Developing and Using Word Electronic Questionnaires at GAO

This guide presents useful practices and tips intended to make gathering information using Word Electronic Questionnaires (Word forms) at GAO efficient and effective. This is not official ARM guidance, but it should be used with relevant ARM guidance on questionnaire design and data collection instrument design. A key step in GAO's Quality Assurance Framework is to consult with ARM or other qualified team experts to discuss data collection strategies, including the appropriate software tools, before beginning data collection.

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Table of Contents

Introduction

This document provides recommendations on developing and using Word Electronic Questionnaires (WEQs) at GAO. These questionnaires are used for a variety of purposes, including survey instruments completed by non-GAO respondents or by GAO interviewers and data collection instruments (DCIs) completed by GAO staff (e.g., when reviewing documents). WEQs allow respondents or GAO staff to read instructions and questions in a Microsoft Word document saved as a Word form and to answer those questions by entering their responses into the document's "form fields." Respondents then generally return the completed WEQs through email. At GAO, WEQs are distributed as password-protected form files that do not allow respondents to change anything other than their responses (i.e., they cannot change instructions, questions, response options, or formatting).

This document should be consulted to avoid common problems in using WEQs and to speed the development of WEQs and the analyses of the resulting data. This document applies to WEQs created using stand-alone Microsoft Word 2007 and Word 2010 through the Virtual Desktop Initiative (VDI); but should be updated as needed when GAO software changes. This document does not directly apply to emailed electronic questionnaires created using other programs (e.g., Excel, Adobe Acrobat), however some of the information in this document may be useful for those questionnaire formats as well. Although Word can be used to create forms to be printed and completed on paper, this document applies to forms completed on the respondent's computer (whether the completed form is emailed or printed and mailed or faxed back to GAO). Therefore, recommendations in this document may not be optimal for questionnaires designed to be completed on paper.

This document should be used with relevant GAO/ARM guidance on questionnaire design and data collection instrument design.   Also, see ARM Guidance for formatting options that are helpful primarily for questionnaires that are designed to be printed before a respondent fills them out but may also be useful for WEQs.[1]

As a quick reference, see the **checklist** of reminders provided in Appendix I.

Background

While there are several software options to collect data in surveys, WEQs are most useful when:
- respondents' email addresses are available;
- the sample size is relatively small (subjective but roughly less than about 50, due to manual processing involved);
- a format that will maintain visual formatting when printed is required;
- extracting data from the documents electronically rather than retyping the data manually is preferred; and/or the costs and benefits are positive compared to collecting data through a web (QPL) survey or a pdf-formatted questionnaire (see Using Fillable PDF Forms as a Data Collection Method for details on pdf forms).

This is because 1) WEQs are almost exclusively distributed by email, 2) questionnaires in most other formats (e.g., QPL and pdf) generally take more time and effort to develop than WEQs, 3) data from WEQs can be extracted electronically using Word macros or other methods, and 4) in some cases, the respondent will want to print a questionnaire to distribute it to several other people at an organization before responses are consolidated in a single WEQ on a respondent's computer and returned to GAO.

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[1] Note that the "checkboxes" and "text boxes" in that document are graphic images rather than functional form fields that respondents can use in WEQs. You would need to replace the images with controls so respondents could enter responses.

Web-based (QPL) questionnaires are better-suited to large sample sizes where the greater investment for development is worthwhile. When email addresses are not available, surveys conducted by phone, in person, or by mail are the main options, though for interviews WEQs can be used by the GAO interviewers to record responses in real-time. For more detailed tips on selecting a survey administration mode and the advantages and disadvantages of WEQs compared to other survey administration modes, see Choosing a Survey Administration Mode participant manual. WEQs can also be completed as "data collection instruments" (DCIs) by GAO staff (e.g., for content analysis, literature reviews, or file reviews; see the Guidance for Analyst-Administered Data Collection Instruments.

Finding, Inserting, and Modifying the Form Fields/Controls

Questionnaire designers create WEQs using the Forms features of Microsoft Word. As a Word form, when the WEQ is finalized, respondents will be able to provide responses but will not be able to make changes to the questions or other text or formatting. The response areas that respondents can change are called "form fields" or "controls" in the remainder of this document.[2] These include open-ended text fields for respondents to type in a response, and checkboxes and drop-down menus for respondents to select a specific response option presented to them.

This document discusses three types of controls: Word 2007 controls, Word 2010 controls, and "legacy" form fields (i.e., Word 2003).[3] Additional information about creating forms in Word 2007 and 2010 is available at Microsoft Word Help Link and more-specifically here.

The controls are located in the "Developer" tab. See Figure 1a/1b. If the Developer tab is not visible when you open Word, follow the procedures in Appendix II to display the Developer tab.

Which controls are available depends on which version of Word you are using and whether the file you are in is saved as a 2007/2010 ".docx" file or a 2003 (or "Compatibility Mode") ".doc" file (used to ensure users of older Word versions can use a document created in a newer version of Word). The "Legacy" fields are available in all Word versions, but some other controls are only available in Word 2007 or 2010 (see Figures 1a and 1b).

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[2] Microsoft documentation refers to the "Legacy" fields as "form fields" but refers to the newer equivalent fields as "controls." For readability, this document uses the newer term "controls" to describe both "controls" and "form fields" but makes clear when the Legacy controls are specifically being referenced.

[3] Active X controls are also available in Word but are not discussed in this document because they are not recommended for use in most GAO WEQS for security and methodological reasons. Active X is disabled by default by many users for security reasons, so it is possible that some of your respondents will not be able to use Active X controls or they will not be able to without instruction on how to enable Active X features, and may still not be willing to accept the security risk. Also, we do not currently know of a method to easily export data from Active X controls (e.g., for analysis in Excel). Therefore, although Active X controls offer some useful features that are not possible with other Word controls (i.e., radio buttons), you should only use them if you know that all your respondents have ActiveX installed and enabled on their computers and you either do not need to export the data or you have found a method to export the data. For information on using Active X controls in Word 2010, see https://msdn.microsoft.com/en-us/library/office/ff195739(v=office.14).aspx. Please contact ARM's Survey Group for current advice on using Active X.

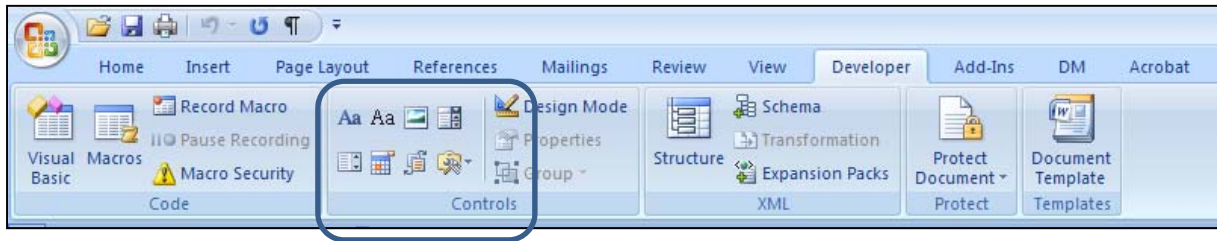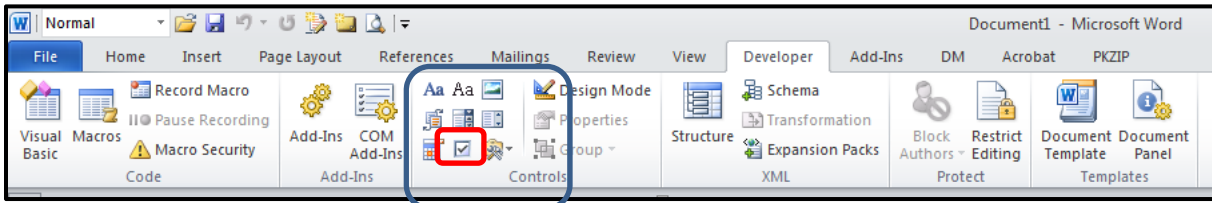*Figure 1a. The Developer Tab in Word 2007 with the controls highlighted.*

Figure 1b. The Developer Tab in Word 2010 (VDI) with the controls highlighted.

Notice the extra checkbox control available in the Word 2010 controls, circled in red.

The Legacy fields are visible by clicking the "Legacy Tools" icon (the icon just above the "C" in "Control" in the "Controls" section), which brings up a menu choice of "Legacy Forms" and "ActiveX Controls." The Legacy controls are more limited than the 2007/2010 controls but are compatible with all versions of Word so are your best choice if you do not know what version of Word your respondents will be using. Clicking on a control icon will insert the control into the document at your cursor's current location.

The controls that are useable by the most respondents to questionnaires (and therefore most-useful to GAO designers for questionnaires) are the three Legacy controls: **Text fields**, **checkboxes**, and **drop-down fields**. See Figure 2.

Figure 2. Legacy Form Tools with controls indicated
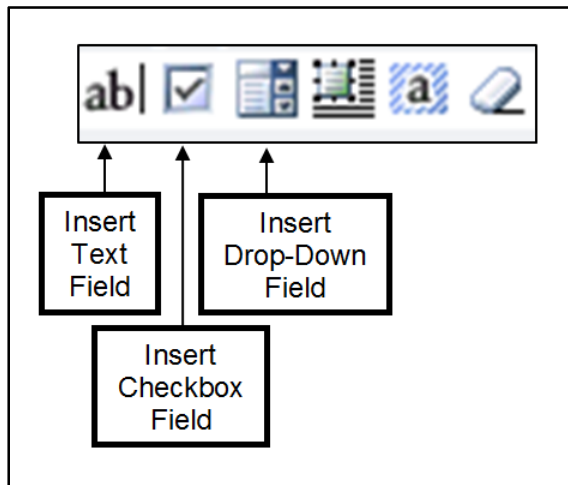
Some of the 2007 controls (two text controls and a drop-down control) and the 2010 checkbox are variations on the Legacy controls and function similarly to the Legacy versions. The 2007 **"Combo box"** and "**Date picker**" controls could also be useful in GAO questionnaires.[4] The combo box functions similarly to a drop-down box, but also allows respondents to type in their own answer instead of selecting a drop-down option. The date picker allows respondents to select a specific date in a format the designer chooses (which would reduce data cleaning time by restricting data to a standard date format).
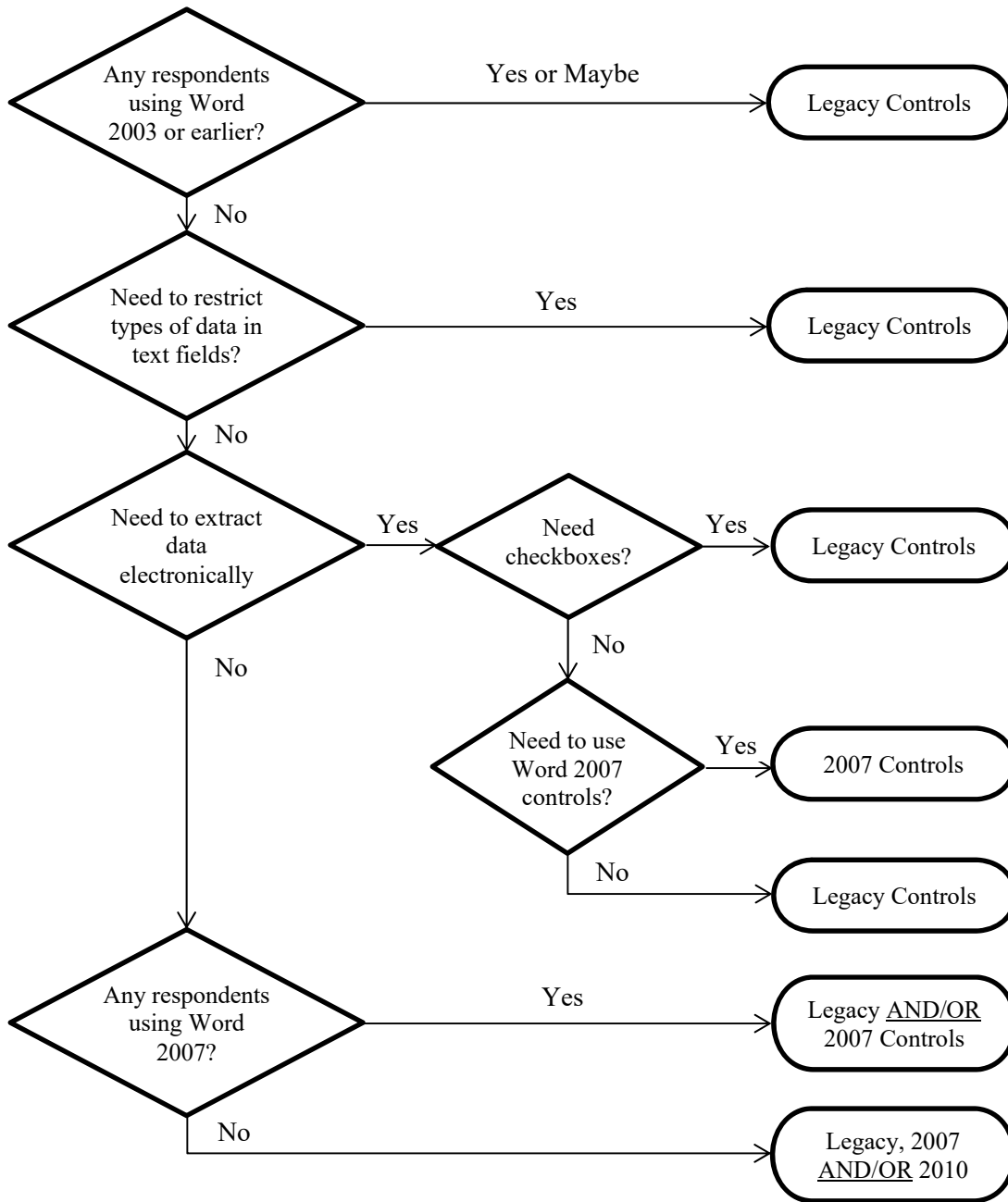
Once you have a control in your document, you can change the properties of that control (i.e., adding the drop-down options that you want to be available to your respondents) in one of two ways. For 2007/2010 controls, you must click "Design Mode" then click Properties on the control you want to modify and make your changes. (Remember to turn off Design Mode by clicking it again before distributing the questionnaire.) For Legacy controls, you can change the properties by double-clicking in the control or by clicking in the control and then clicking the "Properties" button in the "Controls" section.

Choosing Among Use Legacy, Word 2007, or Word 2010 Controls

Some controls do not work in some versions of Word, so you will have to choose which controls are appropriate based on your questionnaire needs, your respondents' version of Word, and whether/how you plan to extract responses from the WEQs. **For reasons described in detail below, only the Legacy controls should be used for most WEQs at GAO. See Figure 3 for a suggested decision tree to help you decide which controls to use.**

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[4] The "Picture control" and the "Building block control" are useful for some document templates but of limited usefulness for most GAO questionnaires.

Figure 3. Suggested Decision Tree for Deciding Which Control Type to Use

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┌─────────────────────┐
│  Any respondents    │      Yes or Maybe      ┌──────────────────┐
│  using Word         │───────────────────────▶│ Legacy Controls  │
│  2003 or earlier?   │                        └──────────────────┘
└─────────────────────┘
          │ No
          ▼
┌─────────────────────┐
│  Need to restrict   │          Yes           ┌──────────────────┐
│  types of data in   │───────────────────────▶│ Legacy Controls  │
│  text fields?       │                        └──────────────────┘
└─────────────────────┘
          │ No
          ▼
┌─────────────────────┐          ┌──────────────┐      Yes   ┌──────────────────┐
│  Need to extract    │   Yes    │    Need      │───────────▶│ Legacy Controls  │
│  data               │─────────▶│  checkboxes? │            └──────────────────┘
│  electronically     │          └──────────────┘
└─────────────────────┘                 │ No
          │ No                          ▼
          │                    ┌──────────────┐   Yes   ┌──────────────────┐
          │                    │  Need to use │────────▶│  2007 Controls   │
          │                    │  Word 2007   │         └──────────────────┘
          │                    │  controls?   │
          │                    └──────────────┘
          │                           │ No      ┌──────────────────┐
          │                           └────────▶│ Legacy Controls  │
          │                                     └──────────────────┘
          ▼
┌─────────────────────┐          Yes           ┌──────────────────┐
│  Any respondents    │───────────────────────▶│ Legacy AND/OR    │
│  using Word         │                        │ 2007 Controls    │
│  2007?              │                        └──────────────────┘
└─────────────────────┘
          │ No                                 ┌──────────────────┐
          └────────────────────────────────────▶│ Legacy, 2007    │
                                                │ AND/OR 2010      │
                                                └──────────────────┘
```

The Legacy controls will work for all respondents, though they are slightly more limited than the newer controls. The Word 2007 controls will allow slightly more functionality than the Legacy controls but will not work for any respondents using Word 2003. The Word 2010 checkbox control adds no clear advantage over the Legacy checkbox and will not work for any respondents using Word 2007 or earlier.

If you know that some respondents will use Word 2003 or if you are unsure what version of Word a respondent may use, then you should use only Legacy controls and save the file in "compatibility mode" so that all respondents will be able to complete the questionnaire, regardless of the version of Word they are using. Only under the following conditions are the Word 2007 controls and the Word 2010 checkbox viable options:

You can use Word 2007 controls if:

    Situation 1:

- NO respondents will be using Word 2003, AND

- You do NOT want to electronically extract responses from the WEQs, AND

OR

    Situation 2:

- NO respondents will be using Word 2003, AND

- You DO want to electronically extract responses from the WEQs, AND

- You do NOT need to restrict the type of data that a respondent can enter (e.g., restricting the control to accept only digits and not letters),

- You do NOT need to use any checkbox controls.

Under Situation 1, you can use either Word 2007 controls alone or in combination with legacy controls in the same WEQ. However, you cannot use the Word 2010 checkbox if any respondents might use Word 2007 because those respondents will not be able to check the Word 2010 checkbox. Also, it is not possible to restrict the type of data that a respondent can enter in a Word 2007 text control (e.g., you can NOT restrict the control to accept only digits) as you can in the Legacy text control. Therefore, if you need to restrict the type of data that a respondent can enter in a text field, you must use the Legacy text control, but under Situation 1 you can combine the Legacy text control with the Word 2003 controls.

Under Situation 2, you <u>must</u> use <u>only</u> the Word 2007 controls and <u>cannot</u> also use the Legacy controls or the Word 2010 checkbox in the same WEQ. None of the current methods for electronically extracting data from WEQs that are discussed later in this document will extract data from Word 2010 controls, and none of the methods will extract data from both

Legacy and Word 2007 controls at the same time.[5] Further, there are no Word 2007 checkbox controls; so, based on the conditions above, if you need one or more checkbox controls and you want to extract data electronically, you <u>must</u> use <u>only</u> the Legacy controls. Similarly, if you want to restrict the type of data that a respondent can enter in text control, you <u>must</u> use only the Legacy controls.

You can use the Word 2010 checkbox if:

- You do NOT want to electronically extract responses from the WEQs, AND

- NO respondents will be using Word 2007 or earlier,

As described above, none of the current methods for electronically extracting data from WEQs that are discussed later in this document will extract data from Word 2010 controls, and respondents using Word 2007 or earlier will not be able to check the Word 2010 checkbox.

Password-Protecting the Document for Use by Respondents

Before sending a form to respondents, the questionnaire designer should protect the document with a password so that respondents can check checkboxes and select drop-down items and cannot modify the questionnaire other than answering questions. If the file is not "protected" as a form (with or without a password), respondents will not be able to check checkboxes or select drop-down responses. A password is not required but is highly recommended to keep respondents from deliberately remove the protection.

To password-protect the document, click the "Protect Document" button (Word 2007) or the "Restrict Editing" button (Word 2010) in the Developer tab of the Word ribbon or and a menu will appear to the right. See Figure 4. Then check the box "Allow only this type of editing in the document:" and select "Filling in forms" from the drop-down menu. Then click the button labeled "Yes, Start Enforcing Protection" and enter a password that a respondent is unlikely to figure out. Record the password for future reference.

To remove a password from a password-protected document, open the document and click the "Protect Document" or "Restrict Editing" icon on the Word ribbon and a menu will appear on the right. Click the Stop Protection button, enter the password, and click OK. <u>IMPORTANT:</u> Removing and then re-applying a password to a document whose controls have already been filled-in may erase the data in the controls. You can remove the protection from a filled-in form, but do not re-apply a password unless you want to erase the form data.
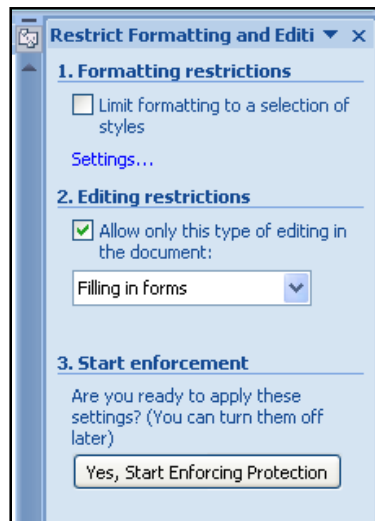
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[5] A macro or other method that can export Word 2010 checkbox control data and/or that can extract data from multiple Word versions simultaneously could be developed in the future. Please check with the GAO Survey Group for the latest methods for extracting data from WEQs.

Figure 4. Password protection menu before and after making selections.
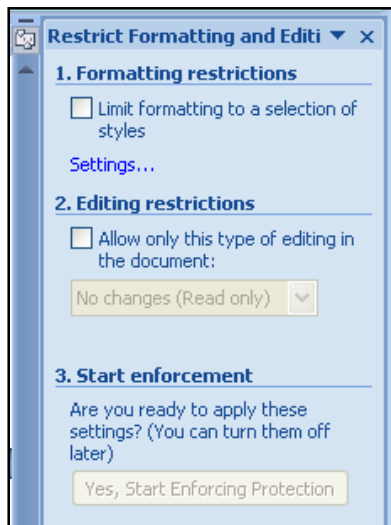
a. Before   b. After

Technical Tips

1. **General tips**

   a. **Use <u>either</u> Legacy controls <u>or</u> Word 2007 controls.** Based on reasoning described elsewhere in this document, it is recommended that you use either Legacy controls or Word 2007 controls but not both in a single WEQ. If you use both types of controls in one WEQ, it is highly recommended that you test your process for exporting data and combining the data to ensure the process works as intended before fielding your questionnaire.

   b. **Don't use macros.** GAO staff should not use macros (embedded within the controls or elsewhere in the Word document) in most WEQs used as questionnaires. Due to security concerns some respondents will not be willing or able to allow macros to operate on their computers and because the macro may not perform as expected on the respondent's computer. If you must use macros, test the functionality extensively to ensure you will be able to collect the data as intended. On the other hand, macros are acceptable and may be very helpful for data collection instruments completed by GAO staff.

   c. **Inserted hyperlinks may not work.** In WEQs saved as either .doc or .docx files, you can insert hyperlinks to external webpages or documents (or even another page in the questionnaire such as an appendix), but the hyperlink might not work when the document is password-protected. To ensure all respondents will be able to access an external file you have hyperlinked, you should provide not only the hyperlink but also spell out the full hyperlinked address so that respondents can type it into a web browser (e.g., "Control-click here" or type the following in your browser's address bar: http://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf to download the National Response Framework, if desired.")

d. During development, it may be helpful to temporarily apply protection to test functionality by following the procedures for protecting the document presented elsewhere in this document but clicking "Yes, Start Enforcing Protection" and then clicking OK <u>without</u> entering a password. Click "Stop protection" to end temporary protection.

e. In Word 2007 (and possibly in Word 2010 under VDI), do not insert anything in a <u>footnote</u> that you plan to remove before fielding (e.g., the word "Draft") because problems with Word in DM sometimes make it difficult to remove text from footnotes. It is safest to insert such text in the <u>header</u> rather than the footer.

2. Control considerations

a. **Do not embed controls in Word text boxes.** Legacy controls cannot be embedded within text boxes. Word 2007/2010 controls can be embedded within text boxes but respondents cannot enter a response in them. There are advantages to adding borders around questions and response options, as a text box does, but to do so, embed the controls in table cells with visible borders rather than in text boxes (see more below).

b. Embedding an open-ended text control in a table cell with a visible border will make the response area more salient to a respondent than the same text control appearing near text without a border and may reduce the number of respondents who accidentally skip a question. This is especially true if the WEQ is printed and filled in before being completed electronically and/or when shading has not been applied and the control itself is not visible.

c. Consider adding empty space within a response area (or within the same table cell) under a text control for questions you hope to get long answers to. A single text control will occupy no more than a single line, and adding space below the control increases the size of the visible response area. This can be beneficial in at least two ways. First, increasing the size of the box beyond a single line presents a visual cue to the respondent that we are expecting more text than would fit on a single line (and therefore encourages longer and more complete responses). Second, if the WEQ is printed and completed by some respondents on paper before transferring the answer to the electronic version or returning the paper document by mail, the extra space will provide the respondent room to write the answer in the response box. See Figure 5 below.

Figure 5. Examples of single-line and multi-line response boxes embedded within table cells.

20. Please provide as much detail as you can about your internal control procedures. *The box will expand as you type.*

20. Please provide as much detail as you can about your internal control procedures. *The box will expand as you type.*

    d. Checkboxes or drop-down controls in lieu of radio buttons. Radio buttons are a common and useful feature in web and other electronic questionnaires, but they are only included in Word as an Active X control, but Active X is not recommended for most GAO WEQs. If you want respondents to select only one of several responses (the primary value of radio buttons), then the usual method in a WEQ is to use checkboxes, with one checkbox for each response option and explicit instructions to check only one box. The downside of this method is that there is nothing stopping the respondent from checking more than one checkbox for a single question.

      i. An alternative to the checkbox method is to use the drop-down (or combo box) control. The advantage of a drop-down control is that you can restrict respondents to selecting only one response (similar to the function of a radio button). However, a disadvantage of the drop-down control is that the response options are not visible on the document until the respondent clicks in the box, and therefore the response options are not visible on a printed version of the WEQ, which may significantly reduce the reliability of responses collected through such previously-printed WEQs. If you expect some respondents to print out the WEQ before completing it electronically -- for example to distribute the questionnaire to multiple team members before entering their responses in a single electronic response -- then using the checkbox method is likely to result in more reliable responses than using the drop-down or combo box controls.

    e. Prepopulate the first response option of drop-down and combo box controls with "blank" text. For drop-down controls and combo boxes, consider making the first/top response option a blank (i.e., prepopulate the first option as " " rather than as "Select One" or a substantive answer such as "Yes", etc.) so that respondents will quickly recognize that they have not yet answered the question and will not accidentally skip it. Do so by entering spaces as a response option and making that the first response option.

    f. It is possible to restrict the type of data that a respondent can enter in a Legacy text control (e.g., you can restrict the control to accept only digits), but not in the Word 2007 text control. To do so in the Legacy control, insert the control then

open the control's options and in the "Type" box select the type of data you want the control to accept, then click "OK." However, realize that limiting the type of data to anything other than "regular text" will make it impossible for respondents to enter explanatory text as well. If you restrict a control's content or format, consider adding a text control below the question for any additional comments the respondent might want to add for that question.

3. **WEQ page formatting suggestions**

   a. **Optimize your table cells for text controls.** By default, when a respondent enters text in an open-ended control that is embedded within a table cell, the cell automatically expands horizontally (not just vertically, which is desired). That expansion may push text off the visible page, or if the table has more than one column, it may shrink the other columns, making text or controls in those cells unusable to respondents. To avoid this possibility when you are using controls within table cells, you should change the default behavior to make sure that the table cells will not resize horizontally automatically. To do so, highlight the table, right click inside the table, click Table Properties, click Options, then uncheck the box labeled "Automatically resize to fit contents", and click OK. The table cells will still expand vertically (wrapping text) as the respondent enters text wider than the table column. To save time, it is best to do this for the first table cell you enter in a questionnaire and then copy that cell wherever needed (rather than creating all the cells you need and then changing each one manually).

   b. **Leave empty lines at the bottom of pages that use open-ended text controls.** Consider leaving several empty lines at the bottom of pages that use open-ended text controls that will expand vertically as the respondent types because as the boxes expand, any text or questions below them will be pushed down the page and eventually onto the next page, possibly destroying vertical formatting, splitting questions from instructions or response options from questions, etc. You can include empty space by inserting blank rows (manual returns), but a better method is by inserting a page break below the last open-ended text field. Using the latter method ensures that blank rows are not moved to the next page as the open-ended text fields are filled-in. Ensuring extra space at the bottom of pages may sometimes lead to large areas of empty space on a page, but this is not noticeable to respondents when completing the questionnaire on the computer and is probably a minimal concern for respondents who may print the questionnaire before filling it in.

   c. **Insert tiny controls to ensure information is not accidentally skipped.** If respondents navigate through a WEQ using the tab key, Word skips between the controls. If there are large sets of text without controls (e.g., most of the instructions on the first page of a WEQ, a page with key definitions), respondents will accidentally skip that text and may never realize it exists and that they have missed something important. Inserting tiny controls within those instructions will help ensure key information is not accidentally skipped when respondents navigate through the questionnaire.

i. Insert tiny, almost-invisible controls immediately above such instructions (e.g., insert a checkbox control, select it, and change its font size to 1pt). This will ensure that when respondents tab after answering a question they will tab to the start of any instructions they would otherwise tab past. Insert such controls within long sets of instructions or anywhere text may be skipped. This is also important for instructions on the first page of the document because respondents may return to the first page after completing the last question in the questionnaire or for other reasons. There is a tiny control inserted directly below this paragraph as an example of the size of the box relative to the text around it.

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ii. Inserting the control in the right margin may make the control less noticeable to respondents than if it were in the left margin, depending on the layout of text near it. (For example, there is a tiny control in the right margin in the line immediately above item "a" on the previous page that you may not have noticed.) However, note that it is easier to accidentally delete the tiny controls on the right when changing the document, so check the questionnaire carefully before fielding to ensure all controls remain.

iii. You can use any type of control for this purpose (checkbox, etc.), though checkboxes are inherently smaller than the other types of controls so may be the least distracting choice.

4. **Preparation just before fielding**

   a. **Pick a filename meaningful to the respondents.** Carefully consider the filename to use for the copy of the questionnaire that you will send to respondents. The filename should make sense to the respondents when they see it in their folder two weeks after they receive and save it. Including the abbreviation "GAO" and the word "survey" or "questionnaire" in the filename will probably be helpful, in addition to a short description of the topic (e.g., "GAO survey on strategic planning.docx").

   b. **Remove comments and tracked changes.** Ensure that all comments and tracked changes have been removed from the file before sending to the respondent. Word sometimes does not display comments and other changes in "Print Layout View" so you should check the document using "Web layout View" as well.

   c. Accept all changes in "track changes" and save "final" not "show markup."

   d. **Ensure that all controls are present rather than just appearing so.**

      i. Checkboxes: Ensure that all checkboxes are really checkbox controls ☐ that can be checked by respondents rather than graphic checkboxes ☐ that are useful for mailed questionnaires but that are not really controls that can be checked by respondents in a WEQ.

      ii. Text controls: Ensure that response areas or table cells that should have text controls actually do have the controls in them. When control shading is turned off or when some types of background highlighting are used, it may be difficult to notice that there is no control where there should be.

iii. Testing: Make a copy of the document, temporarily protect it, then test every control by checking checkboxes, typing in text controls, and manipulating other controls. Simply tabbing between controls is insufficient because you may simply tab past non-controls without noticing something was skipped.

Tips for Sending WEQs to Respondents

1. **Send WEQs in individual not group emails.** Generally, it is best to send the WEQ documents by email as an attachment to each respondent individually (i.e., only one respondent per email). Sending emails to all respondents in the same email divulges to all respondents who the other respondents are, which is poor practice and could lead to a violation of confidentiality, especially if the respondent accidentally uses "reply all" to return a completed questionnaire or to ask a sensitive question. Such a scenario with classified WEQs collected through SIPRnet email could also lead to a security violation. Also, sending emails to many respondents in the same email using the blind courtesy copy ("bcc") option may result in some email servers rejecting the email as spam.

2. **Use a cover "letter" email.** Best practice is to include a cover "letter" in the same email as the questionnaire, either embedded as text in the email or as another email attachment. See the ARM guidance on Letters, E-mail messages, and Introductions for Mail and Electronic Questionnaires.

3. **Include key information from the cover email on the first page of the WEQ**. Including key information from the cover email (e.g., questionnaire purpose and motivational or confidentiality text) can be important because the WEQ may be printed and distributed to staff who do not have access to the cover letter/email.

4. **Consider automating the process of sending the WEQs by email** if you have a large number of respondents,. Unfortunately, Word's Mail Merge feature does not allow attachments to the emails it produces, so Word mail merge is not appropriate for sending WEQs as attachments.[6] SAS code may be available that will send the documents to recipients as email attachments through Outlook. For some surveys, ISTS may be able to send a large number of customized emails for you. Contact the ARM Survey Group for current procedures for sending mass emails with questionnaire attachments and/or for current SAS code.

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[6] If for some reason you must send a cover email that includes a link to download the WEQ from a location on GAO's server then you can use Word's Mail Merge feature or can use QPL to send the cover email. Either way, you will need to post the questionnaire on GAO's publically-accessible server so respondents can download it. However, requiring respondents to download a copy of a questionnaire from a link is not best practice for distributing questionnaires and should be avoided if possible.

Tips for Extracting Data From Completed WEQs

Contact the ARM Survey Group for the current procedures for extracting data from WEQs. Note that if you use the first three methods below to electronically extract data, from <u>checkboxes</u> for multiple choice answers (i.e., for Question 1, one checkbox for "Yes", one checkbox for "No", etc.) the result will be one variable in your dataset for each checkbox rather than one variable for each question (i.e., one variable for "Question 1 - Yes", a separate variable for "Question 1 - No", etc. rather than one "Question 1" variable with a "Yes" level, a "No" level, etc.). If that is how you plan to analyze the data then there is no problem. But if you need individual variables for each question, you have at least the following options:[7]

1. Extract the data electronically using one of the first three extraction methods below, then recode the multiple variables per question into multiple levels of a single question variable (using SAS or other software).

2. Manually enter the data using the last extraction method below, recording checked responses as one of multiple levels of a single variable (i.e., the "Yes" checkbox for Question 1is manually entered as level "Yes" for the "Question 1" variable, etc.).

3. Design the questionnaire to use Word drop-down controls instead of checkboxes for multiple choice questions, then extract the data electronically using one of the first three extraction methods below.

4. Program the questionnaire in QPL or as a pdf form rather than as a WEQ and use radio buttons instead of checkboxes for multiple choice questions to save the responses as multiple levels of a single variable.

As of the publication of this document, there are four main methods used at GAO for extracting the data from completed WEQs into a spreadsheet or database for analysis. It is highly recommended that you test your preferred method on an early version of your questionnaire with at least one of each control type you plan to use to ensure extraction will work as you expect before you invest time in adding all controls. All four methods work with the Legacy controls; only the first method works with Word 2007 controls. Only the last method (manual data entry) works with the Word 2010 checkbox control.

1. **Use a Word/Visual Basic macro to export Legacy or Word 2007 responses from multiple questionnaires.** A process to automatically export data from multiple Word files into a single comma-delimited file using Visual Basic is an option and the macros themselves are available by contacting ARM. The comma-delimited data can then be imported into any data processing software. This method is appropriate for sensitive or classified information. This method works for Word Legacy and 2007 controls. However, as of the date of this document, each macro can only export data from either Legacy or 2007 controls; a single macro cannot export data from both types of controls in the same step. Special characters (e.g., carriage returns, tabs, bullets) in WEQ responses remain in

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[7] You may wish to consider the number of multiple choice questions, the number of response options, the variety of response options (i.e., all questions use Yes/No, or a variety of different scales are used), the amount of time available before fielding the questionnaire, and the amount of time before analyses must be completed after data collection ends as you choose the most appropriate option.

the resulting delimited-text files and create errors when the data are imported into analysis software and so they must be removed from each WEQ prior to executing the macro or removed from the resulting delimited text file prior to importing into analysis software.

2. **Export responses from Legacy controls from individual questionnaires as comma-delimited text data and manually import into Excel.** Responses from individual WEQs can be saved as comma-delimited text data and then imported into Excel using the "Save form data as delimited text file" Word option. As in the method above, special characters (e.g., carriage returns, tabs, bullets) must be removed from each WEQ prior to export or removed from each delimited text file prior to importing into Excel. This method only works for Legacy controls. This method is appropriate for sensitive or classified information.

3. **Import delimited text data from Legacy controls using SAS.** Text delimited data can be exported from individual WEQs without manually removing special characters and then, using SAS syntax, automatically cleaned of special characters and imported into SAS. This method requires exporting text delimited data from individual WEQs before running the SAS program. This method is probably most appropriate when there are a very large number of WEQs (dozens to hundreds) that have many open-ended responses, which would otherwise require much effort to manually remove special characters before exporting using the methods above. This method requires access to and familiarity with the statistical program SAS. This method only works for Legacy controls. This method is appropriate for sensitive or classified information.

4. **Manually enter the responses in a database.** Responses can be manually typed (or copied and pasted) into a spreadsheet or database by GAO staff or by a contractor that GAO uses for this type of task. Using the contractor is not an option for classified surveys. This method works on all types of controls because the questionnaires are printed before manual data entry. This method may be most useful when a WEQ is sent to respondents for completion electronically but the respondents print the completed documents and mail them back to GAO. It is also the only option currently available for transferring Word 2010 checkbox data to an electronic database.

Appendix I - Checklist of Reminders for Creating WEQs

During development:

1. Develop the questionnaire according to general survey research best practices, including preliminary design, peer review, and cognitive pretesting, as needed.

2. Early in development, if you plan to extract data from the questionnaires, test the data extraction process you plan to use on at least one of each type of control to ensure that you will be able to get all the data out of the questionnaire as hoped.

   a. If you will want to extract data from Legacy controls using ARM's Microsoft Access tool or any other method that requires unique bookmark names for each control, ensure there is a unique bookmark name for each control.[8]

3. Ensure there are controls everywhere there should be.

4. Insert tiny controls at the start of -- and within long sections of -- text/instructions as necessary to ensure the text is not skipped as respondents tab through the questionnaire.

Just before fielding:

5. If you have embedded open-ended text controls within table cells, check that the tables' default to automatically resize horizontally is disabled and fix any that are not.

6. Remove comments and tracked changes from the document.

7. Ensure the "track changes" feature is turned off.

8. Ensure "Design Mode" is turned off. (You cannot password-protect a document that is in design mode.)

9. Remove the word "DRAFT" and any other GAO-internal/administrative text that a respondent does not need to see from the header and footer (or watermark) of the document.

10. If not already done, save the non-password-protected WEQ document in DM. This is your archive copy and may be used for workpaper and report documentation and for copying into the appendix of a report.

11. Save the WEQ document outside DM, possibly using the filename you would like respondents to see when they receive the attachment (e.g., "GAO Survey on XYZ.docx").

12. Password-protect the WEQ document outside DM using the "Protect Document" process described above.

13. Save the password-protected WEQ document again. (If you did not already save the file using the filename you want respondents to see when they receive the file, do so now.)

14. Conduct usability testing to ensure that all features work as expected. Preferably, conduct testing on a computer and screen combination that is different from the one used to

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[8] This extraction method has not been used recently at GAO and is not discussed in this document. Contact the Survey Group for details if you are interested in learning more about the method.

develop the questionnaire. This is especially important if you developed a Word 2010 (VDI) document but some respondents may use Word 2007 or an earlier version.

a. Check that the form can only be unprotected by using the password if the form is being used as a questionnaire (rather than a DCI completed by GAO staff). Ensure that all controls work as they should, that open-ended text wraps as expected in open-ended controls in table boxes, and that all instructions and questions are visible (and not skipped) as a respondent navigates through the questionnaire. Consider testing your planned data extraction process again on all questions before fielding. Revise the DM version as necessary and continue the process until the questionnaire is ready to be used.

Appendix II - Displaying the Developer Tab in the Word Ribbon

Use the information in this appendix to display the Developer tab in the Word ribbon if it is not already visible. The instructions differ between Word 2007 and Word 2010 (VDI).

In Word 2007:

- Open Word 2007.
- Click on the "Office" logo in the upper left.
- Click the "Word options" button in the lower right of the pop-up menu.
- Select "Popular" from the menu on the left (if not already selected). See Figure 6a.
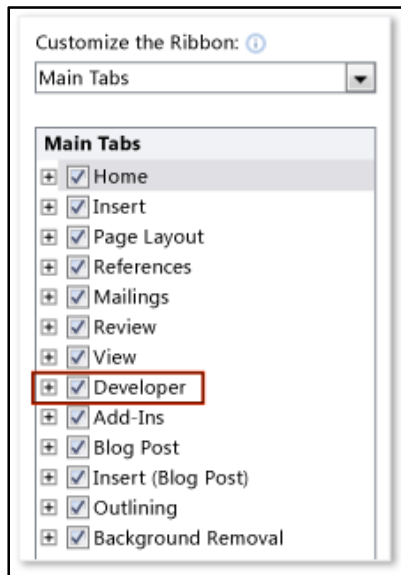- Check the box for "Show Developer tab in ribbon."
- Click "OK."

Figure 6a. Word 2007's Word Options screen.
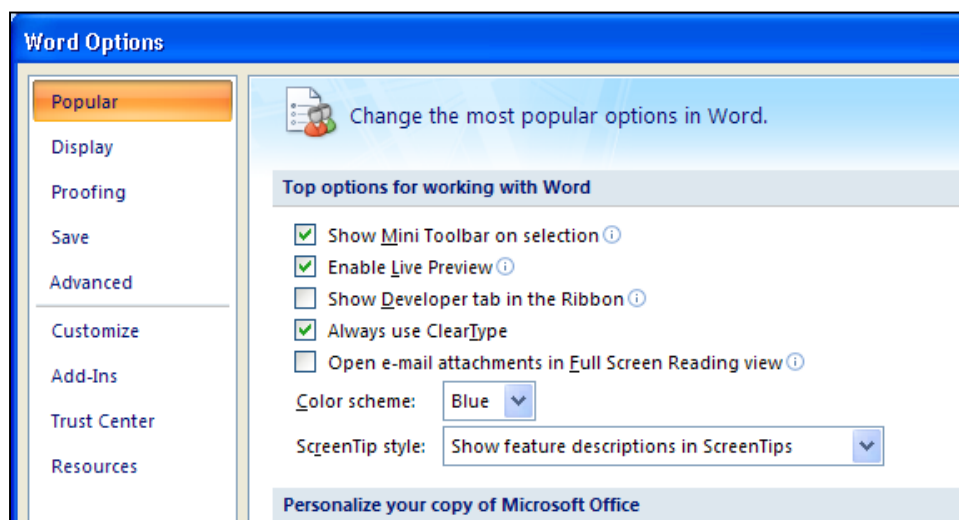
In Word 2010 (VDI):

- Open Word 2010.
- Click the "File" tab.
- Click the "Options" button from the list.
- Click the "Customize Ribbon" button from the list.
- Check the box for "Developer" in the list box on the right. See Figure 6b.
- Click "OK."

Figure 6b. Word 2010's Customize Ribbon selection box.

The Developer tab will then be available in your ribbon.