<Units>**, type the width of area to be extracted from the template. This measurement is the X (horizontal) dimension of the area to be extracted.

This default value for Width is equal to the width of the template.

#### Heights < Units > < Unit Type >

The value identifies the height (length) of the portion to be extracted (starting at the X, Y coordinates).

Type the word **Height** followed by a space. For <**Units**>, type the height of the area to be extracted from the template. This measurement is the Y (vertical) dimension of the area to be extracted.

This value is expressed in unitized format if the unit type is different from the default unit type defined in the Units element. Possible <Unit Type > values are listed above.

The default value for Height is equal to the width of the template.

### **Example**

```
[PageDescriptionLanguageFile]

ps1

ps2

[ps1]

File Path = /mydir/mypsfile.ps

Templates = temp1, temp2

PSScale = .8

[ps2]

File Path = /mydir/mysubtmp.ps

SubTemplate = True

Templates = temp3, temp4, temp5, temp6

SubTemplate Area - X 1in Y 2in Width 3in Height 4in
```

This example depicts two PDL files.

File ps1 is a "normal" PDL file containing two "normal" templates

File ps2 is identified as a subtemplate file (SubTemplate = True). The same area (SubTemplateArea) on each template is ps2 will be defined as a subtemplate. This area represents a 3-inch wide by 4-inch long portion starting from 1 inch to the right and 2 inches above the lower left corner of the template. Since no Name < SubName > value is given, each subtemplate will take the official name of its template.

#### [TEMPLATE TAG]

A user-defined tag name for a group that provides information about a template and corresponds to a descriptive tag that you create within the Templates element.

### **Syntax**

#### [Template Tag]

< VariScript rendering parameters >

New Name = < Template New Name >

Sub Template =

Sub Template Area =

#### See Also

**Templates** 

#### Remarks

Optional.

A separate [Template Tag] group is required for each descriptive tag listed in the Templates element which you will identify as a subtemplate or assign a new template name or a template-level marketing parameter.

#### **Explanation**

[Template Tag]

Take the descriptive tag within the TempleNames element and write it here as a group name within brackets [].

# < VariScript rendering parameters >

Define a value for any VariScript rendering parameter which will be applied to this specific template. These elements include PSAnchor, PSLength, PSNPlanes, PSOrientation, PSResX, PSResY, PSRotation, PSScale, PSScaleX; PSScale Y, PSTranslater X,

**PSTranslate Y, and PSWidth**. See the element descriptions in Chapter 4.

A rendering parameter applied within this group has the highest precedence. It will override the definition of the same parameter in the configuration file, in the [JobSetup] group, and in the [PDLFileTag] group.

#### NewName =

See the NewName element description

## SubTemplate =

See the SubTemplate element description.

#### SubTemplate Area =

See the SubTemplate Area element description.

# Example

[TempA]

 $NewName = lotto_tikt$ 

PSScale = 0.8125

SubTemplate = True

#### **NEWNAME**

An element that defines a new name for the specified template. This new name overrides the system-generated default template name or the template name that you may have placed directly on this template within the PDL file.

**Syntax** 

NewName = < TemplateNewName >

Remarks

Optional.

The template receives its name in one of three ways:

The system automatically generates a default template name. (lowest precedence)

You can physically name the template when you are working in your design application (for example, QuarkXPress) before you output to a PDL file.

You can define a new template name in the Job Ticket within the NewName element. (highest precedence)

VariScript will recognize only one template name for each template. Therefore, a template name assigned by using a method of higher precedence will overwrite a name of lower precedence. For example, a name defined directly on the template will overwrite the system-generated default, and, in turn, be overwritten by a name defined using the NewName element.

The NewName element does NOT have a default value.

**Explanation** 

<TemplateNewName>

Specify the template's new name.

Example

NewName = lotto tikt

#### **SUBTEMPLATE**

An element that identifies this templates as being a subtemplate.

Syntax SubTemplate = {True | False}

Remarks Optional.

A subtemplate is a template or PDL page that is used as an object to

be inserted on another page.

The default value for SubTemplate is False.

**Explanation** {True | False}

If this template is to be identified as a subtemplate, type True.

If this template is NOT a subtemplate, type False.

**Example** SubTemplate = True

While the forms of apparatus and procedure herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to such precise embodiments, and that variations can be made therein without departing from the scope of the invention.

What is claimed is:

1. A method for generating a plurality of bitmaps comprising the steps of:

(a) generating a template page description language specification, the template specification including template data and associated graphic attributes defining how the template data is to appear on a printed page, the template specification including at least one variable data identifier;

- (b) generating a plurality of sub-template page description language specifications, each sub-template specification including sub-template data and associated graphic attributes defining how the sub-template data is to appear on a portion of a printed page;
- (c) interpreting the template specification so as to generate a plurality of template rendering commands, and during the interpreting step, identifying the variable data identifier;
  - (d) saving the plurality of template rendering commands into memory;
- (e) associating the variable data identifier with the plurality sub-template specifications;
- (f) accessing a first sub-template specification from the plurality of sub-template specifications;
- (g) processing the first sub-template specification so as to generate a plurality of first sub-template rendering commands;
- (h) accessing a copy of the plurality of template rendering commands from memory;
- (i) merging the copy of the plurality of template rendering commands with the plurality of first sub-template rendering commands so as to provide a first merged plurality of rendering commands;
- (j) generating a first merged bitmap from the first merged plurality of rendering commands;
- (k) accessing a next sub-template specification from the plurality of sub-template specifications;
- (l) processing the next sub-template specification so as to generate a plurality of first sub-template rendering commands;

(m) accessing a copy of the plurality of template rendering commands from memory;

- (n) merging the copy of the plurality of template rendering commands with the plurality of next sub-template rendering commands so as to provide a next merged plurality of rendering commands; and
- (o) generating a next merged bitmap from the next merged plurality of rendering commands.
- 2. The method of claim 1, wherein steps (k) through (o) are repeated for the remaining plurality of sub-template specifications.
- 3. The method of claim 1, wherein:
  the variable data identifier includes a associated graphic attribute;
  prior to the merging step (i), the graphic attribute associated with the variable data identifier is saved to memory;

the merging step (i) includes the steps of accessing the graphic attribute associated with the variable data identifier from memory and applying it to the plurality of first sub-template rendering commands so that a bitmap generated by the plurality of first sub-template rendering commands will include the graphic attribute associated with the variable data identifier; and

the merging step (p) includes the steps of accessing the graphic attribute associated with the variable data identifier from memory and applying it to the plurality of next sub-template rendering commands so that a bitmap generated by the plurality of next sub-template rendering commands will include the graphic attribute associated with the variable data identifier.

- 4. The method of claim 1, wherein the variable data identifier includes an associated graphic attribute that is discarded during the processing step.
  - 5. The method of claim 1, wherein:

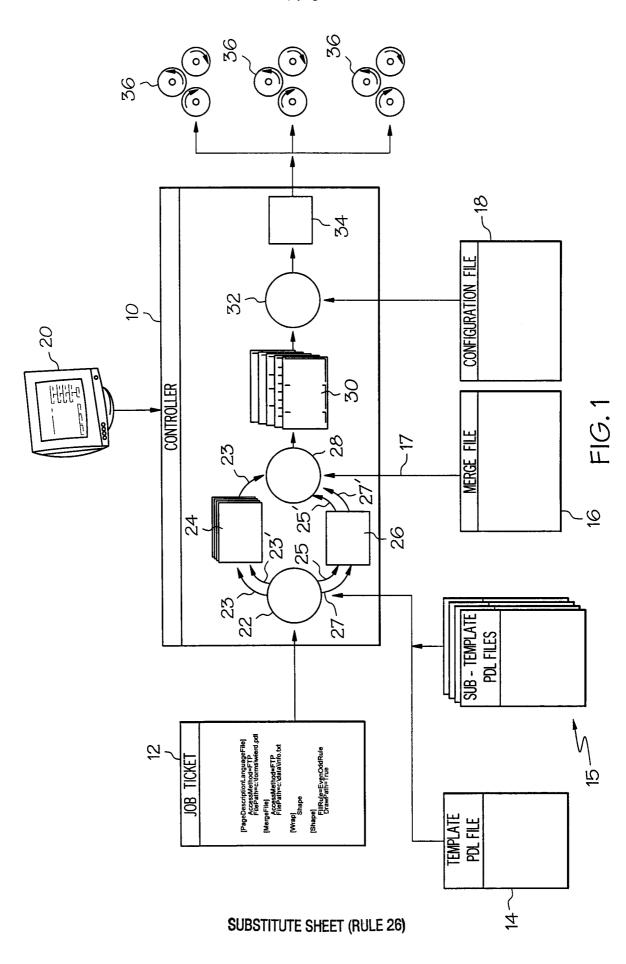
wherein the associating step includes the step of referring to a file containing a name corresponding to at least one of the locations and identities of sub-template specifications; and

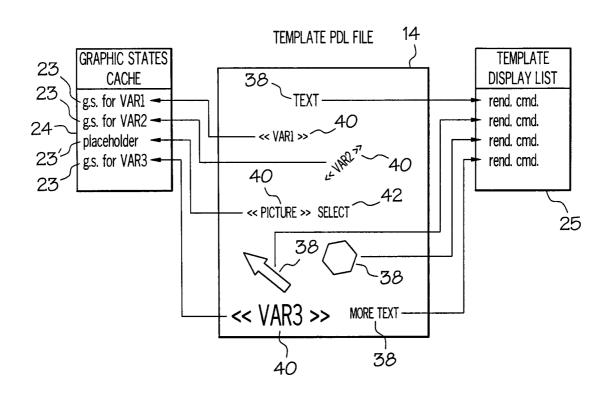
the file includes a definition of a new graphic attribute to be applied to the sub-template specifications associated with the name.

- 6. The method of claim 5, wherein the new graphic attribute includes the location of sub-template bitmaps in merged bitmaps.
- 7. The method of claim 5, wherein the new graphic attribute includes the size of sub-template bitmaps in merged bitmaps.
  - 8. A method for generating a plurality of bitmaps comprising the steps of:
- (a) generating a template page description language specification, the template specification including template data and associated graphic attributes defining how the template data is to appear on a printed page, the template specification including at least one variable data identifier;
- (b) generating a plurality of sub-template page description language specifications, each sub-template specification including sub-template data and associated graphic attributes defining how the sub-template data is to appear on a portion of a printed page;
- (c) processing the template specification so as to generate a template bitmap, and during the processing step, identifying the variable data identifier;
  - (d) saving the template bitmap into memory;
- (e) associating the variable data identifier with the plurality of sub-template specifications;
- (f) accessing a first sub-template specification from the plurality of sub-template specifications;
- (g) processing the first sub-template specification so as to generate a first sub-template bitmap;
  - (h) accessing a copy of the template bitmap from memory;

(i) merging the copy of the template bitmap with the first sub-template bitmap so as to provide a first merged bitmap;

- (j) accessing a next sub-template specification from the plurality of sub-template specifications;
- (k) processing the next sub-template specification so as to generate a next sub-template bitmap;
  - (1) accessing a copy of the template bitmap from memory; and
- (m) merging the copy of the template bitmap with the next sub-template bitmap so as to provide a next merged bitmap.





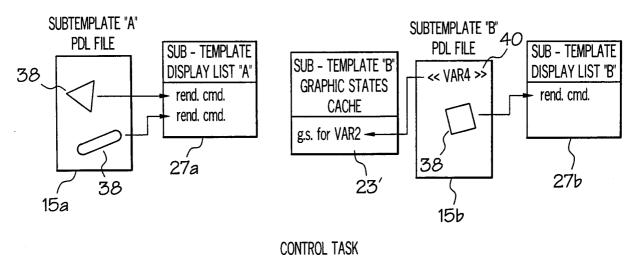
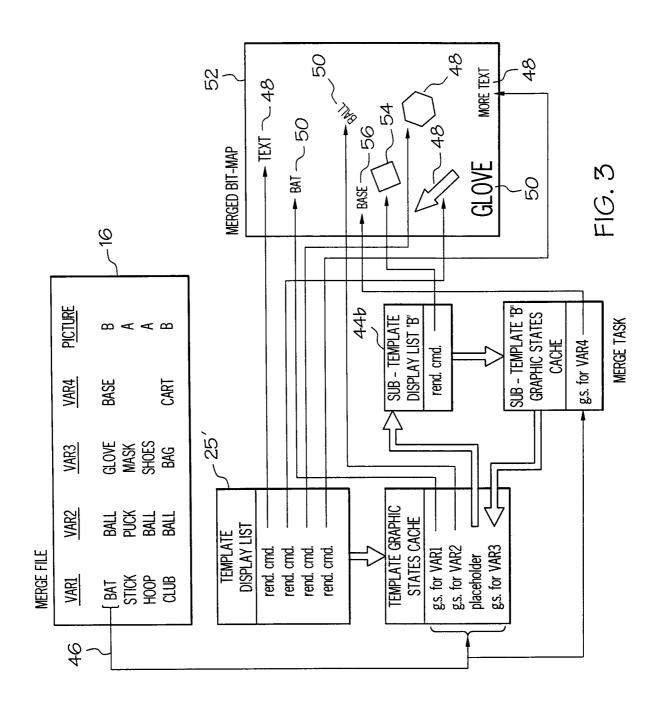


FIG. 2



4/8

```
[MergeFiles] — 74
      merge -76
[merge] — 78
             = c:/class/mrgfiles/mydata04.mrg
      FilePath
      MergeType = delimited
      MergeHeader = yes
      RecordDelimiter
                                 "\r\n"
      FieldDelimiter
                                 "\t"
[PageDescriptionLanguageFile] — 60
      letter_master — 62
      all_maps — 64
[letter_master] \sim 66
      FilePath = c:/class/psfiles/dirmail4.ps
[all_maps] \sim 68
FilePath = c:/class/psfiles/maps4.ps
SubTemplate = true
72 Templates = South, East, West, Midwest
```

FIG. 4

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(	7	;
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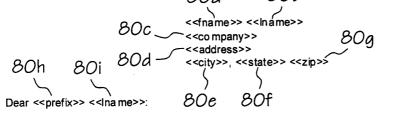
Rodgess Mr. President Rodges Recreation 098 Combande Way 1920-1011		prefix	title	company	address	dz	uogau	city	state	
Chandler         Ms         CEO         Chandler & Son         717 Angle Street         93003-3445           Chandler         Ms         CEO         Chandler & Son         717 Angle Street         9101-5720           Water         Ms         Account Mgr.         Central Foam         901 Papper HB         456-5258           Smith         Mss         Account Mgr.         Central Foam         901 Papper HB         456-5244           Carrell         Ms         Central Foam         64 List Lane         1201 Papper HB         456-6274           Percified         Carrell Foad Stone         401 Harrismon Dr.         750-6274         450-6274           Patencian         President         Percified Towards Valor         64 List Lane         5105-574           Soore         Ms         Fresident         Herman Builder Supply         401 Lorden Arc         450-574           Soore         Ms         Vice President         Herman Builder Supply         401 Lorden Arc         450-574           Saunders         Ms         Fresident         Herman Builder Supply         401 Lorden Arc         401-127           Saunders         Ms         Fresident         Herman Builder Supply         401 Lorden Arc         401-127           Saunders         Ms		M.	President	Rodger's Recreation	698 Gimble Way	45429-0011	Midwest	N ettering	r .	
Martin         Mr.         Manager         Cluck incorporated         713 Steephechase Lane         5010 Expert Ham         456425783           Switch         Mr.         Accourt Mgr.         Centraria Enhance         200 Expert Ham         45042458           Switch         Mrs.         Goodland Exhibitation         250 Northgate Dr.         2020-2713           Ludoww         Mr.         HR         Great Food Stone         250 Northgate Dr.         450462478           Ludow         Mr.         HR         Great Food Stone         4010 Papper Ha         45046273           Shevers         Mr.         HR         Great Food Stone         401 Manager         40546248           Shore         Mrs.         Great Food Stone         401 Manager         40546248           Shore         Mrs.         Accident         President         4040400         4010 Manager           Shore         Mrs.         Script Manager         4040400         4010 Manager         4011 Manager           Mrs.         Serior Pantar         Mrs.         Mrs.         Mrs.         Mrs.         Mrs.         Mrs.           Mrs.         Accident         Mrs.         Mrs.         Mrs.         Mrs.         Mrs.         Mrs.         Mrs.         Mrs.<		Ms.	CEO	Chandler & Son	777 Angel Street	93003-8465	West	Ventura	CA	
Witten         Mr.         Centuré Bel         901 Pepper HB         45455358           Smith         Mis.         Accourt Mg.         Genérale Bel         901 Pepper HB         4546045018           Smith         Mis.         Carell Food Store         64 Lois Lane         21992935           Ludow         Mr.         Carell Food Store         407 Hamiston Dr.         9025-734           Ludow         Mr.         Carell Food Store         407 Hamiston Dr.         9026-734           Patientson         Dr.         President         Patientson Pet Care         407 Hamiston Dr.         9026-734           Store         Mis.         Vice Feedert         Herman Bulder Supply         761 Centeror Piece         652-734           Solneck         Mis.         Vice Feedert         Jan. Account Gr.         6718-853           Johnstor         Herman Bulder Supply         761 Centeror Piece         6718-853           Junders         Mr.         None President Jan.         None Company         761 Centeror Piece         6717-272           Junders         Mr.         None President Jan.         None President Jan.         Anter Bulder Ave         8072-718-23           Junders         Mr.         President Signer         Anter Fields Company         7617-67-718-72		Mr.	Manager	Chuck Incorporated	731 Steeplechase Lane	30136-2703	South	Duluth	QA Q	
Wilson         Mr.         Account Mgr.         General Foam         9017 Papper Had         4500401           Smith         Miss.         Account Mgr.         General Foam         64 List Lane         2297937           Thempson         Dr.         Herbelle English         104 Sammywer Lane         3058-274           Ludoww         Mr.         HR         Great Food Stone         104 Sammywer Lane         3058-274           Ludow         Mr.         HR         Great Food Stone         404 Harmignon Court         6508-2781           Solinec         Mh.         President         Vance Valve Compan         701 Colemen Crite         267-4722           Solinec         Mh.         Vice President         Vance Valve Compan         715 Genteen Crite         664 Harrings Court         667-2724           Solinec         Mh.         Vice President         Vance Valve Compan         715 Genteen Crite         6710-2724           Waller         Mh.         Semior Partne         Waller         715 Genteen Crite         6710-2724           Waller         Mh.         Semior Partne         Waller         710 Genteen Crite         2030-2018           Ludow         Mh.         Semior Partne         Waller         710 Genteen Crite         2030-2018      <		Mr.		Centervile Bel	200 East 3rd	45459-2558	Midwest	Centerville	НО	
Smith         Miss.         Excellate list         64 List lane         2203-2783           Currello         Currell         Grant Pool Fabricator         266 Nordigate Dr.         2050-2743           Luddow         Mr.         Carpel Fabricator         266 Nordigate Dr.         605-274           Patterson         Mr.         Carest Food Stone         64 Uhi Lanan Count         650-274           Stevers         Mr.         President         Harman Builder Supply         101 Samnyeira Lane         650-274           Stone         Mr.         President         Harman Builder Supply         761 Castloton Phere         6718-8557           Solne         Mr.         President         Walton         761 Castloton Phere         6718-8557           Solne         Mr.         Scenior Parter Walton         Walton         761 Castloton Phere         6718-8557           Hins         Mr.         Scenior Parter Walton         Walton         760-152-84         6718-8557           Hins         Mr.         Scenior Parter         Ramplis Pred         761 Castloton Phere         6717-87-82           Chapt         Mr.         Scenior Parter         Mr.         Mr.         7618-76-74         774-78-78-78           Mr.         Mr.         Scenior Parter <td></td> <td>Mr</td> <td>Account Mgr.</td> <td>General Foam</td> <td>9012 Pepper Hill</td> <td>45040-8011</td> <td>Midwest</td> <td>Mason</td> <td>НО</td> <td></td>		Mr	Account Mgr.	General Foam	9012 Pepper Hill	45040-8011	Midwest	Mason	НО	
Carrelf         Dr.         Clidoal Fabricator         25.0 Notigate Dr.         302562744           Ludword         Mr.         HR         Great Food Store         407 Hamigon Dr.         45682454           Ludword         Mr.         Herran Builder Supply         4051 Colemere Cried         66282453           Steveres         Mr.         Prezident         Herran Builder Supply         4051 Colemere Cried         66282453           Steveres         Ms.         Vice President         Vance Valve Company         115 Garden Ave.         6871-1222           Solone         Ms.         Vice President         Vance Valve Company         115 Garden Ave.         6871-1224           Wolzon         Ms.         School Stevenson         407 Hamingon Dr.         115 Garden Ave.         6073-118-21           Wolzon         Mr.         Sales Mgr.         Washingon Life         839 Treeking Dr.         2202-31           Hensige         Mr.         Sales Mgr.         Washingon Life         839 Treeking Dr.         4491-128           Waling         Mr.         Sales Mgr.         Washingon Life         837 Treeking Dr.         4491-128           Chiff         Anal         Mranger         Holcomb's Pring         8787 Carden Court         4137-324           Wal		Miss.		Excellence Ink	64 Lois Lane	22192-9783	East	Woodbridge	٧A	_
Carreli         Mr.         Campobilistist Trans         1104 Sammyræv Lane         95008-783 5           Luddown         Mr.         President         President         President         407 Hamingson Dr.         6528-783 1           Sinevers         Mr.         President         President         President         644 Harrison Court         6528-783 1           Vance         Ms.         Vice President         Janual Coline         644 Harrison Court         6528-783 1           Soleck         Ms.         Vice President         Janual Coline         641 Harrison Court         6528-783 1           Sunders         Ms.         Vice President         Janual Coline         641 Harrison Court         6528-783 1           Walion         Ms.         Vice President         Janual Coline         637 Janual Ave         6712-834 1           Sunnders         Mr.         President         Mine Salva Marion         68 Janual Ave         6712-834 1           Hines         Mr.         President         King's Construction         62 Notingham Rd         4490-154 2           Fines         Mr.         President         Markaingon Life         811 Carleid Bor         8111-232 2           Fines         Ms.         Andreson Life         Markaing Pide         Ashell <td></td> <td>Ď.</td> <td></td> <td>Glob al Fabricator</td> <td>256 Northgate Dr.</td> <td>30236-2744</td> <td>South</td> <td>Jonesboro</td> <td>CA</td> <td>_</td>		Ď.		Glob al Fabricator	256 Northgate Dr.	30236-2744	South	Jonesboro	CA	_
Putterson         Mr.         HR         Great Food Stone         440 Harington Dr.         45085-784 1           Stevene         Mr.         President Patterson Pet Care         6441 Harrison Court         64387-781 1           Stevene         Ms.         President Patterson Pet Care         6441 Harrison Court         6871-7274 1           Stone         Ms.         Vice President JanCo Inc.         715 Gelenone Criet         6871-782 1           Jonet         Mr.         No.         K.         K.         7481-782 1           Walton         Mr.         Senior Pattner Walton & Walton         6839 Treektige Dr.         2702-310 1           Hines         Mr.         Director         Investige Dr.         2705-101-1549 1           Hines         Mr.         Sales Mgr.         Washington Life         6839 Treektige Dr.         2705-310-1549 1           Hines         Mr.         Sales Mgr.         Washington Life         6839 Treektige Dr.         2705-153-184 1           Hensisy         Mr.         Sales Mgr.         Washington Life         811 Crafe Rd         4800-153-184 1           Hensisy         Mr.         Sales Mgr.         Washington Life         2749 Medial of Sector         3700-153-184 1           Hensisy         Mr.         Mr.		Mr.		Campbell First Trust	1104 Sunnyview Lane	95008-7836	West	Campbell	CA	_
Patterson         Dr.         President         Patterson Pe Care         644 Harfranco Court         66208-7831           Storer         Mr.         President         Vance Vave Company         7612 Castleton Pace         6718-9537           Sone         Ms.         Vice President         Vance Valve Company         7612 Castleton Pace         6718-9537           Solone         Ms.         Vice President         Vance Valve Company         7612 Castleton Pace         6718-9537           Howard         Mr.         President         Valor Mana         3600-12724         9481-12824           Hums         Mr.         Sales Mgr.         Washington Life         3904 Oleander Court         43409-1539           Chapman         Mr.         Sales Mgr.         Washington Life         8111 Cariste Rd         8602-1231           Hansky         Ms.         Sales Mgr.         Washington Life         811 Cariste Rd         8602-1231           Hantely         Ms.         Ramer's Stuten Care         460 Cariste Acc         9304-1482           Wall         Ms.         Ramer's Stuten Care         460 Cariste Acc         9304-1482           Ms.         Amarger         Holcomb's Fbritz         774 Garland Ave         9744-1824           Ms.         Amarger		Mr	Æ	Great Food Store	407 Hamngton Dr.	45068-2454	Midwest	Waynesvile	НО	_
Stevens         M.         Herman Builde Supply         4051 Colemore Circle         2684402           Stone         Ma.         Vice President JanCo Inc.         315 Galemore Ave.         67218-9537           Stone         Ms.         Vice President JanCo Inc.         315 Galemore Ave.         67218-9537           Volore         Ms.         Vice President JanCo Inc.         315 Galemore Ave.         67218-9537           Hine         Ms.         Senior Partner Walton & Walton         6839 TreeRige Dr.         22302-3101           Hine         Ms.         Specific Tree Walton & Walton         6839 TreeRige Dr.         22302-3101           Hine         Ms.         Specific Mr.         Walting to Construction         63 Notificial and Court         44300-1549           Hunsley         Ms.         Sales Mgr.         Walting to Life         485 Chempon         4700-1548           Wall         Ms.         Americ S Kitten Care         486 Chempon         9700-9381           Wall         Ms.         Americ S Kitten Care         486 Chempon         9700-9381           Wall         Ms.         Senity Panter         Americ S Kitten Care         970 Gale Octobas         970-948           Manager         Holocub's Fale         176 Galemon         970 Gale Octobas <td< td=""><td></td><td>Ď.</td><td>President</td><td>Patterson Pet Care</td><td>6441 Harrison Court</td><td>66208-7831</td><td>Midwest</td><td>Prairie Village</td><td>κS</td><td>_</td></td<>		Ď.	President	Patterson Pet Care	6441 Harrison Court	66208-7831	Midwest	Prairie Village	κS	_
Vance         Ms.         President         Vance Valve Company         15 CL Castelone Place         0871-2724           Solice         Ms.         Vice President         Jack of Eabloics Center         315 Gattelon Place         0871-1824           Solice         Ms.         Vice President         Jack of Eabloics Center         305 Sumise Ave.         9491-2829           Saunders         Mr.         Director         Incredible Toy Store         3904 Oleander Court         44309-1849           Chapman         Mr.         Sales Mgr.         Washington Life         811 Cartists Rd.         8007-1834           Chapman         Mr.         Sales Mgr.         Washington Life         811 Cartists Rd.         8007-2143           President         Kingerman         Mr.         Manager         Holcomb's Fhris         2749 Medinul Street         9740-1849           Mull         Ms.         Senior Partner Deer & Cirifin         2749 Medinul Ave.         9742-2812           Anderson         Ms.         Senior Partner Deer & Cirifin         9740 Gatt-8814         980-13-24           Anderson         Ms.         Senior Partner Deer & Cirifin         9740 Gatt-881         970-14-38           Anderson         Ms.         Senior Partner Deer & Cirifin         970 Gatt-88-14         970-14-3		Mr		Herman Builder Supply	4051 Colemere Circle	26874-4902	East	Germantown	MD	-
Stone         Mis.         Vice President Jan Co Inc.         31 St Glemone Ave.         67218-3537           Sellieck         Mis.         Hayward Auto Shop         315 Glemone Ave.         67218-3537           Sallieck         Mr.         Director         Hayward Auto Shop         315 Garden Ave.         9451-2829           Saunders         Mr.         Director         Having Dr.         8002-134         3904 Oleander Court         44399-134           Hines         Mr.         President         Kirg's Construction         62 Noting and R.         4670-134           Manners         Mr.         Sales Mgr.         Washington Life         81 Loa's Skill         3817-8243           Husis         Mannager         Bob's Skill         204 Oleand Street         3050-134           Wall         Mr.         Sales Mgr.         Victory House         958 Wilmington Pixe         3017-8243           Manners         Mr.         Mr.         Mr.         Victory House         734 Medicine Street         3027-1343           Anderson         Mr.         Sanitz Panter Deer & Criff         509 C Citle on         3017-345           Kooker         Mr.         Sales Mgr.         Norden Street         307 Medicine         3000 Citle on           Anderson Fanter		Ms.	President	Vance Valve Company	7612 Castleton Place	08731-2724	East	Forked River	Z	_
9: Selleck         Ms.         Hayward Auto Shop         315 Garden Ave.         945412829           Toner         Mr.         Senior Patrner         Walton         839 Treeking Dr.         2320-3101           Hinss         Mr.         President         King's Construction         683 Treeking Dr.         2320-3101           Hinss         Mr.         President         King's Construction         68 Outspan         44309-144           Hensisy         Mr.         Sales Mgr.         Washington Life         81 LCarkis Kd.         8070-381           Hensisy         Mr.         Sales Mgr.         Washington Life         3504 Oleander Court         44309-144           Hensisy         Mr.         Kamer's Kitten Care         81 LCarkis Kd.         8070-381           Main ager         Holcomb's Floris         274 Medind Street         9744-281-243           Main ager         Holcomb's Floris         2047 Garland Ave.         9702-243-243           Anderson         Mr.         Necident         Derector         1744-881-243           Griffin         Anderson Spory Keg         357 Beaumont Ave.         9702-243-243           Griffin         Gross Key Limiton Only Groen         1774-488           Knoor         Mr.         President         Brank		Ms.	Vice President		3156 Glenmore Ave.	67218-9537	Midwest	Wichita	KS	_
Toner         Mr.         Keler Fabrics Center         503 Sumise Ave.         80027-1824           Walton         Ms.         Director         Walton         639 Treeking Ep.         22302-3101           Sauders         Mr.         Director         Lineable Toy Store         62 Notingham Rd.         86712-383           Chapman         Mr.         Sales Mgr.         Washington Life         811 Loa states         86712-383           Hensley         Mr.         Mamager         Bob Shell         2749         Meding States         978 Withington Pile         8671-283           Pruggerman         Mr.         Mamager         Bob Shell         2749         Medind Street         9720-138           Griffn         Ms.         Serior Panter Deve & Griffn         998 Withington Pile         9720-138           Anderson         Ms.         Serior Panter Deve & Griffn         973 Cifton Dr.         9740-1824           Anderson         Ms.         Serior Panter Deve & Griffn         992 Cifton Dr.         9740-1824           Anderson         Ms.         President         Davis Company         938 Kirkwood Dive         9740-184           Stockert         Mr.         Manager         Bovis Davis Res         9740-184         9510-24-248           Stoc		Ms		Hay ward Auto Shop	315 Garden Ave.	94541-2829	West	Hay ward	CA	-
Walton         Ms.         Senior Patner Walton & Walton & Walton         6839 TreeRtige Dr.         22302-310 12439           Hines         Mr.         President         incedible Toy Store         3990 Gleander Court         4230-1549           Hines         Mr.         President         incedible Toy Store         390 Gleander Court         44309-1549           Hines         Mr.         President         Washigon Life         811 Carfab Rd         980 Gleander Court           Hongerman         Mr.         Sales Mgr.         Washigon Life         811 Carfab Rd         980 Gleander Street           Wall         Ms.         Manager         Bob 's Shell         2749 Med find Street         97204-2872           Anderson         Mr.         Senior Partner         Deer & Griffn         6902 Ciflom Dr.         97204-2872           Anderson         Mr.         Anderson's Pony Keg         368 Kirkwood Drive         9740-1824           Knock erf         Mr.         Anderson's Pony Keg         368 Kirkwood Drive         9740-1834           Knock erf         Mr.         Branis Beauty Shop         8267 Bager Road         3740-1843           Knock erf         Mr.         Branis Beauty Shop         8267 Bager Road         3740-243           Bel         Mr.         <		M		K eller Fabrics Center	503 Surrise Ave.	80027-1824	West	Superior	8	Ţ
Saunders         Mr.         Director         Incredible Toy Store         3900 Oleander Court         44309-1349           Chapman         Mr.         President         King \$ Construction         65 Dottingham Rd.         8671-2384           Mars         Mars         Knamer's Kitten Care         4867 Chenywood Lane         3669-1243           Pruggerman         Mr.         Manager         Bob's Shell         2749 Mediton Street         9724-2872           Wall         Manager         Bob's Shell         2749 Mediton Street         9724-2872           Wall         Manager         Holcomb's Prins         2047 Galand Ave.         5022-8243           Manners         Mr.         Seric Partner Deer & Griffin         374 Brandway Street         9726-1147           Griffin         Ms.         Seric Partner Deer & Griffin         992 Cifin Dr.         9740-1845           Anderson         Ms.         Anderson's Powy Keg         167 Brandway Street         9206-1845           Griffin         Ms.         President         Davis Company         830 Cifin Ave.         9500-578           Anderson         Ms.         Sales Mgr.         Morgan Partner         740-818         740-818           Gross         Mr.         Owner         Braun's Beauty Sho		Ä	Senior Partner	Walton & Walton	6839 TreeRidge Dr.	22302-3101	East	Alexandria	٧A	
Hines         Mr.         President         King's Constnucion         62 Notitigham Rd.         86712-3834           Chapman         Mr.         Sales Mgr.         Washington Life         81 Lor arise Rd.         98 020-381           Hansy         Mr.         Manager         Bob's Shell         2749 Medfand Street         3724-2874           Wall         Ms.         Manager         Bob's Shell         2749 Medfand Street         9726-1347           Wall         Ms.         Manager         Bob's Shell         2749 Medfand Street         9726-1347           Griffn         Ms.         Senior Partner Dere & Ciffn         960 C Lifton Dr.         9726-1347           Arderson         Mr.         Manager         Arderson's Pony Keg         1073 Beaumon Are         9009-1324           Locket         Mr.         Manager         Arderson's Pony Keg         1073 Beaumon Are         9009-1324           Locket         Mr.         President         1070 Bark Kirkwood Dire         9740-1824           Knox         Ms.         President         1070 Bark Kirkwood Dire         9740-1834           Gross & Stanton         Gross & Stanton         986 Patterson Bhd         1744-179           Haggell         Mr.         Handager         Bark Wiskwood Dire		Ā	Director	Incredible Toy Store	3904 Oleander Court	44309-1549	Midwest	Akron	ОН	
Chapman         Mr.         Sales Mgr.         Waterington Life         811 Cardise Rd.         9820-9381           Mass         Mrs.         Sales Mgr.         Kramer's Kitten Care         4867 Chenywood Lane         9820-9381           Hensiey         Mrs.         Memphispon Life         3749 Medicid Street         9724-287-3           Wall         Manager         Holcomb's Florist         2047 Garland Ave.         9722-844-5           Wall         Manager         Holcomb's Florist         2047 Garland Ave.         9722-844-5           Griff         Ms.         Senior Parner Der & Criff         7749 Medicid Street         9722-84-134           Griff         Ms.         Senior Parner Der & Criff         774 Garland Ave.         9722-84-134           Anderson         Mr.         Manager         Arderson's Pony Keg         1673 Beaumont Ave.         9704-18-81-8           Stock et         Mr.         President         Davis States         1674 States         1744-18-8           Moryan         Ms.         Sales Mgr.         Moryan Printing         8732 Aubum Ave.         9510-4-348           Gross S         Ms.         Owner         Braum's Beauty Shop         8267 Beger Road         1737-4-39           Hasgel         Mr.         Moryan Printing		Ž	President	King's Constniction	62 Notingham Rd	86712-3834	West	Tueson	ΑZ	
Citedinian         Mit.         States in State in Contraction         4867 Cherywood Lane         36695-1243           Mars         Manager         Bob's Shell         2749 Medful Street         97204-2872           Wall         Manager         Horsby         2749 Medful Street         97204-2872           Wall         Manager         Holotoph's Parist         2749 Medful Street         97204-1872           Griffin         Ms.         Senior Partner Deer & Criffin         602 Ciffin Dr.         97401-8245           Anderson         Ms.         President         Anderson's Pony Reg         3573 Beaumon's New         97401-8245           Knox         Ms.         President         Anderson's Pony Reg         3673 Beaumon's New         97401-8245           Knox         Ms.         President         Anderson's Pony Reg         3673 Beaumon's New         9504-4248           Knox         Ms.         President         Anderson's Pony Reg         3673 Beaumon's New         9504-4248           Knox         Ms.         Sales Mgr.         Morgan Printing         3747 Aubum Ave         97401-428           Gross & Station         Gross & Station         Bony         86.0 Beatnessen Dive         97401-428           Ms.         Owner         Brun's Beauty Shop		, X	Color Mar	Washington Life	811 Carlet Rd	98020-9381	West	Edwards	WA	_
Miss         Manager         Former Synth Case         For State		: 1 Z	Sales Mgt	V mmorte Vittee Care	4867 Chemwood I ane	36695-1243	South	Mohile	I	-
Heastey         Miss         Memphas Frace         7349 Medford Street         9702-2873           Wall         Miss         Manager         Holomb's Fbrist         2749 Medford Street         9702-2874           Wall         Miss         Senior Partner         Fbrist         2047 Garland Ave.         9702-2824           Griffin         Mis.         Senior Partner         Device Griffin         6907 Giffin         9704-287           Anderson         Mr.         Manager         Fix Knox Bank         873 Beaumont Ave.         9740-1834           Knox         Ms.         President         Davis Company         638 Kirkwood Drive         85014-3936           Knox         Ms.         President         Davis Company         873 Abrum Ave.         95104-3936           Stockert         Mr.         Clyde's Cafe         629 Woodge en Drive         85014-3936           Baun         Brans         Brans         875 Abrum Ave.         95104-388           Gross         Stanton         880 Fatterson Bhd.         7508-588           Ms.         Owner         Brans Beauty Shop         826 Bager Road         7854-488           Bel         Mr.         Hounds & Company         830 City Ave.         17374-4139           Hasper	es	ž ;		Nighter S Ninch Care	oce withing and	2617 6196	Midumen	Momentia	2	_
Progerman         Mr.         Manager         Hob Shell         2.94 Meathur Street         97.64-281.4           Wall         Ms.         Manager         Holcomb's Fbrist         2.94 Meathur Street         97.64-1347           Griffin         Ms.         Senior Partner Deer & Griffin         6902 Ciffon Dr.         97.04-1845           Anderson         Mr.         Anderson's Pour's Company         13.73 Beaumont Ave.         6003-1346           Knox         Ms.         President Davis Company         638 Kirkwood Dive         97.04-1883           Stockert         Mr.         Sales Mgr.         Morgan Printing         37.12 Aubum Ave.         95.04-2488           Stockert         Mr.         Gross & Station         93.04 Woodgreen Drive         95.04-2488           Haspell         Mr.         Gross & Station         98.04 Autresson BMd.         94.04-388           Hasjegell         Mr.         Anager         Bed autris Shop         8267 Bager Road         17374-473           Bed         Mr.         Manager         Bed & Whiste         267 Masheld Street         2463-2451           Shpp         Mr.         President         Incison Ave.         273 Autranteed         2453-348           Isakon         Mr.         Anderson Least         Spor		W.	:	Memphis Pride	938 Wilmington Fike	38137-8243	Midwest	Membris	<u> </u>	_
Wall         Ms.         Manager         Holcomb is Pinnat         2047 Gatland Ave.         50.522-8329           Manners         Mr.         Victory Partner         Colfin         9.026-1347           Griffin         Ms.         Senior Partner Deve Company         6.00 Cillion Dr.         9.005-1346           Davis         Ms.         President         Davis Company         6.88 Kirk wood Dive         85.014-2488           Stockert         Mr.         Clydes Scafe         67.9 Woodge en Dive         95.04-2488           Roogan         Ms.         Owner         Braun's Beauty Shop         82.0 Woodge en Dive         7600-5783           Hongan         Ms.         Owner         Braun's Beauty Shop         82.0 Woodge en Dive         7600-5783           Hasgell         Mr.         Hounds & Company         83.0 Clyo Ave.         1737-4473           Hasgell         Mr.         Alabama Saving & Loan         52.0 Bahr Road         7603-533           Bell         Mr.         Alabama Saving & Loan         52.0 Bahr Road         36193-9348           Bell         Mr.         President         Inkpa win Road         27.8 Bahr Road         2453-2591           Shots Am         Borden Bakery         52.0 Bahr Road         52.9 Storop Ave.         52.35-2		Z.	Manager	Boo's Shell	7.49 Medibid Street	7197-50716	1 C .	romano.	ź:	-
Manners         Mr.         Victory House         774 Broadway Street         92026-1347           Griffin         Ms.         Senior Partner Deer & Griffin         673 Beaumont Ave.         9740-1347           Anderson         Ms.         President         Davis Company         638 Kirkwood Drive         85014-3356           Knox         Ms.         President         Davis Company         638 Kirkwood Drive         85014-3356           Stockert         Mr.         Clyde's Caffe         629 Woodgeen Drive         95104-248           Gross         Mr.         Gross & Stanton         986 Patterson Bhd.         9401-3834           Haggell         Mr.         Hounds & Company         830 Chyo Ave.         17374-4739           Halsgell         Mr.         Alabama Savings & Loan         830 Chyo Ave.         17374-4739           Halsgell         Mr.         President         Jackson Jet Ski         2024 Stroop Ave.         6345-437           Isckson         Ms.         President         Jackson Jet Ski         2024 Stroop Ave.         6345-437           Isckson         Ms.         President         Jackson Jet Ski         2024 Stroop Ave.         6345-437           Isckson         Ms.         Alabama Savings & Loan         2238 Stroop Ave. <t< td=""><td></td><td>Ms.</td><td>Manager</td><td>Holcomb's Florist</td><td>2047 Carland Ave.</td><td>50322-8245</td><td>Midwest</td><td>Des Mones</td><td>≤ ;</td><td></td></t<>		Ms.	Manager	Holcomb's Florist	2047 Carland Ave.	50322-8245	Midwest	Des Mones	≤ ;	
Griffin         Ms.         Senior Partner Deer & Griffin         6902 Ciffion Dr.         97401-8245           Anderson         Mr.         Manager         Anderson's Pony Keg         1573 Beaumont Ave.         6009-3246           Knox         Ms.         President         Davis         8732 Aubum Ave.         97401-8848           Stockert         Mr.         Sales Mgr.         Morgan Printing         8732 Aubum Ave.         95104-2488           Gross         Mr.         Gross & Station         98.0 Wood green Drive         95104-2488           Gross         Mr.         Gross & Station         98.0 Patterson Bud.         9403-3846           Braun         Ms.         Owner         Braun's Beauty Shop         8267 Bigger Road         9403-3846           Hasjeel         Mr.         Hounds & Company         8267 Bigger Road         17374-4739           Hasjeyl         Mr.         Alabama Saving & Loan         1774-4739           Bipp         Mr.         Alabama Saving & Loan         1774-4739           Jackson         Ms.         President         1ackson Lee, Road         1463-3448           Jackson         Ms.         Broots Area         570 Bark Road         5613-4437           Jackson         Ms.         Broots Area		Ä.		Victory House	734 Broadway Street	92026-1347	w est	Escontido	۲ کا ا	
Anderson         Mr.         Manager         Anderson Arde room         3673 Beaumont Ave.         60093-3243           Davis         Ms.         President         Davis Company         638 Kirkwood Dive         85014-335           Knox         Ms.         Ft. Krox Bank         629 Woodgreen Drive         95104-2488           Stockert         Mr.         Gross & Stanton         934 Pk verside Drive         95104-2488           Gross         Mr.         Gross & Stanton         934 Pk verside Drive         9404-3334           Haggell         Mr.         Gross & Stanton         936 Patterson Bhd         9403-3346           Haggell         Mr.         Alabama Saving & Loan         5270 Bahr Road         17774-4739           Hastley         Mr.         Alabama Saving & Loan         5270 Bahr Road         1773-4739           Jackson         Ms.         President         Shop Worldwide         2956 Stroop Ave         6193-348           Jackson         Ms.         President         Shorts Arma         577 Mashel Street         6435-4437           Johnson         Ms.         Borden Bakery         9218 Dorotty Lane         6245-5928           Johnson         Ms.         Marison Grazete         1937 Springboro Pike         2635-47437		Ms.	Senior Partner	Deere & Griffin	6902 Cifton Dr.	97401-8245	West	Eugene	ĕ	
Davis         Mis.         President         Davis Company         638 Kirkwood Dive         85014-3356           Knox         Mis.         President         Davis Company         638 Kirkwood Dive         85014-2488           Stockert         Mr.         Clyde's Cafe         629 Woodgenen Dive         7080-5783           Morgan         Ms.         Owner         Braun's Beauty Shop         34 Riverside Drive         98 104-5683           Braun         Ms.         Owner         Braun's Beauty Shop         820 Eigner Road         78314-583           Hasley         Ms.         Atabama Savings & Loan         870 Dahr Road         17374-473           Bed         Mr.         Atabama Savings & Loan         5270 Bahr Road         1619-3948           Bed         Mr.         President         Jake Son Jet Ski         2648 Shroyer Blod         36193-3948           Jackson         Ms.         President         Jake Son Jet Ski         6248 Shroyer Blod         6425-5928           Harnotkson         Ms.         Andren Bakery         9218 Davit Road         6435-437           Stephenson         Ms.         Andren Bakery         9218 Davit Road         2458-3918           Stephenson         Ms.         Madrison Gazette         9278 Alexand Grove		Ä.	Manager	Anderson's Pony Keg	3673 Beaumont Ave.	60093-3246	Midwest	Northfield	⊒!	
Knox         MS.         Ft. Knox Bank         8712 Aubum Ave.         95 104-2488           Stockert         Mr.         Clyde's Cafe         629 Woodgeen Drive         7580-5783           Morgan         Mr.         Gross & Stanton         986 Patterson Bhd.         9401-3683           Haggell         Mr.         Braun's Beauty Shop         8267 Bigger Road         78514-3827           Hasgell         Mr.         Hourds & Company         830 Clyo Ave.         17374-4739           Hasgell         Mr.         Alabama Saving & Loan         270 Bahn Road         3619-3948           Shipp         Mr.         President         Jackson Jet Ski         224 Shroyer Blvd.         6612-592           Walters         Ms.         President         Jackson Jet Ski         6248 Shroyer Blvd.         6612-592           Walters         Ms.         Anaager         Demonte Grocery         9218 Davis Road         2453-3148           Johnson         Ms.         Amanger         Demonte Grocery         1915 Springboro Pike         2453-3148           Stopsteson         Mr.         Garden Gazette         1234 Darbury Road         2478-3214           Repaired         Mr.         Garden Gazette         1234 Darbury Road         2478-3143           R		Ms.	President	Davis Company	638 Kirkwood Drive	85014-9356	West	Phoenix	Ϋ́	-
Stockert         Mr.         Clyde's Cafe         620 Woodgreen Drive         7588-5783           Morgan         Ms.         Sales Mgr.         Morgan Printing         34 Riverside Drive         98 104-5683           Gross A.         Mr.         Gross & Stanton         98 Patterson Bhd.         94 103-38.46           Haggell         Mr.         Hounds & Company         8267 Bigger Road         7834-9827           Hasley         Ms.         Alabama Savings & Loan         270 Bahn Road         17374-4739           Hasley         Mr.         Manager         Bed & Whiste         267 Manshel Street         2463-2459           Shipp         Mr.         President         Jakson Log Strong Ave.         6193-348         6193-348           Jakson         Ms.         President         Jakson Log Strong Ave.         6345-4437         6193-5927           Johrson         Ms.         President         Jakson Log Strong Ave.         6219 Dorothy Lane         6245-5928           Johrson         Ms.         Amanager         Demonte Grocery         193 Springborn Pike         255-8928           Johrson         Ms.         Amanager         Demonte Grocery         193 Springborn Pike         263-47437           Reporded         Mr.         Ganden Center		Ms.		Ft. Knox Bank	8732 Aubum Ave.	95104-2488	West	Cupertino	CA	_
Morgan         Ms.         Sales Mgr.         Morgan Printing         34 Riverside Drive         98 104-568 3           Gross         Mr.         Gross & Stanton         98 6 Patterson Bhd.         94 403-834 6           Haggell         Mr.         Hounts & Company         83 0 Clyo Ave.         1734-473 7           Hasley         Ms.         Hounts & Company         83 0 Clyo Ave.         1734-473 7           Bed         Mr.         Habaman Saving & Loan         5270 Bahn Road         36 193-394 8           Bed         Mr.         President         Shipp Workwide         267 Marshel Street         36 193-394 8           Back         Mr.         President         Jackson Jet Skir         6248 Strope Ave.         6345-447 1           Jackson         Ms.         President         Jackson Jet Skir         6248 Strope Ave.         6345-437 1           Johnson         Ms.         President         Jackson Jet Skir         6248 Strope Ave.         6415-5928           Johnson         Ms.         President Growery         193 Springboro Pike         263-5437           Stepherson         Ms.         Demonte Grocery         193 Springboro Pike         263-44-7437           Checkers         Mr.         Games Estraordinaise         123 Danbury Road		Mr.		Clyde's Cafe	629 Woodgreen Drive	75080-5783	South	Richardson	¥	_
Gross         Mr.         Gross & Stanton         986 Patterson BMd.         94403-8346           Hazlen         Ms.         Owner         Braun Beauty Shop         8266 Bigger Road         7834-4392           Hasley         Mr.         Hounte & Company         830 Clys Are.         1734-4473           Hasley         Mr.         Alabama Saving & Loan         5270 Bahn Road         36193-9348           Bed         Mr.         President         Ship Worldwide         2570 Bahn Road         36193-9348           Ship         Mr.         President         Jackson Jet Skir         6248 Shroye Blvd.         66912-3927           Walters         Ms.         President         Jackson Jet Skir         6248 Shroye Blvd.         66912-3927           Walters         Ms.         President         Jackson Jet Skir         6248 Shroye Blvd.         6612-3927           Johnson         Ms.         President Grocery         1913 Springboro Pike         2453-9128           Johnson         Ms.         Amanger         Demonte Grocery         1913 Springboro Pike         2451-437           Checkers         Mr.         Games Estrancránare         1234 Danbury Road         24578-0203           Regidencie         Mr.         Garden Center         4228 Bancheserar Lan		Ms.	Sales Mgr.	Morgan Printing	34 Riverside Drive	98104-5683	West	Seattle	MΑ	_
Haggel Mr.   Braun's Beauty Shop   8205 Bigger Road   78534-827     Haggel Mr.   Hounds & Company   8305 Upo Ave.   17374-4739     Haggel Mr.   Alanager   Bel & Whiste   2570 Bahn Road   3619-3948     Bel Mr.   President   Shipp Worldwide   295 Stroop Ave.   6345-4437     Jackson Ms.   President   Jackson Jet Ski   6248 Shroyer Blvd.   65145-392     Univarian Mr.   President   Jackson Jet Ski   6248 Shroyer Blvd.   65145-392     Univarian Ms.   Ananager   Demonte Grocery   1915 Springboro Pike   2458-3-128     Stepherson Ms.   Games Estancriane   1249 Davity Lane   2458-3-1437     Checkers Mr.   Games Estancriane   1249 Davity Road   14578-7447     Radson Gazette   724 Carters Grove   14578-7447     Wilsams Mr.   Games Estancriane   1249 Davitory Road   14578-7447     Garden Center   4268 Banchester Lane   8346-8912     Wilsams Mr.   Garden Center   4268 Banchester Lane   8478-8912     Garden Center   4268 Banchester Lane   84972-8571     Greene Ms.   Rockeind Quick Pint   2103 Walnut Creek Drive   1208-8239     Greene Ms.   Architects of Ornata   9248 Enstgate Drive   1208-8253     Vounstown Ms.   Universal Tenn   291 Steph Blace   5020-1563     Online Center   4268 Blace   4378-4144     Online Center   4268 Banchester Lane   826-8314     Online Center   4268-426 Banchester Lane   826-8314		Mr		Gross & Stanton	986 Patterson Blvd.	94403-8346	West	San Mateo	CA	_
Haggell         Mr.         Hounds & Company         830 Clyo Ave.         173744739           Hasley         Ms.         Alabamager         Bed & Whiste         2270 Bahn Road         36193-348           Bed         Mr.         President         Shpp Worldwide         29% Stroop Ave.         6343-5431           Jackson         Ms.         President         Jackson Let Ski         6288 Stroop Ave.         6343-5431           Walters         Ms.         President         Jackson Let Ski         6288 Stroop Ave.         6345-7437           Johnson         Ms.         President         Jackson Let Ski         6288 Stroop Ave.         6345-7437           Johnson         Ms.         President         Jackson Let Ski         6288 Stroop Ave.         6345-7437           Johnson         Ms.         Amanager         Deront Resident         6219 Dovity Lane         2458-3918           Johnson         Ms.         Madson Gazette         9218 David Road         2458-3018           Stepherson         Ms.         And School Gazette         924 Acteandria Road         2458-3204           Mills         Mr.         Garden Center         4228 Banchesser Lane         24578-234           Wilsans         Mr.         Distributor         Wicker World Worl	뒱	Ms.	O wner	Braun's Beauty Shop	8267 Bigger Road	78534-9827	Midwest	Lexington	ΚY	_
Hasley Ms. Alabama Savings & Loan   5270 Bahn Road   36193-3948     Bel		Mr		Hounds & Company	830 Clyo Ave.	17374-4739	South	Orlando	F	_
Bel         Mr.         Manager         Bel & Whiste         26 Mashel Street         2463-24591           Sipp         Mr.         President         Shpp Worldwide         295 Stroop Ave.         6345-3437           Jackson         Ms.         President         Jackson Jet Ski         6248 Stroop Ave.         6345-3437           Walters         Ms.         President         Jackson Jet Ski         6248 Stroop Ave.         6345-3437           Haroldson         Mr.         Sports Arena         6218 Dorotify Lane         2458-39128           Johnson         Ms.         Manager         Demont Grocery         193 Springboro Pike         2635-43345           Stepherson         Ms.         Games Extraordinate         1234 Danbury Road         24578-0203           Palmer         Mr.         Garden Center         4268 Burdensest Lane         28346-8912           Willams         Mr.         Distributor         Wick World         5612 Hillendale Court         5670-623           Mddkkamp         Mr.         Rockford Quick Print         2103 Walnut Creek Drive         12038-5239           Greene         Ms.         Rike Tire Center         4357 Mt. Meadows Court         49772-5571           Jordan         Mr.         Architects of Ornaka         2915 s		Ms.		Alabama Savings & Loan	5270 Bahn Road	36193-9348	South	Wilmingham	Αľ	_
Shipp         Mr.         President President         Shipp Worldwide         295 Stroop Ave.         6345-4377           Jackson         Ms.         President         Jackson Jet Ski         6248 Shroyer Blvd.         66912-3927           Walters         Ms.         Borden Bakery         9218 Davit Road         6245-8928           Johnson         Ms.         Demont Grocery         193 Springboro Pike         2458-3-128           Stepherson         Ms.         Madson Gazette         9278 Alexandria Road         2458-3-1245           Checkers         Mr.         Games Estrancrinaire         1249 Danbur Road         2478-3-134           Palmer         Mr.         Garden Center         4268 Bancheser Lane         2478-8-234           Wilsams         Mr.         Distributor         Wicker World         5612 Hillendale Court         5627-6-528           Mddkkamp         Mr.         Rockford Quick Pint         2103 Walnut Creek Drive         1203-8-239           Greene         Ms.         Architects of Ornate         4977-2-571           Jordan         Mr.         Architects of Ornate         9234 Eastgate Dive         4977-2-571           Jordan         Mr.         Architects of Ornate         9204 Eastgate Dive         5091-5631	_	Mr	Manager	Bel & Whistle	267 Marshell Street	24632-4591	Midwest	Flir	Ξ	_
Jackson         MS.         President         Jackson Jet Ski         6248 Shroyer Blvd.         06912-3927           Walters         Ms.         Borden Bakery         9218 David Road         6243-8928           Harrolkon         Mr.         Sports Arena         6219 Dorottly Lane         2438-3112           Johnson         Ms.         Manager         Demonite Grocery         193 Springtono Pike         2643-2345           Stephenson         Ms.         Madison Gazette         9278 Alexandria Road         7254-7437           Checkers         Mr.         Oil & Lube         724 Cartes Grove         14578-4234           Reyndds         Mr.         Games Edraordinaire         124 Danbury Road         24578-0203           Wilans         Mr.         Garden Center         4268 Bancheser Lane         2846-8912           Wilans         Mr.         Distributor         Wick World         5612 Hillerdale Court         5620-5738           Greene         Ms.         Reck End Quick Print         2103 Walnut Creek Drive         12038-5239           Greene         Ms.         Architects of Ornada         9248 Eastgate Drive         12038-5239           Greene         Ms.         Architects of Ornada         924 Eastgate Drive         5020-156314		Mr	President	Shipp Worldwide	2956 Stroop Ave.	63435-7437	South	Lake Charles	3	-
Walters         Ms.         Borden Bakery         9218 David Road         62435-8928           Haroklson         Mr.         Sports Aena         6219 David Road         62435-8928           Stepherson         Ms.         Manager         Demont Grocery         193 Springboro Pike         2438-39128           Stepherson         Ms.         Mate Stanor Grocery         9278 Alexandria Road         7254-7437           Reyndds         Mr.         Ganes Edraordinaie         1234 Danbury Road         24578-0203           Wilans         Mr.         Garden Center         4268 Banchester Lane         14578-3745           Green         Ms.         Rock End Quick Pint         2103 Walnut Creek Drive         1208-5239           Greene         Ms.         Rite Tire Center         4378 Mt. Meadows Court         49772-5571           Jordan         Mr.         Architects of Ornada         924 Eastgate Drive         1208-5239           Younstown         Ms.         Universal Tenn         29 Josenh Place         5020-15631		Ms.	President	Jackson Jet Ski	6248 Shroyer Blvd.	06912-3927	East	Trenton	2	
Harroldson Mr. Sports Arena 6219 Dorothy Lane 2483-3128		Ms.		Borden Bakery	9218 David Road	62435-8928	West	Olympia	WA	
Johnson Ms. Manager Demonte Grocery   193 Spirigboro Pike   26354-2345		Mr		Sports Arena	62 19 Dorothy Lane	24583-9128	East	Bridgeport	CT	
Stephenson Ms. Madson Gazette   9278 Alexandria Road   72354-7437     Checkers Mr. Games Extraordinaire   124 Danbury Road   24578-4203     Palmer Mr. Oli & Lube   7234 Cartes Grove   14578-7345     Reyndds Mr. Gardn Center   426 Bancheser Lane   28346-8912     Wilams Mr. Distributor Wicker World   5612 Hillerdale Court   56720-5738     Greene Ms. Rét Tire Center   4387 Mt. Meadows Court   49772-5571     Jordan Mr. Architects of Ornaba   9234 Eastgate Dive   28346-8134     Vourssion Ms. Universal Tenno   2910senh Place   50501-15637     Checkers Ms.		Ms.	Manager	Demonte Groce ry	193 Springboro Pike	26354-2345	East	White Plains	Ϋ́	
Checkers         Mr.         Games Edmoordnaire         1234 Danbury Road         24578-0203           Palmer         Mr.         Oil & Lube         7234 Carters Grove         14578-3745           Reyndds         Mr.         Garden Center         4268 Buchester Lane         28346-8912           Wilfams         Mr.         Distributor         Wick World         5612 Hillerdale Court         5620-5238           Middlekamp         Mr.         Rock End Quick Pint         2103 Walnat Creek Drive         12038-5239           Greene         Ms.         Rite Tire Center         4387 Mt. Meadows Court         49772-9571           Jordan         Mr.         Architects of Ornada         29.54 Eastgate Drive         2846-8134           Yoursstown         Ms.         Universal Tenn         29.1 seath Place         5050-1563	•	Ms.		Madison Gazette	9278 Alexandria Road	72354-7437	Midwest	Madison	M	
Palmer Mr.   Oil & Lube   7234 Carters Grove   14578-7345     Reyndds Mr.   Oiarden Center   4268 Banchester Lane   8346-8912     Wilsans Mr.   Distributor   Wicker World   5612 Hillendale Court   56270-5238     Middekamp Mr.   Rockford Quick Pint   2103 Walnut Greek Dire   12038-5239     Greene Ms.   Rie Tire Center   4387 Mt. Meadows Court   49772-9571     John Mr.   Architects of Omaha   9234 Eastgate Dire   28346-8134     Voutstown Ms.   Universal Tenn   2910seth Place   5091-1637     Control of the Court   12038-1204     Control of the Court   12038-1		Mr		Games Extraordinaire	1234 Danbury Road	24578-0203	East	Winchester	٧A	
Reyndds         Mr.         Garden Center         4268 Bkncheser Lane         28346-8912           Wilsans         Mr.         Distributor         Wicker World         5612 Hillendale Court         56270-5238           Middkkamp         Mr.         Rockford Quick Print         2103 Walnut Creek Drive         12038-5239           Greene         Ms.         Rie Tire Center         43871 Mr. Meadows Court         49772-9571           Jordan         Mr.         Architects of Omaha         9234 Eastgate Drive         28346-8134           Younstown         Ms.         Universal Tenn         59 Josenh Place         50501-3637		Mr		Oil & Lube	7234 Carters Grove	14578-7345	Midwest	Paris	ΚY	
Wilsams         Mr.         Distributor         Wicker World         56 12 Hilendale Court         56 270 -5238           Middekamp         Mr.         Rock End Quick Print         2103 Walnut Creek Drive         1203 -5239           Greene         Ms.         Rie Tire Center         4387 M.1 Meadows Court         49772-5571           Jordan         Mr.         Architects of Ornala         9234 Eastgate Drive         28346-8134           Yoursstown         Ms.         Universal Tenn         29 Josenh Place         50501-3537	Кеупо	Mr		Garden Center	4268 Blanchester Lane	28346-8912	East	Anderson	SC	
Middlekamp         Mr.         Rock End Quick Print         2103 Walnut Creek Drive         1203 8-5239           Greene         Ms.         Rie Tire Center         4387 Mt. Meadows Court         49772-9571           Jordan         Mr.         Architects of Ornaha         9234 Eastgate Drive         28-96-8134           Yoursstown         Ms.         Universal Tenn         29 Josenh Place         50-90-1-5637		M.	Distributor	Wicker World	5612 Hilendale Court	56270-5238	Midwest	Duluth	Z	_
Greene Ms. Rie Tire Center 4387 Mt. Meadows Court 49772-9571 Jordan Mr. Architects of Ornaha 9234 Eastgate Drive 28546-8134 Youngtown Ms. Universal Term 29 Joseph Place 50501-7637		Mr.		Rockford Quick Print	2103 Walnut Creek Drive	12038-5239	Midwest	Rockford	П	_
Jordan Mr. Architects of Ornaha 9234 Eastgate Drive 28546-8134 Youngtown Ms. Universal Term 29 Joseph Place 50501-7637		Ms.		Rite Tire Center	4387 Mt. Meadows Court	49772-9571	Midwest	Richmond	НО	_
Youngtown Ms. Universal Temp 29 Joseph Place 50 501-7637		Mr		Architects of O maha	9234 Eastgate Drive	28546-8134	Midwest	Omaha	N H	_
		Ms.		Universal Temp	29 Joseph Place	50501-7637	Midwest	Ft. Dodge	≰	
Interes Ms Golf World 98626 Banniciae Street 14201.9181		Ā		Colf World	98676 Bannieter Street	14701-0183	South	Venire	i 5	_

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# Thanks so much!



Thank you for visiting Varis and your interest in VariScript. As a printer in the <<region>>, you are undoubtedly in search of new ways to reduce your total job development time. Recent marketing phenomena in printing requires more frequent changes in the layout than ever before. The result is the increased importance of keeping presentation (static layout) and data separate so those rapid changes can be accomplished.

Varis Corporation has a solution that will enable you to achieve these goals.

Is this new system compatible with my current pre-press equipment and format, and is it available in <<city>>>?

These are probably your first questions. The answer to both is yes! The VariScript suite of products can be easily incorporated within your current pre-press equip ment, and <<city>> is at the top of our list for our next product delivery!

Remember that a key advantage of VariScript is the ability to make last-minute changes in text, graphics, layout or data. Pre-flight information concerning your job's components is given to you via the Operator Display Terminal (ODT) before you place your printer on-line. This gives you better control over production schedules and ensures on-time customer deliveries.

With a minimal capital investment, VariScript offers you the opportunity to reduce your cost of operation, optimize the use of your staff and equip ment, and provide additional services to your company.

Many of our customers are reporting astounding improvements in their production!

We look forward to talking with you about how the suite of VariScript products can help you achieve <<company>>'s goals.

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<<region>> select

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FIG. 6

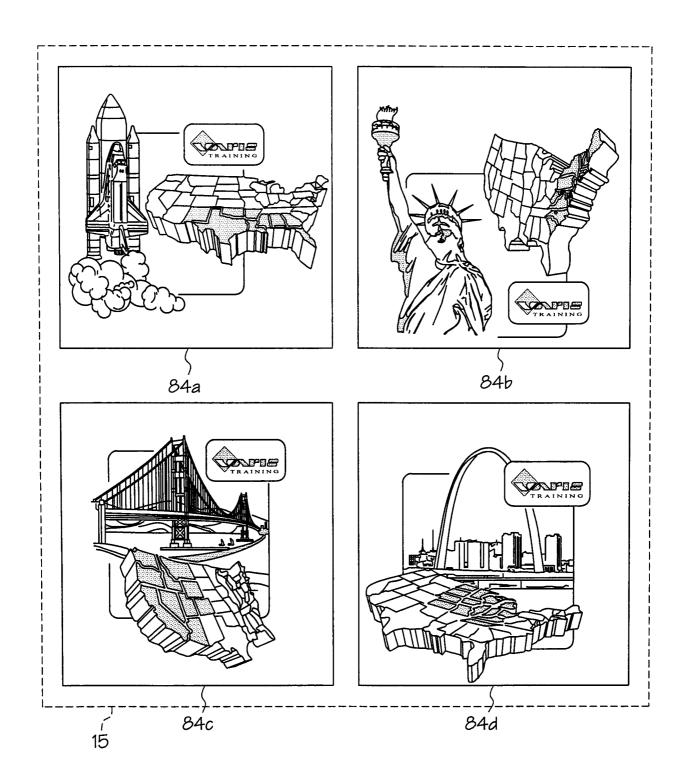


FIG. 7

# Thanks so much!

88a 88b Shannon Janszen

88c Shannon Ja

98626 Bannister Street Venice, FL 34293-9183

Dear Ms. Janszen:

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88e 88f 88g

Thank you for visiting Varis and your interest in VariScript. As a printer in the South, you are undoubtedly in search of new ways to reduce your total job development time. Recent marketing phenomena in printing requires more frequent changes in the layout than ever before. The result is the increased importance of keeping presentation (static layout) and data separate so those rapid changes can be accomplished.

Varis Corporation has a solution that will enable you to achieve these goals.

Is this new system compatible with my current pre-press equipment and format, and is it available in Venice?

These are probably your first questions. The answer to both is yes! The VariScript suite of products can be easily incorporated within your current pre-press equipment, and Venice is at the top of our list for our next product delivery!

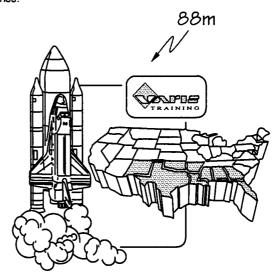
Remember that a key advantage of VariScript is the ability to make last-minute changes in text, graphics, layout, or data. Pre-flight information concerning your job's components is given to you via the Operator Display Terminal (ODT) before you plave your printer on-line. This gives you better control over production schedules and ensures on-time custo mer deliveries.

With a minimal capital investment, VariScript offers you the opportunity to reduce your cost of operation, optimize the use of your staff and equip ment, and provide additional services to your company.

Many of our customers are reporting astounding improvements in their production!

We look forward to talking with you about how thw suite of VariScript products can help you achieve Golf World's goals.

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FIG. 8

#### INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/09646

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Minimum documentation searched (classification system followed by classification symbols)				
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#### INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/09646

C (Continua	tion). DOCUMENTS CONSIDERED TO BE RELEVANT	· · · · · · · · · · · · · · · · · · ·	
Category*	Citation of document, with indication, where appropriate, of the relevant	ant passages	Relevant to claim No.
A	US 5,506,697 A (LI et al.) 09 April 1996, whole docum	nent.	1-8
A	US 5,459,826 A (ARCHIBALD) 17 October 1995, who document.	ble	1-8
A	US 5,291,243 A (HECKMAN et al.) 01 March 1994, w document.	hole	1-8

# INTERNATIONAL SEARCH REPORT

International application No. PCT/US00/09646

B. FIELDS SEARCHED Minimum documentation searched Classification System: U.S.	
358/1.1, 1.9, 1.15, 1.17, 1.18, 1.19, 448, 467, 470, 518, 520, 538; 382/171, 180, 209, 215, 217, 27, 433, 435, 436, 438, 468, 522.	77, 302; 345/113,