

This manual supports Logical Decisions® for Groups, Version 5.I.

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Introduction

Logical Decisions[®] for Groups (LDWG) is an enhanced version of Logical Decisions[®] for Windows[™] (LDW) that lets you collect and save a group's responses to preference assessment questions.

LDWG is designed for situations where you want to pose preference assessment questions to a group or team and to save not only a group consensus but also each individual's responses. Having these individual responses can be useful to identify areas of agreement and disagreement among the participants and to show the effects of the disagreements on the analysis results. It is often the case that the overall recommendation of an analysis will remain the same even though there are disagreements about the answers to individual preference assessment questions.

LDWG includes all the features of LDW. LDW is a sophisticated program that lets you evaluate a set of alternatives based on a set of goals and objectives. The goals and objectives identify what is important about the selection. They are quantified with evaluation measures that describe how well each alternative meets a particular goal or objective. The features of LDW are discussed in the Logical Decisions User's Manual that comes with LDWG. This LDWG User's Manual only discusses those features that are unique to LDWG. This manual builds on the LDW User's Manual, so you should review it before continuing with the LDWG User's Manual. This LDWG users manual assumes that you are familiar with the LDW User's manual, the operation of the LDW program and the terms used in the LDW program.

How LDWG Differs From LDW

LDW provides features that let you compare different preferences or points of view. It does this using what are called Preference Sets. A preference set is a collection of information about the value judgments of a single individual or homogeneous group. A preference set contains the parameters for converting the measure scales to common units and for determining the weights of the various measures and goals. LDW lets you define preference sets reflecting many different perspectives and also lets you compare results based on these different perspectives.

In LDW, preference sets are designed to collect consensus information elicited at a single decision conference or interview. If differing perspectives or answers to the assessment questions are obtained, there is no easy place to store the different answers. LDWG remedies this problem by allowing many responses to a single question to be stored in a group preference set.

This ability to store many responses to an assessment question provides advantages for group decision conferences or assessment sessions. First, you can quickly collect and display the range of responses to each assessment question. Responses that differ significantly from the group average (outliers) can be identified quickly and the reasons for these outlying responses can be discussed. This is perhaps the greatest value of LDWG, since the individuals holding outlying views may have information not possessed by the group as a whole. As

the new information comes out and is discussed, the perspective of the entire group may change.

A second advantage is that LDWG can track the responses of each participant in the group individually, so that a set of ranking results customized to each participant can be obtained. With this capability, each participant can see how the analysis results would differ if her perspective were used instead of the group consensus. It is often the case that the results are the same when different perspectives are compared

Organization of This Manual

Section 2 describes how to tell LDWG about your group and the different types of group preference sets available. Section 3 describes the methods available to collect data from your group and how to tell LDWG about your system. Section 4 describes how to elicit a number from your group. Section 5 describes how to elicit group measure levels. Section 6 describes how to elicit parameters that let LDWG convert measure levels to common units. Section 7 describes how to elicit parameters that let LDWG compute weights for the goals and measures. Finally, section 8 describes the unique results displays available in LDWG.

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Defining A Group

The first step in using LDWG in a group setting is to define a "Group Preference Set". A Group Preference Set has information about the members of a group and lets you store information about their responses to various preference assessment questions.

There are two kinds of Group Preference Sets -- Named and Anonymous. Named preference sets contain the names of the individuals in the group. Each individual's responses to group assessment questions are kept as part of the preference set and you can generate rankings and other displays based only on the answers for that individual. Two other responses are kept for each group question -- the average and the consensus. The average response is simply the mean response of the group members (or the geometric mean¹ in the case of AHP responses). The consensus is the single response the group as a whole feels best summarizes its judgement. The group can decide whether the consensus answer should be different from the average answer.

The second type of group preference set is called an Anonymous preference set. Anonymous preference sets do not track information about the individuals in the group. They only track information about the average and consensus responses to the assessment questions. Anonymous preference sets are designed for use with Delphi type assessments, where you want to see everyone's answers to the questions, but not who has provided each individual answer.

Defining a Group Preference Set

You define a group preference set just like you define a regular preference set in LDW. First you add a preference set using the Edit::Add option or the  View::Select a Preference Set option. Once you have created the new preference set (or selected an existing preference set), you can convert it to a group preference set with the Assess::Preference Sets option. The dialog box for the Assess::Preference Sets option has been modified for LDWG as shown in Figure I.

¹The geometric mean of n numbers is the nth root of their product

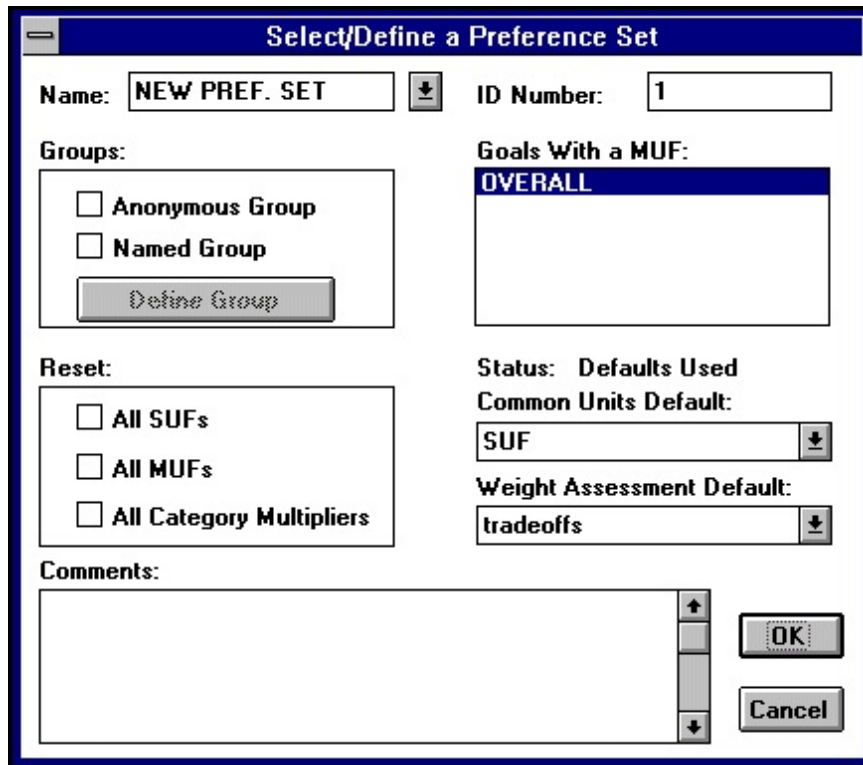


Figure 1. Assess::Preference Sets option dialog box.

The dialog box has been modified to include the box in the upper left labeled "Groups". This box includes check boxes for "Anonymous Group" and "Named Group". To convert the active preference set to one of these types, simply click on the correct type.

When you click to select one of the two group preference set types you will be asked to confirm that the preference set should be converted to that type. If you have selected "Anonymous Group", you will next be asked the number of members in the group. you should enter a number at least as big as the maximum number of people you expect to attend any one of the group assessment sessions. You can increase the number of people in the group later by clicking the "Define Group" button.

If you select "Named Group", you will need to define the names of the people in your group. You do this by clicking the "Define Group" button. When you do this, the dialog box shown in Figure 2 will appear.

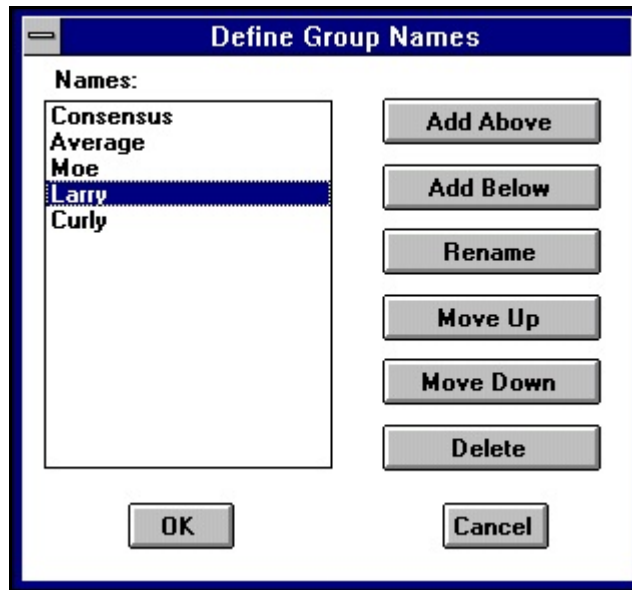


Figure 2. Dialog box for defining names of group members.

The first two names in the list - Consensus and Average -- cannot be changed.

These are always in the list of names. Below these two names you should add the names of the members of your group. If you will be conducting several sessions, you should add the names of all the people present at at least one session. LDWG does not require you to collect information for everyone in the list for every group question.

You can add, delete or revise the names in the list by using the buttons at the right of the dialog box. You can come back later and make changes by again clicking the "Define Group" button in the Assess::Preference Sets dialog box.

Modifying a Group Preference Set

You can change the type of a group preference set after you have defined it by simply checking or unchecking the desired box in the preference set's dialog box. If you uncheck the box for either a named or anonymous group preference set, LDWG will convert the preference set back to a normal non-group preference set (after confirming, of course). LDWG will make the conversion by replacing any group assessment information with the group consensus.


You can also convert between group preference set types. If you click on the "Named Group" box when the "Anonymous Group" box is already checked, LDWG will ask if you want to change the group's type. If you do, LDWG will convert the anonymous group to a named group. LDWG will assign default names (Name 1, Name 2, ...) to the members of the group. You will need to use the "Define Group" dialog box to change these names to something more meaningful.

If you click on the "Anonymous Group" box when the "Named Group" box is already checked, LDWG will again ask if you want to change the group's type.

If you do, LDWG will convert the named group to an anonymous group. LDWG will delete the name information and you will lose the ability to see the responses of a particular individual.

Displaying Information For An Individual In A Group

When you select a group preference set in LDWG, you also select an individual from that group (or the group average or group consensus) as the active member. When LDWG displays a screen that contains a group number, the value for the number is that for the active member. Similarly, when LDWG displays results the results are based on the numbers elicited from the active member. This powerful feature lets you see how the responses from an individual affect the analysis results and also let you customize any of LDWG's many displays for any member of a group.

To select a preference set and the active individual within the preference set, use the  View::Select a Preference Set option. When you pick this option, you will see the dialog box shown in Figure 3.

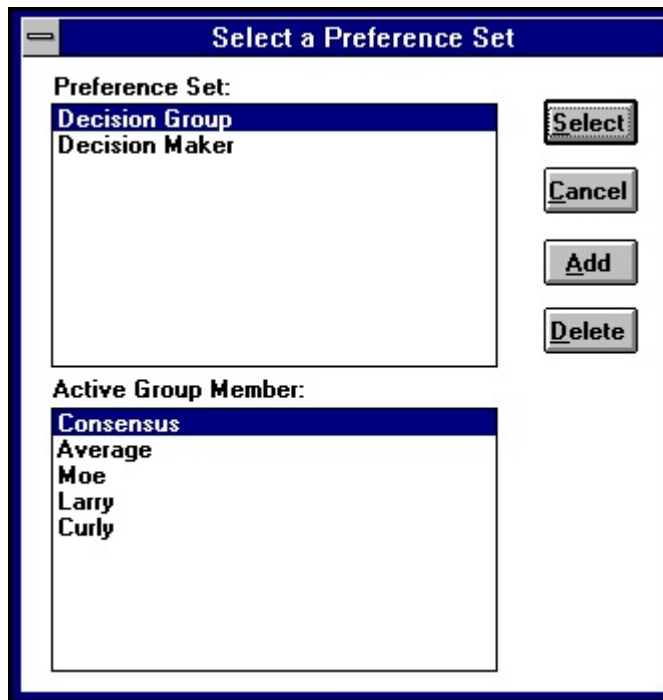


Figure 3. View::Select a Preference Set dialog Box.

Note that this dialog box is different than the corresponding

one in LDW. It contains a second list box, labeled "Active Group Member". For non-group preference sets, this box is empty. For named groups, the list contains the names of the members of the group, along with "Consensus" and "Average". For anonymous groups, only "Consensus" and "Average" are shown. When you select a named or anonymous preference set to be the active preference set, you can also select a member of the group to be the active member. The default is always "Consensus".

The active preference set shown in the lower left hand corner of the LDWG main window will include the name of the preference set and the name of the active member for group preference sets. Similarly, when you create a review or results window, it will also be labeled with the name of the active preference set and active member. The parameters used to create the display will be those assessed from the active member.

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Data Collection Methods

LDWG provides two methods for collecting data from a group -- keyboard entry and audience response keypads. In the keyboard entry method, the facilitator will enter the information for each group member in edit boxes displayed by LDWG. In the keypad method, each member of the group is provided with a keypad equipped with a radio transmitter. Group members respond to elicitation questions by pressing buttons on their keypads. LDWG receives this information and displays it on the screen as it becomes available. The remainder of this section describes the data collection methods in more detail.

Data Collection by Keyboard Entry

LDWG's default data collection method is keyboard entry. This method has the advantage of not requiring any additional hardware, but does require the facilitator or an assistant to do the data entry work. The keyboard entry method also requires that the individual members of the group be polled or submit written responses. This can slow down the group process.

You select the data collection method to use with the Assess::Group Input Method option. When you select this option, you will see the dialog box shown in Figure 4.

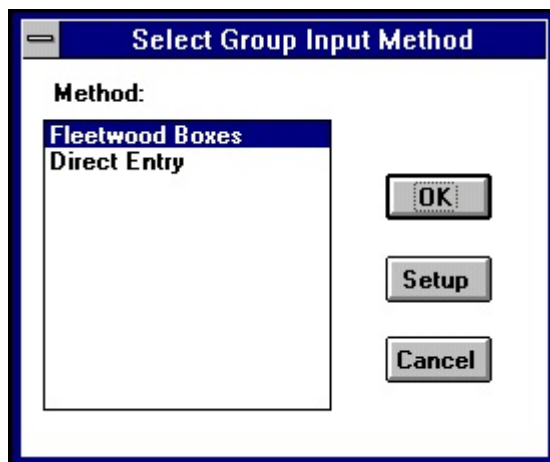


Figure 4. Group input method selection dialog box.

To select the keyboard entry method, simply click on "Keyboard Entry" in the Method list box and click "OK". You don't need to do any setup to use the keyboard entry method.

Data Collection With Fleetwood Keypads

LDWG's other data collection method is with radio keypads. In particular LDWG is compatible with the Reply® Wireless Response system manufactured by Fleetwood, Inc. This system consists of keypads that look like TV remote controls. Each member of the group is given one of these keypads and responds to questions by pressing keys on the keypad. When a keypad key is pressed, the box sends a radio signal to a receiver that is connected to the computer running LDWG. The receiver collects and consolidates the keypress information from the group's keypads and sends it on to LDWG. LDWG interprets the information from the receiver and displays it for the group to review. This method has the advantage of not requiring the facilitator or an assistant to enter the data. The group's responses are automatically collected and displayed. In addition, the group members can respond simultaneously, thus reducing data collection time dramatically.

Setting Up The Keypads

Before the Fleetwood Reply® system can be used correctly with LDWG, the system needs to be set up properly. To set up a box you need to make sure that it has the proper address number and that it can accept the asterisk (*) key. The number on each keypad should match the internal address number that it sends to the receiver. To make sure the address number on a keypad is correct, press its clear key continuously for more than three seconds. After three seconds, the "C" in the box's display will blink. You should release the clear key when the display blinks. The box will then display its address number as three sequential digits (e.g. 0,0,3 for box number 3). After the address has been displayed, you can change it by entering another three digit code. You will need to use the box's "IO" key to enter "0". If a "P" appears after the box's address, the box has been password protected. See the Reply® system users manual for information on how to work with password protected keypads.

To use a keypad with LDWG, you also need to activate its asterisk (*) key. LDWG uses this key to indicate the end of a multiple digit response. To activate the asterisk key, you need to enter the option code 93I. You enter option codes like you do a box's address. Press the clear key for more than three seconds and release it when the "C" in the display blinks. then press the key sequence 9, 3, I. After you do this the box will display a ":" when you press the asterisk (*) key. The ":" indicates that the asterisk key has been activated and will be transmitted.

Selecting the Keypad Option in LDWG

To select the keypad data entry method in LDWG, use the Assess::Group Input Method option. Click on "Fleetwood Boxes" in the Method list box and click "OK".

You next need to click on the "Setup" button to tell LDWG about your keypads. When you do this, LDWG will display the dialog box shown in Figure 5.

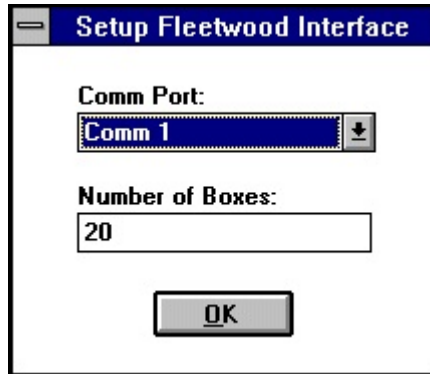


Figure 5. Fleetwood Keypad setup dialog box.

In the dialog box you should select the comm. port that the keypad receiver is linked to from the

"Comm. Port" combo box. Then you should enter the number of keypads in your system in the "Number of Boxes" edit box. LDWG can handle a maximum of 50 keypads. You should enter a number that is at least as great as the largest address number for any of the boxes you are using, even if you are not using all the boxes with lower address. For example, if you are using three boxes, numbered 5, 17, and 25, you should enter 25 as the number of boxes.

Assigning Keypads To Group Members

Before you can use the keypads to get input from a group, you need to tell LDWG which group members have which keypads. To do this, you use the Assess::Assign Devices option. When you select this option, you will see the dialog box shown in Figure 6.

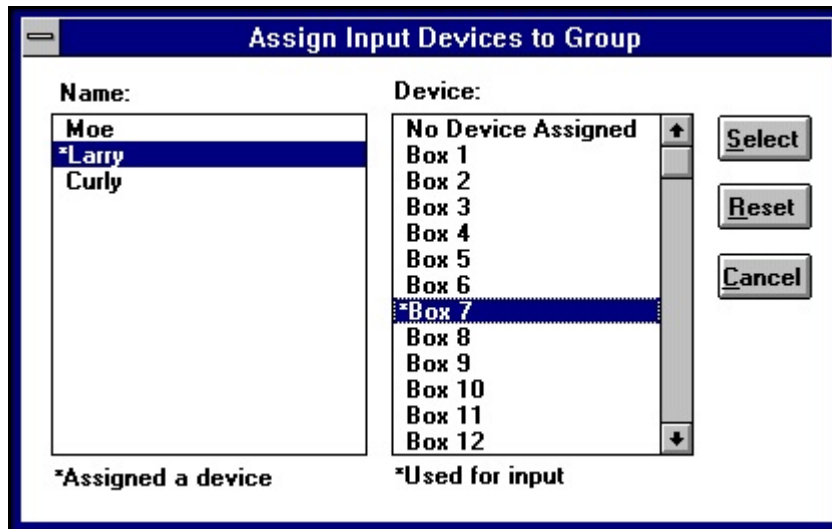


Figure 6. Dialog box for Assess::Assign Devices option.

In this dialog box, you assign keypads to individuals. You do this by highlighting an individual in the "Name" list and selecting a box from the "Device" list. When you make a selection, both the name and the box number are marked with an asterisk to show they have been assigned. Note that the "consensus" and "average" group members don't have an assignment. The average is computed by LDWG, while the consensus is entered by the facilitator at the end of each group assessment. If the active preference set is anonymous, generic names ("member 1", "member 2", ...) are used to assign devices.

Entering Numbers With The Keypads

The Reply® keypads are primarily designed for single digit responses. However, several of the LDWG assessment questions require several digits to be entered. This requires some care when responding to questions using the keypads.

To let group members enter several digits using the keypads, LDWG uses the asterisk (*) key to indicate that an entry is complete. Thus, to enter the number 15, a group member should press the key sequence "1", "5", "*".

The Fleetwood receiver checks for keypresses about once every half second. Thus if a member presses the keys too quickly, an initial keypress might be overwritten by a later one. To prevent this problem, group members should be instructed to press the keys for their entries slowly. When a key is pressed, it appears in the box's display. When the receiver polls the box and collects its keystroke, the digit disappears from the display. Thus group members should wait till each keystroke disappears before entering the next one.

If a key is pressed just before the box is polled by the receiver, the display may stay lit for two polling cycles. When this happens, two identical digits are sent to the transmitter. LDWG has logic to discard duplicate digits if they are received in consecutive cycles. However, in some cases a group member might really want to send the same digit twice (say, if she wanted to respond with the number "55"). In order to transmit the same digit twice in a row, the participant should wait for at least a second between keypresses. This will let the receiver collect the first keypress and at least one "no response" cycle before it sees the second duplicate digit. Thus, LDWG will correctly interpret "5", "wait for 1 second", "5", "*" as 55, but will incorrectly interpret "5", "5", "wait for 1 second", "*" as 5.

LDWG sometimes needs question responses that include a decimal point, such as "0.5" or "1.75". Because the Reply® system keypads do not have a decimal point key, LDWG provides the ability to divide the user responses by 10 or 100. Thus, if the divide by 100 option is selected, a user could enter the sequence "1", "7", "5", "*" and LDWG would interpret it as 1.75.

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Eliciting Group Numbers

This section describes the process for eliciting a group number in LDWG. This process is the same for any number that you may want to assess, from a measure level to a parameter on a SUF curve to a swing weight. The next section will describe the places in LDWG where group numbers can be assessed and how the group numbers are used in each particular context.

Preparing for Group Number Assessment

Before you can assess a number from a group, you need to do the following activities, as described in earlier sections

- Define a group preference set.
- Select a group assessment method.
- Assign hardware devices to individual group members, if necessary.

When you have done this, the  Assess::Begin Group Assessment option will be enabled in those places in LDWG where a group number can be used.

Beginning a Group Number Assessment

To elicit a group number just select the option to begin the process. When you select the Assess::Begin Group Assessment option, you will see the dialog box shown in Figure 7.

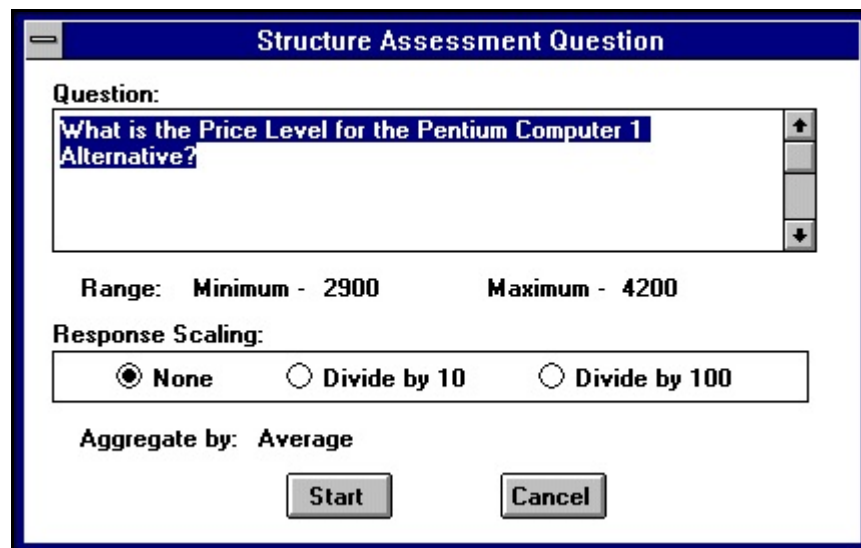


Figure 7. Dialog box for beginning a group number assessment.

This dialog box lets you customize the question that will be posed to the group. The question being elicited in the dialog box in Figure 7 is the price of a particular computer. The exact question is shown in the edit box labeled "Question:". You can edit this question and your edited version will be displayed to the group in the data gathering step. The dialog box also provides options to scale the members' responses by dividing them by 10 or 100. This scaling is only available when the Fleetwood Reply® system keypads are being used, as they don't have a decimal point key.

The dialog box provides two other pieces of information. The first is the range of acceptable responses. The second is the method that will be used by LDWG to aggregate the members' responses. The aggregation method is always the arithmetic mean (average) except when AHP pairwise ratios are being assessed. Then the geometric mean is used.

Collecting The Group Responses

When you click the start button in the dialog box in Figure 7, you will begin the actual data collection. You will see a screen similar to the one in Figure 8.

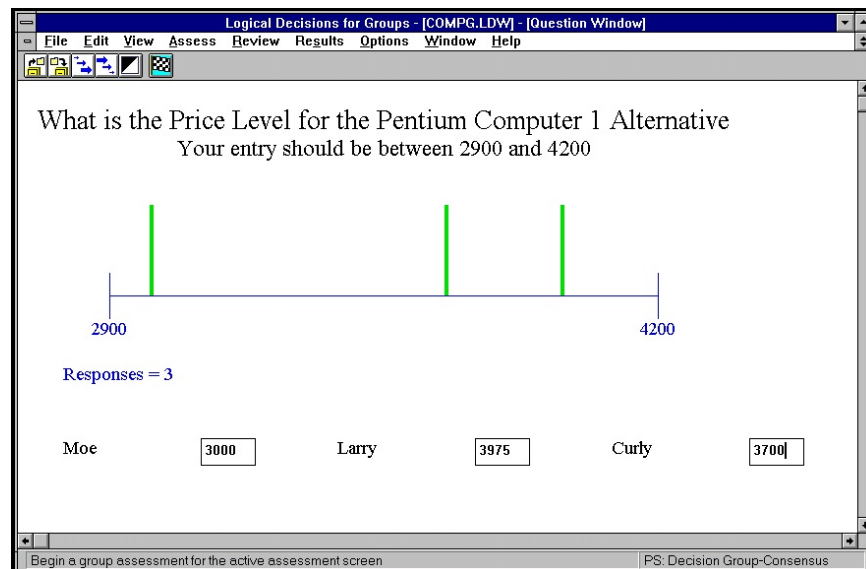


Figure 8. Example group data collection screen.


The group data collection screen has three parts. At the top of the screen is the question being posed to the group. In Figure 8, its "What is the Price level for the Pentium Computer I alternative?". Below that is an indication of the allowable range of responses. In the center of the screen is a bar graph indicating the actual responses. Each response is shown as a vertical bar along the allowable range. The number of responses entered so far is also indicated. At the bottom of the window is a display of the responses for each individual.

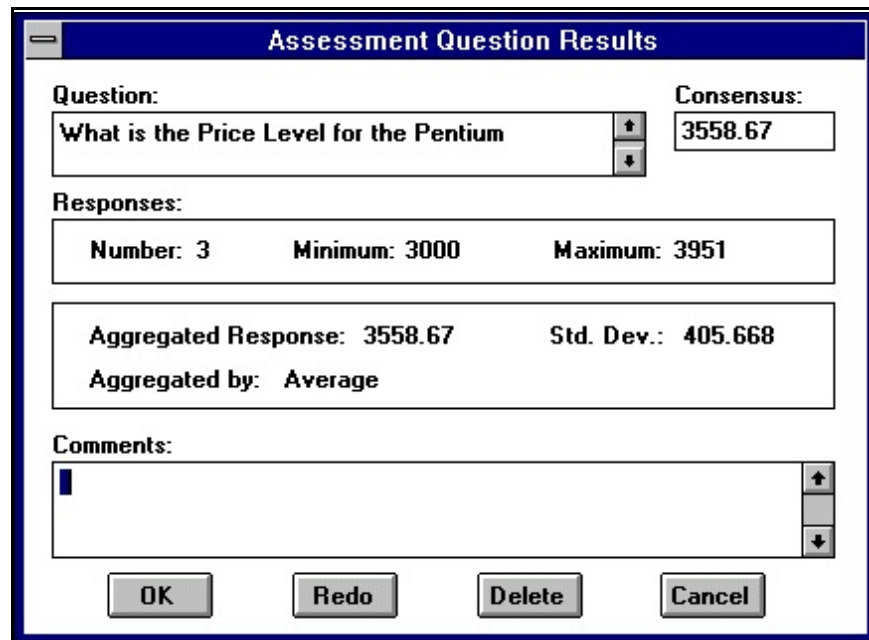
If the "Keyboard Entry" input method has been selected, each member's name is followed by an edit box. The facilitator should enter the response for each member of the group in the proper edit box. If the "Fleetwood Keypads"

method had been selected, the edit boxes are replaced by text that indicates if a response has been received and, if so, what it is.

If the active preference set is anonymous, the names of the group members are replaced by generic names ("member 1", "member 2", ...). If the active preference set is anonymous and the "Fleetwood Boxes" data entry method has been selected, individual responses are not shown. Only the bar chart is displayed.

Completing the Group Number Assessment

When everyone has responded to the question, you complete the assessment by selecting the  Assess::End Group Assessment option. When you do this, you will see the assessment question results dialog box shown in Figure 9.



Assessment Question Results	
Question:	Consensus:
What is the Price Level for the Pentium	3558.67
Responses:	
Number: 3	Minimum: 3000
Maximum: 3951	
Aggregated Response: 3558.67	Std. Dev.: 405.668
Aggregated by: Average	
Comments:	
OK	Redo
Delete	Cancel

Figure 9. Dialog box for completing a group assessment.

This dialog is where you complete the group assessment. The dialog box provides information about the data collected from the group. In the edit box labeled "Question:" it repeats the question posed to the group. You can't change the question here.

The information in the box labeled "Responses:" includes the total number of responses received, and the minimum and maximum responses. Note that everyone in the group is not required to respond to a question. The next box shows the average and standard deviation of the responses.

The edit box in the upper right shows the consensus response of the group. Initially, this box shows the average of the group's responses. However, the

group can agree to change this number to any number within the allowable range for the question.

Finally, the edit box at the bottom of the dialog box lets you enter a comment about this assessment.

When you click "OK", the group assessment is completed. The parameter will be marked with a (G) on the screen where you started the assessment.

Revising or Deleting Group Assessments

You can revise a group assessment by selecting the Assess::Begin Group Assessment option when a parameter labeled (G) has been highlighted. If you select this option when a group number has already been assessed, LDWG will display the assessment question results dialog box shown in Figure 9. This dialog box summarizes the previous group assessment. If you need to make a revision in the assessment, click on the "Redo" button to return to the group data collection screen. There you can collect data from individuals not present at the initial assessment or revise data for individuals who wish to change their initial response. All responses from the initial assessment will be kept if they are not explicitly re-entered. You cannot delete an individual's response.


After you have finished updating the assessment, select the Assess::End Group Assessment option. LDWG will redisplay the assessment question results dialog box with updated assessment results. At this time you may want to review the consensus answer and revise it if necessary.

Occasionally you may want to convert a group number to a single consensus number. This can be useful if there is strong agreement among the group about the correct answer. To convert a group number to a single number, first highlight the group number and select the Assess::Begin Group Assessment option. When LDWG displays the end group assessment dialog box (Figure 9), click on the "Delete" button. LDWG will ask you to confirm and then will replace the group number with a single (non-group) number. The number will have the group consensus as its value.

The following sections describe the places in LDWG where you can do group assessments.


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Eliciting Levels

You can elicit a group level in LDWG's matrix view. Just click on the cell you want to elicit. The elicitation will be a level for a particular alternative and measure. To begin the elicitation, Select the  Assess::Begin Group

Assessment option. LDWG will guide the group through the group elicitation process described in the last section. The allowable range for group entries will be the range defined in the measure's dialog box. After the group assessment has been completed, the group level will be highlighted in red and marked with a (G).

You can cut and paste group measure levels like you can any other level.

You can only assess group levels for measures that have a continuous scale. Group level assessments are not available for measures that use labels. You also can't assess a probabilistic level from a group. All of the numbers elicited for a group level are considered to be point estimates. If you later wish to assign a probabilistic level, you must first delete the group level assessment. LDWG will ask you to confirm that you want to delete the group level if you select the 

Matrix::Define Probability option for a group level cell. Similarly, if you select the Assess::Begin Group Assessment option for a cell that contains a probabilistic level, LDWG will ask you to confirm that you want to delete the probabilistic level before you continue.



As with the other group assessment options, there is no requirement that you elicit a group number for any particular level. You can do group assessments for as many or as few levels as you need to. Generally, you should only do group assessments for those levels for which there is likely to be disagreement among the group about the proper level for an alternative on a measure. There are also no restrictions on when you can do a group level elicitation. You can do one at any time while you are using LDWG.

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Eliciting Common Units

You can elicit group numbers as parameters for all of the common units assessment methods:

- SUF
- AHP SUF
- Analytic Hierarchy Process
- Adjusted AHP
- Direct Assessment

To assess a group number for any of these methods, you first select the  Assess::Common Units option and then select the measure you would like to assess and the method you want to use. When you click the "Assess" button, you will see the assessment screen for the method you have selected. Highlight the parameter you would like to enter and select the  Assess::Begin Group Assessment option.

Some of the common units assessment options require several parameters. If you want to assess a group number for each of them, you will probably want to use the Assess::Print Questionnaire option to print a questionnaire for the desired parameters. You can copy the questionnaire and hand it out to the group members, making it easy for them to provide consistent answers.

The rest of this section discusses the group inputs available for each common units option.

Group Numbers for SUFs

When you select the SUF option under Assess::Common Units, you will see a data entry screen similar to the one in Figure 10.

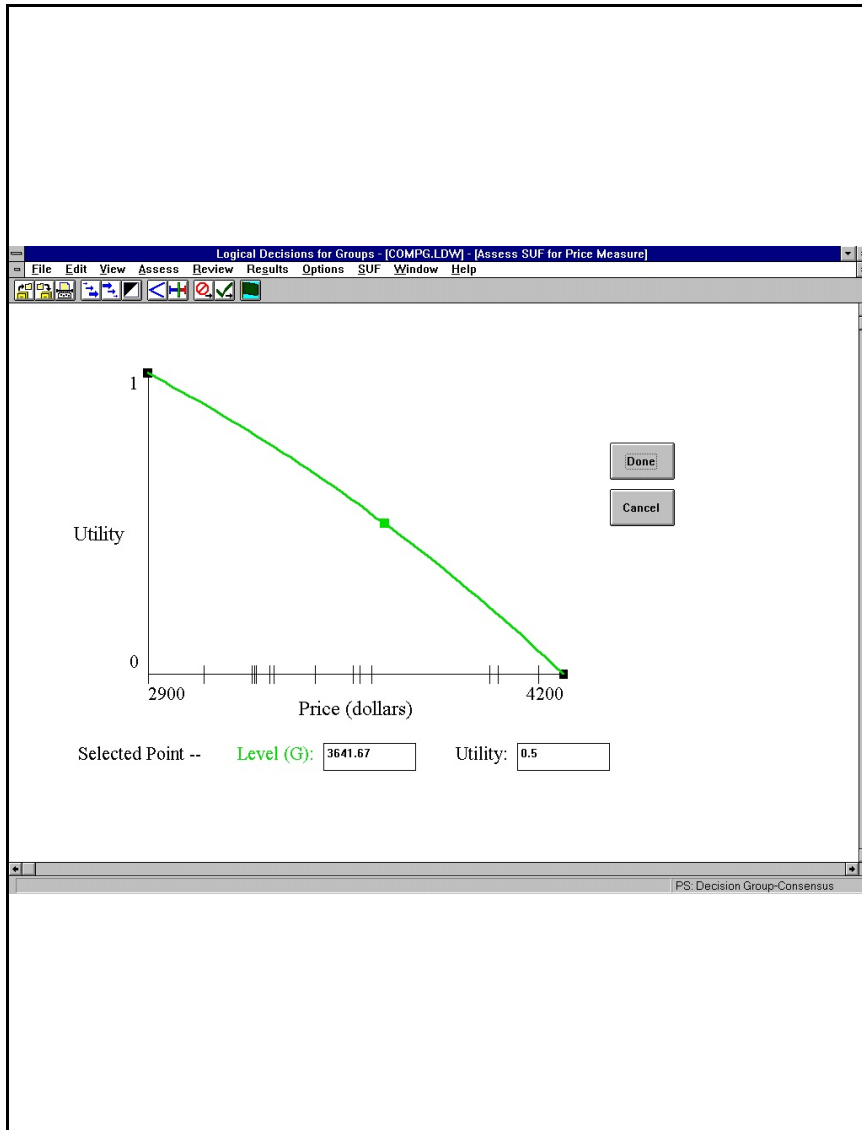


Figure 10. Typical SUF assessment screen.

In the SUF method, two parameters define the shape of each sub-range of the SUF curve -- the (mid-)level and the (mid-)utility. You can elicit a group number for either one of these parameters, but not both at once. To assess a group number for the (mid-)level, click in the "Level" edit box so that there is a cursor inside it. Then select the Assess::Begin Group Assessment option. LDWG will guide you through the group assessment process described starting on page 23. The allowable range will be the minimum and maximum levels for the active sub-range of the SUF. When you have completed the group elicitation, LDWG will return you to the SUF assessment screen and will mark

the "Level" edit box with a "G" to show that a group number has been assessed, as is shown in Figure 10.

Eliciting a utility is similar. Just highlight the "Utility" edit box instead of the "Level" edit box. The rest of the process is the same. The allowable range for the utility is the range of utilities for the active sub-range.

If you have already elicited a group number for a level, you will be asked to delete it before eliciting a group number for utility and vice versa. You can elicit a group number for the midpoint of each sub-range in your utility function. Each midpoint can have a group number for either its level or its utility, but not both. You can use group numbers for some midpoints but not others.

You CANNOT elicit a group number for the endpoints of a sub-range or for a point that connects two sub-ranges. Thus if you select the SUF::Split Range option for a midpoint for which you have elicited a group number, LDWG will require that the group number be deleted before the sub-range can be split.

Group Numbers and the Mid-Level Splitting Method

The mid-level splitting method is a way to set the midpoint for a sub-range by identifying the level that is halfway in terms of preference between the two end levels for the sub-range. You can select this method by choosing the SUF::Assess Value option. When you do this, you will see an assessment screen similar to the one in Figure 11.

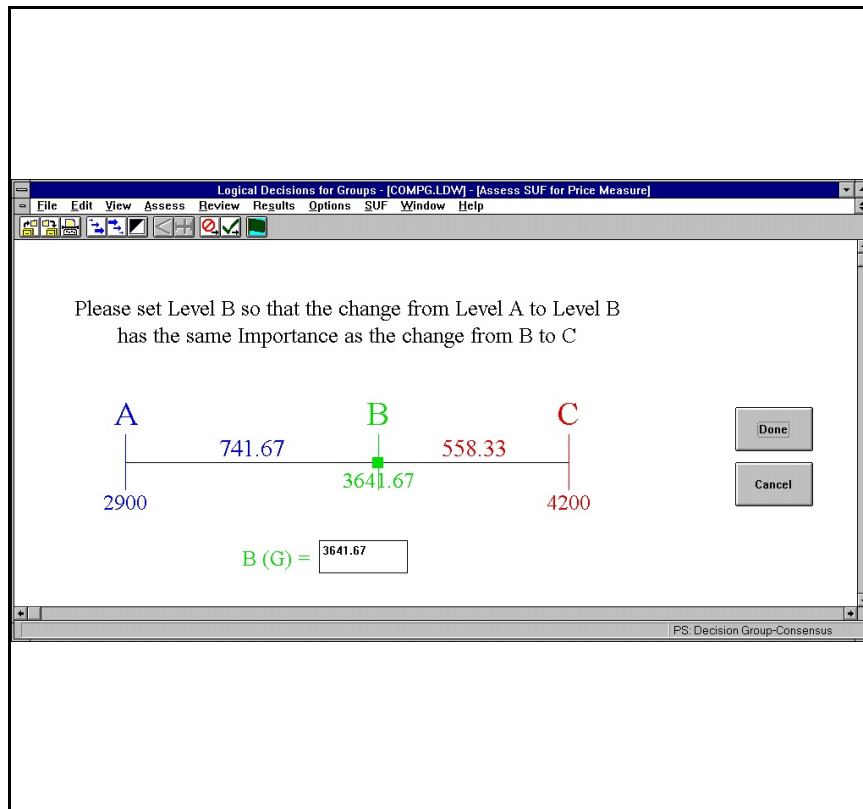


Figure 11. Typical mid-level splitting assessment screen.

You can use a group number to define the mid-preference level "B". To do this, click on the edit box labeled "B" and select the *Assess::Begin Group Assessment* option. The group will be allowed to enter numbers between the minimum and maximum levels of the sub-range. When you have completed the group elicitation, the "B" edit will be marked with a "G". Since the mid-preference level defines the mid-level in the SUF assessment screen, the "Level" edit there will also be marked with a "G" after you return there by clicking the "Done" button.

Group Numbers and The Probability Method

The probability method is a way to set the midpoint for a sub-range by identifying the certain level that is equally preferred to a lottery over the two end levels for the sub-range. You can select this method by choosing the *SUF::Assess Utility* option. When you do this, you will see an assessment screen similar to the one in Figure 12.

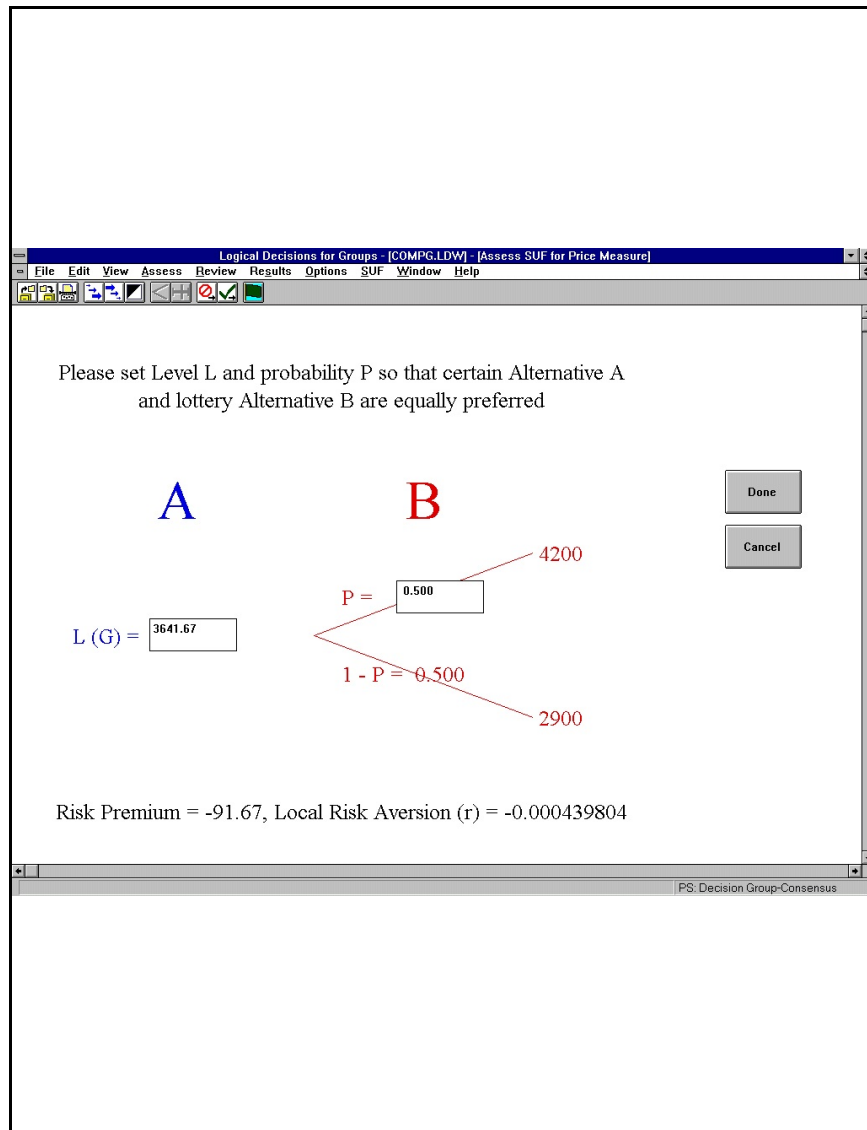


Figure 12. Typical SUF::Assess Utility screen.

You can use a group number to define either the certain level "L" or the probability for the lottery "P".

To elicit the certain level "L", click on the edit box labeled "L" and select the Assess::Begin Group Assessment" option. The group will be allowed to enter numbers between the minimum and maximum levels of the sub-range. When you have completed the group elicitation, the "L" edit will be marked with a "G". Since the certain level "L" defines the mid-level in the SUF assessment screen, the "Level" edit there will also be marked with a "G" after you return there by clicking the "Done" button.

To elicit the probability "P", click on the edit box labeled "P" and select the Assess::Begin Group Assessment option. The group will be allowed to enter probabilities between 0.0 and 1.0. When you have completed the group elicitation, the "P" edit will be marked with a "G". Since the probability "P" defines the utility in the SUF assessment screen, the "Utility" edit there will also be marked with a "G" after you return there by clicking the "Done" button.

Group Numbers for the Analytic Hierarchy Process

When you select the Analytic Hierarchy Process under the Assess::Common Units option, you will see a data entry matrix similar to that shown in Figure 13.

Logical Decisions for Groups - [AHPG.LDW] - [AHP Matrix for Location Measure]			
File Edit View Assess Review Results Options AHP Window Help			
I-max = 3.000 C.I. = 0.000 C.R. = 0.000			
	House C	House B	House A
House C	10.6	0.17	0.41
House B	5.96	63.4	2.44
House A	2.44	0.41	26.0

PS: NEW PREF. SET-Consensus

Figure 13. Typical Analytic Hierarchy Process assessment screen.

You can elicit a group number for any of the pairwise performance ratios in the matrix. As with all AHP ratios in LDW, eliciting a group number in one half of the matrix automatically implies a group number for the corresponding inverse ratio on the other side of the matrix diagonal. You can elicit group numbers for as many or as few cells in the matrix as you want.

Before eliciting ratios from a group, you may want to print and distribute a questionnaire for the matrix using the Assess::Print Questionnaire option. The questionnaire provides a graphical method for arriving at a ratio for every pair of alternatives in the AHP matrix.

To elicit a particular ratio just highlight the cell you want and select the Assess::Begin Group Assessment option.

The data collection process is somewhat different than for other parameters. When assessing an AHP ratio, you will see a screen like the one shown in Figure 14.

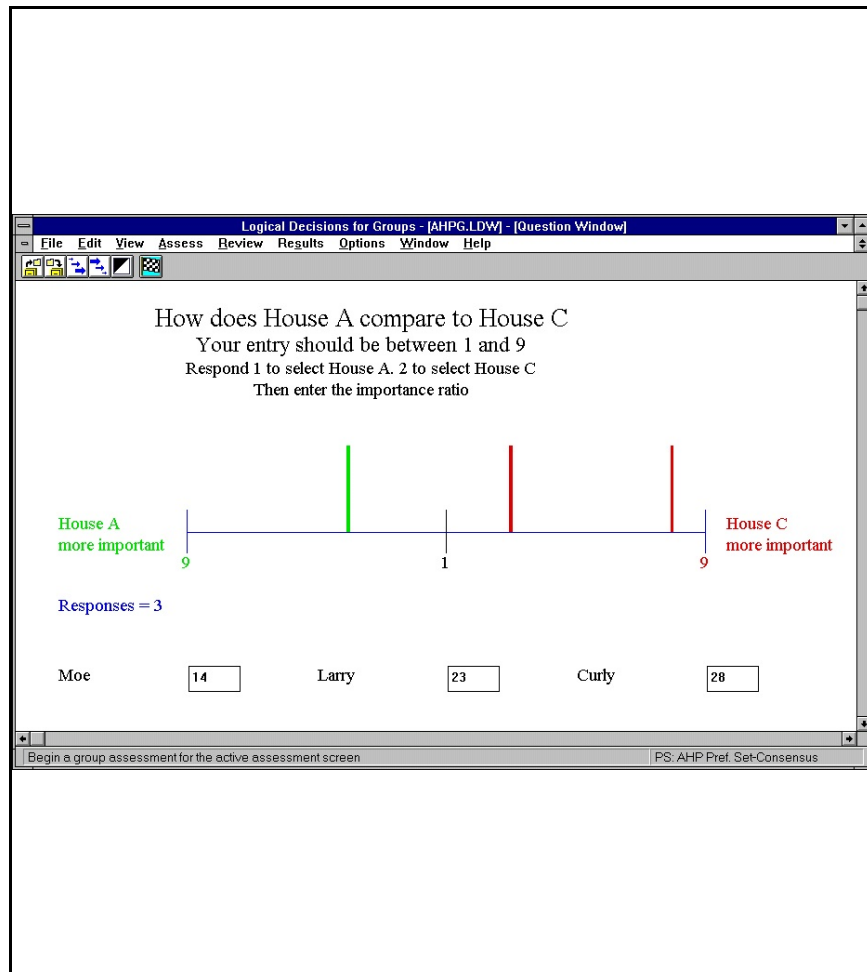


Figure I4. Typical AHP data collection screen.

In the AHP data entry screen, you need to know both which alternative has better performance and what the performance ratio is. To capture the needed information, LDWG uses the following procedure:

- The first digit entered indicates which alternative is preferred. If the first digit is a "1", the alternative on the left is preferred. If the first digit is a "2", the alternative on the right is preferred.
- The next digit(s) indicate the strength of preference using the standard 1-9 AHP scale. 1 means equal preference, 9 means extreme preference for one alternative over the other on the measure.

For example, the "14" entered by Moe indicates that House A has 4 times better performance than House C on the measure being assessed. The "23" entered by Larry indicates that he feels that House C has three times better performance than house A.

After a number has been entered by a group member, it is shown in the bar graph in the middle of the assessment window. Group members preferring the first alternative have vertical bars on the left half of the graph, while members preferring the second alternative have vertical bars on the right half of the graph. Higher importance ratios are indicated by vertical bars closer to the extreme left and right ends of the graph.

Note that group responses to AHP questions are aggregated using a geometric mean rather than an arithmetic mean.

The other two common units assessment methods based on the Analytic Hierarchy Process -- AHP SUF and Adjusted AHP -- use exactly the same group elicitation method as the Analytic Hierarchy Process.

Group Numbers for Direct Entry

When you select the Direct Entry method for converting to common units, you will see an assessment screen similar to the one in Figure 15.

Label	Utility
First Rate	1.000
Second Tier (G)	0.670
No-Name	0.000

Figure 15. Typical assessment screen for direct entry.

In this screen, you are asked to directly enter the utility for each possible label or alternative. You can elicit a group number for any or all of the directly entered utilities.

Typically, you will not want to elicit a group utility for the most and least preferred labels, since these should always be assigned the most and least preferred utilities.



To elicit a group number for a utility, click on the desired edit box and select the Assess::Begin Group Assessment option. The group will be allowed to enter numbers between the minimum and maximum utilities as defined with the Options::Utility Options option. The default range is 0.0 to 1.0. When you have completed the group elicitation, the edit box will be marked with a "G".

CHAPTER TITLE PAGE GOES HERE

Eliciting Weights

You can elicit group numbers as parameters for the following weight assessment methods:

- tradeoffs
- direct entry
- Analytic Hierarchy Process
- Smart Method
- Smarter Method

To assess a group number for any of these methods, you first select the  Assess::Weights option and then select the goal you would like to assess and the method you want to use. When you click the "Assess" button, you will see the assessment screen for the method you have selected. Highlight the parameter you would like to enter and select the  Assess::Begin Group Assessment option.

Some of the weight assessment options require several parameters. If you want to assess a group number for each of them, you will probably want to use the Assess::Print Questionnaire option to print a questionnaire for the desired parameters. You can copy the questionnaire and hand it out to the group members, making it easier for them to provide consistent answers.

Note that you can't elicit group numbers for the Pairwise Weight Ratios method. You also can't assess interactions for group preference sets.

The rest of this section discusses the group inputs available for each weight assessment option.

Eliciting Group Numbers for Tradeoffs

You can elicit a group number for any one of the four measure levels that make up a tradeoff. Note that in order to do this you will need to get the group to agree on which of the four levels to elicit. This will require agreement on which of the two members in the tradeoff is more important.

To get ready for the group elicitation, you need to begin the tradeoff assessment process by selecting the Assess::Weights option, clicking the left "Assess" button and selecting two members from the list in the tradeoff assessment dialog box. LDWG will display an initial tradeoff pair of A and B alternatives and ask you to select which is preferred. This is where you will need initial agreement from the group. After you have selected A or B, LDWG will display a tradeoff assessment screen like the one in Figure I6.

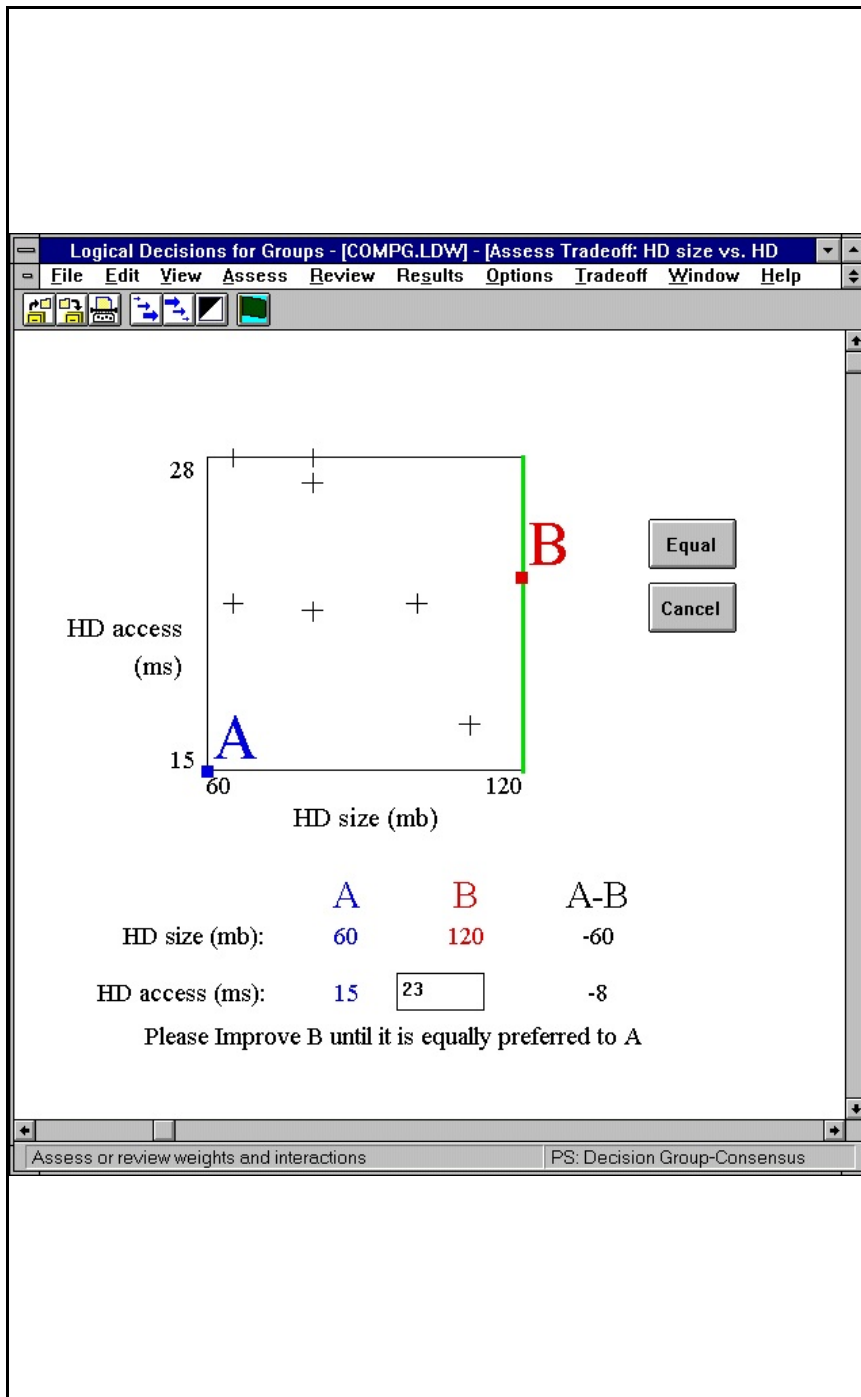


Figure 16. Typical tradeoff assessment screen.

In the figure you can assess a group number for the HD Access time for

alternative B. Just click in the edit box and select the Assess::Begin Group Assessment option. The allowable range will be the range displayed in the tradeoff graph (remember, you can adjust this with the Tradeoff::Revise Range option). After you have completed the elicitation, the group number in the tradeoff will be marked with a "G".

Eliciting Group Numbers for Direct Entry

When you select the direct entry method for assessing weights, you will see an assessment screen similar to the one in Figure I7.

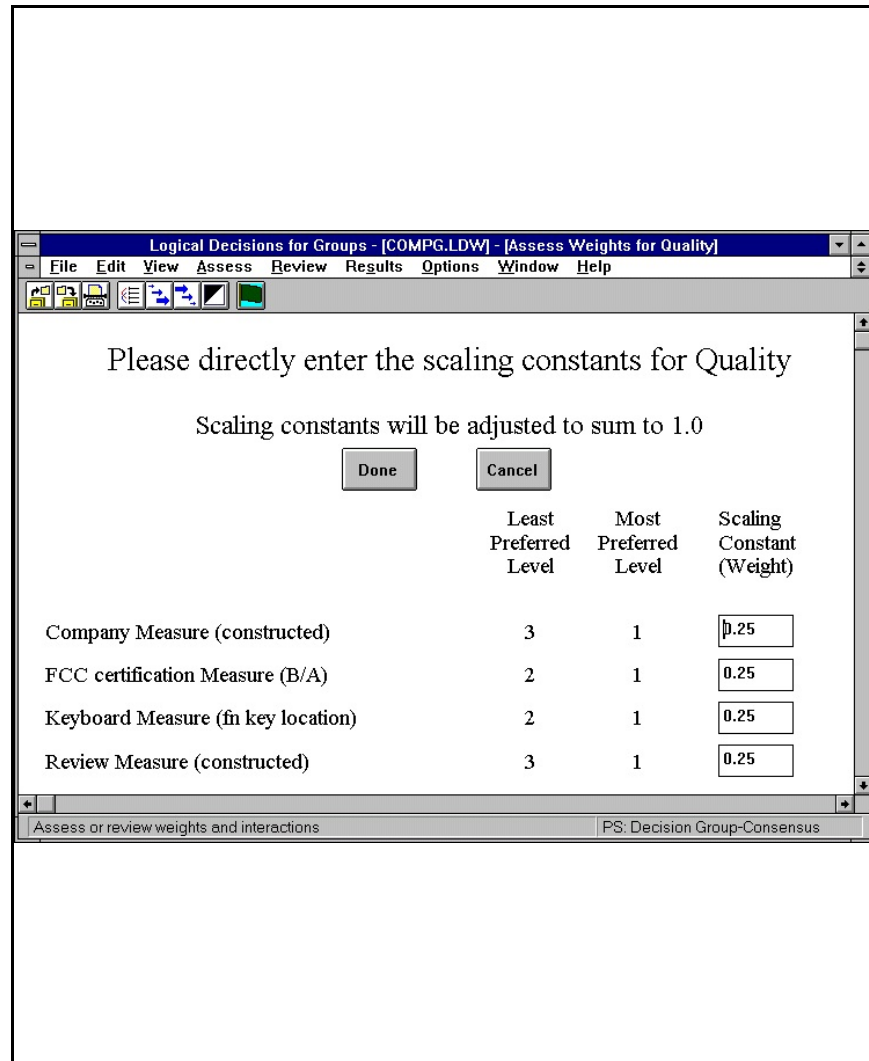


Figure I7. Typical assessment screen for direct entry of weights.

In this screen, you are asked to directly enter the weight for each member of the active goal. You can elicit a group number for any or all of the directly entered weights.

To elicit a weight, click on the desired edit box and select the Assess::Begin Group Assessment option. The group will be allowed to enter numbers between 0.0 and 1.0. When you have completed the group elicitation, the edit box will be marked with a "G". Remember that when using the Fleetwood Keypads input option you will need to select the divide by 10 or divide by 100 option in the begin assessment dialog box to be able to get responses between 0.0 and 1.0.

Adjusting directly entered weights

Because the weights for each group member must sum to 1.0 it may be necessary to make adjustments to weights not elicited as group numbers. In order to do this, LDWG will create a group number for all the weights for a goal if at least one group number has been elicited for a group. LDWG will then adjust each group member's set of weights so that they sum to 1.0.

Eliciting Group Numbers for AHP

When you select the Analytic Hierarchy Process under the Assess::Weights option, you will see a data entry matrix similar to that shown in Figure 13.

You can elicit a group number for any of the pairwise performance ratios in the matrix. As with all AHP ratios in LDW, eliciting a group number in one half of the matrix automatically implies a group number for the corresponding inverse ratio on the other side of the matrix diagonal. You can elicit group numbers for as many cells in the matrix as you want.

Before eliciting ratios from a group, you may want to print and distribute a questionnaire for the matrix using the Assess::Print Questionnaire option. The questionnaire provides a graphical method for arriving at a ratio for every pair of alternatives in the AHP matrix.

To elicit a particular ratio, highlight the cell you want and select the Assess::Begin Group Assessment option.

The data collection process for AHP is described starting on page 40.

Eliciting Group Numbers for the Smart Method

When you select the Smart method for assessing weights, you will see an assessment screen similar to the one in Figure 18.

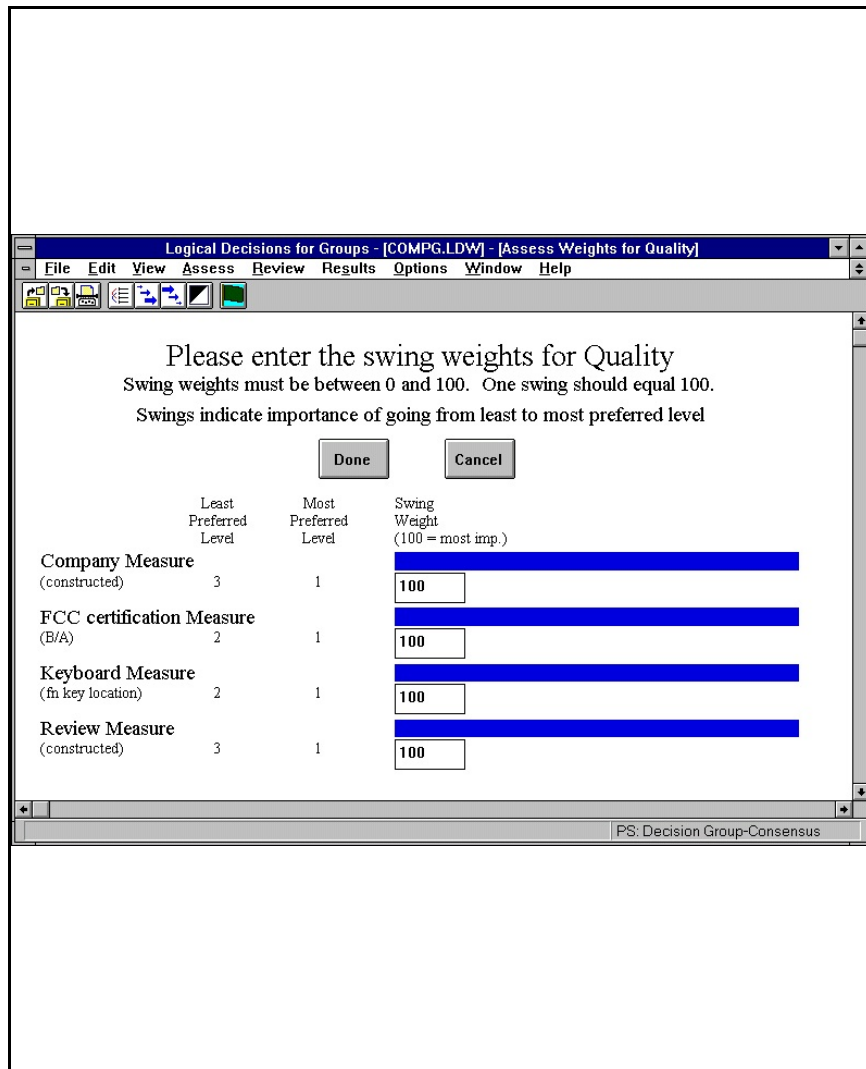


Figure I8. Typical Smart method assessment screen.

In this screen, you are asked to enter a swing weight of from 0 to 100 for each member of the active goal. You can elicit a group number for any or all of the needed swing weights.

To elicit a swing weight, click on the desired edit box and select the Assess::Begin Group Assessment option. The group will be allowed to enter numbers between 0 and 100. When you have completed the group elicitation, the edit box will be marked with a "G".

Eliciting Group Numbers for the Smarter Method

When you select the Smarter method for assessing weights, you will see an assessment screen similar to the one in Figure I9.

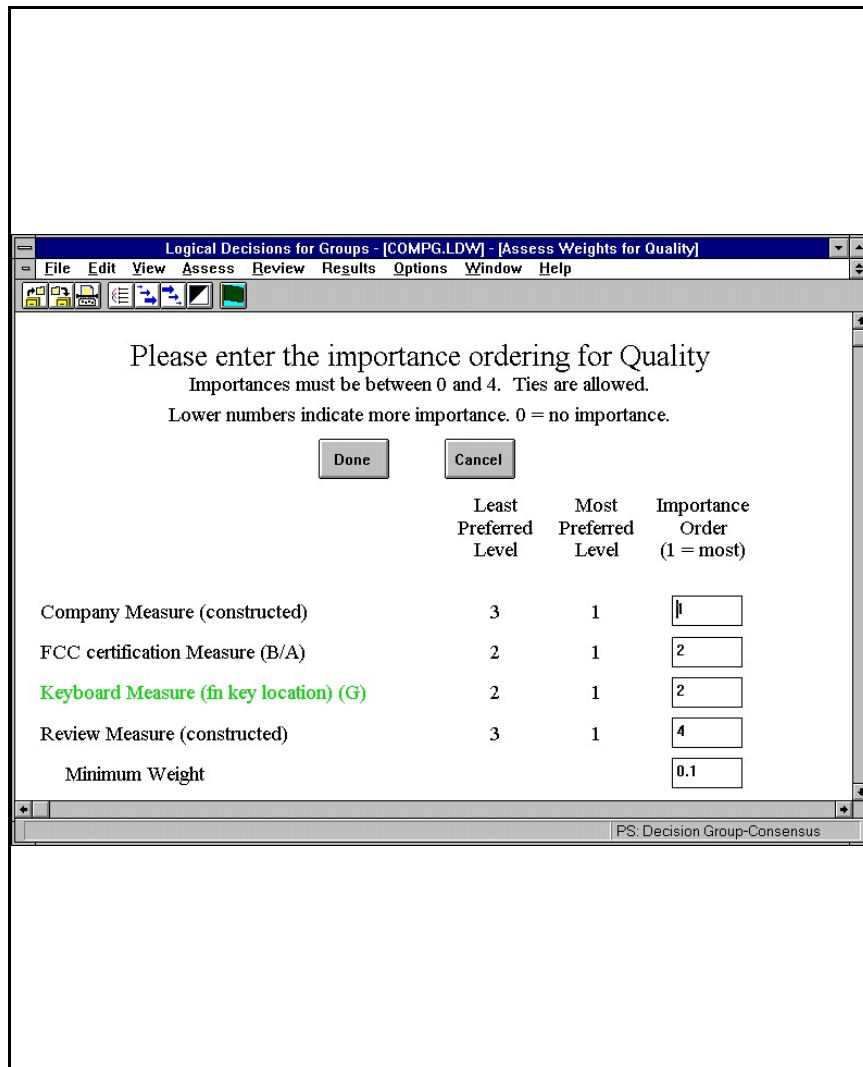


Figure 19. Typical assessment screen for Smarter method.


In this screen, you are asked to enter an importance ordering of from 0 to n, (where n is the number of active goal members) for each member of the active goal. You can elicit a group number for any or all of the needed order numbers. You can't elicit a group number for the minimum weight, but you can enter a minimum weight directly.

To elicit an importance order, click on the desired edit box and select the Assess::Begin Group Assessment option. When you have completed the group elicitation, the edit box will be marked with a "G".

CHAPTER TITLE PAGE GOES HERE

Group Results Displays

LDWG provides several specialized displays that let you review the results of your analysis and how they are affected by the differences in the numbers elicited from the group.

Remember that you can display information about any individual in a group by selecting that individual as the active individual for the group preference set. When LDWG displays a screen that contains a group number, the value for the number is that for the active individual. Similarly, when LDWG displays results the results are based on the numbers elicited from the active individual. This powerful feature lets you see how the responses from an individual affect the analysis results and also lets you customize any of LDWG's many displays for any member of a group. To change the active individual within a preference set, use the  View::Select a Preference Set option.

The active preference set shown in the lower left hand corner of the LDWG main window will include the name of the preference set and the name of the active individual for group preference sets. Similarly, when you create a review or results window, it will also be labeled with the name of the active preference set and active individual. The parameters used to create the display will be those assessed from the active individual.

Several of the display options in LDWG provide additional information about the group assessment and related results. These are:

- Assessment Summary -- provides information about each group number assessed as well as the information normally provided by LDW.
- Comments Summary -- provides the comments for each group number assessment as well as the comments normally shown by LDW.
- Ranking Results -- provides a bar to indicate the range of variation in the utility of each alternative.

Two displays are unique to LDWG and let you display information about the group as a whole. These display options are:

- Group Weights -- a bar chart showing the range of weights assessed for each measure and goal.
- Group Summary - a matrix showing the utilities for each member of the group as well as the mean and standard deviation.

Each of these displays is described in more detail below.

Group Information in the Assessment Summary Option

The Review::Assessment Summary option lets you display information about the group numbers assessed for the active preference set. The bulk of the information provided is the assessment details for the active individual within the group preference set. In addition, LDWG provides detailed information on the group numbers assessed. A typical group number summary is shown in Figure 20.

SUF for Price, range from 4200 to 2900, mid-level				
Consensus:	3641.67	Average:	3641.67	Moe: 3800 Larry: 3500
Curly:	3625			

Figure 20. Typical group number display in Review::Assessment Summary option.

Each group number summary provides a description of the group number and the response elicited from each member of the group. Only the consensus and average numbers are displayed for anonymous group preference sets.

Group Information in the Comments Summary Option

You select the comments summary with the Review::Comments Summary option. When you select this option in LDWG, all of the comments entered in the Assess::End Group Assessment dialog box are included in the table.

Group Information in the Rank Alternatives Option

When you select the Results::Rank Alternatives option in LDWG, you will see the slightly modified dialog box shown in Figure 21.

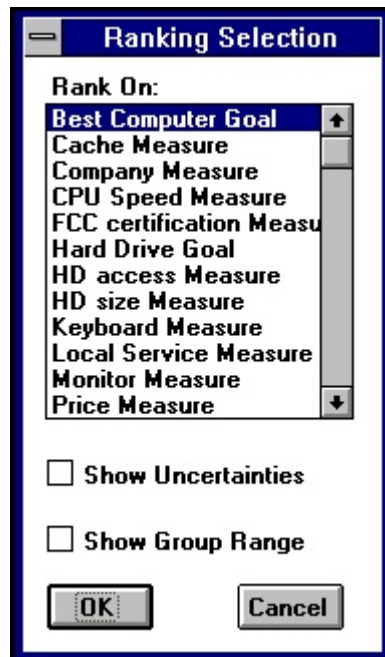


Figure 21. Modified dialog box for Results::Ranking Results option.

The dialog box includes a second check box, labeled "Show Group Range". When you check this box, you will see a ranking results bar graph similar to the one in Figure 22.

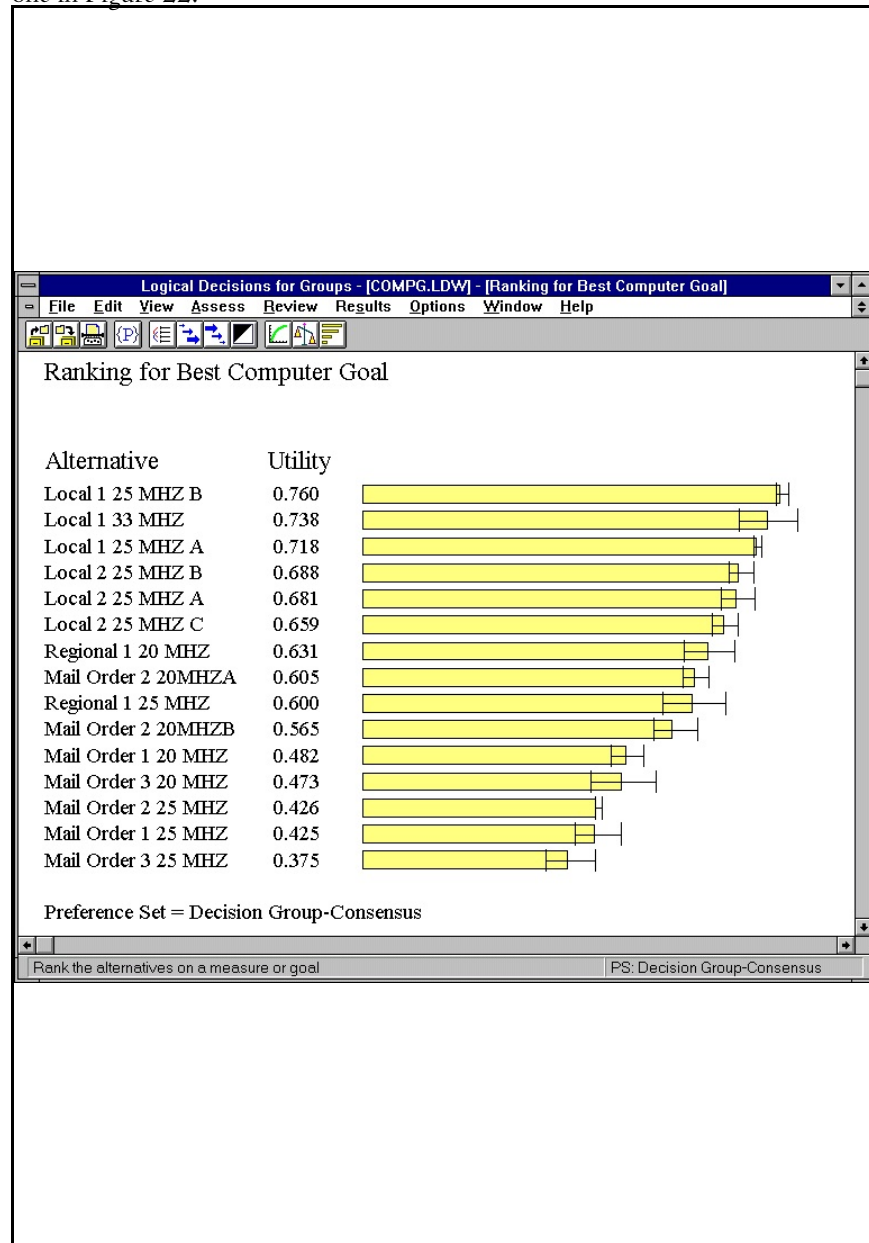


Figure 22. Typical Ranking Results bar chart with "Show Group Range" option selected.

In the modified ranking results display, each alternative has a black bar indicating the range of variation in the utility for the alternative for the selected goal or measure. The length of each wide bar is proportional to the ranking for the alternative for the active member of the group preference set.

Group Information in the Group Weights Option

The Review::Weights::Group Weights option is a new display that shows the range of variation in the weights for the goals and measures for the members of the group preference set.

When you select this option, you will see a display similar to Figure 23.

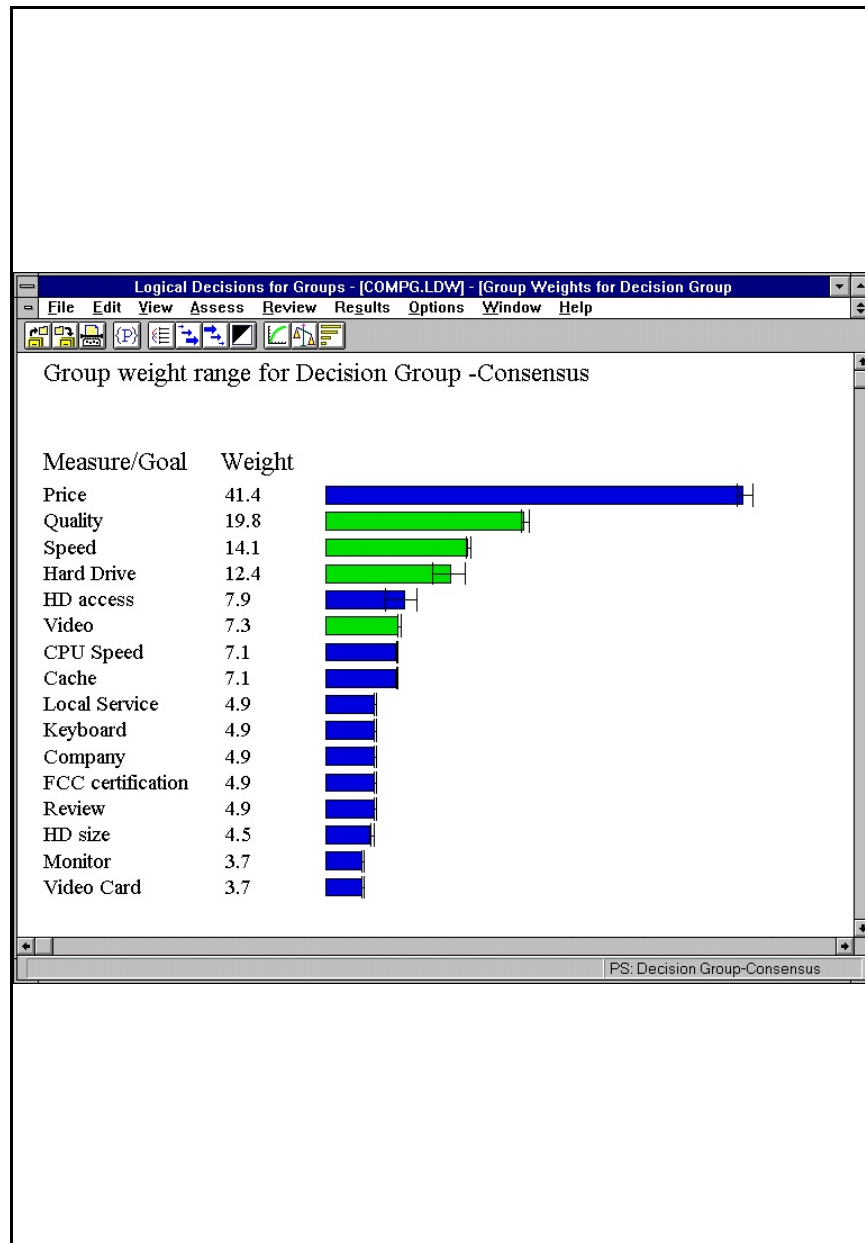


Figure 23. Typical display for Review::Weights::Group Weights option.

This display shows a bar chart with a bar for each measure and goal in the analysis. Each bar's length is proportional to the measure or goal's percentage weight as computed for the active individual in the group preference set. Each measure and goal also has a bar that indicates the range of variation in its computed weight for the individuals in the group.

Group Information in the Group Summary Option

The Results::Group Summary option lets you display a matrix that compares the ranking results for individuals within a group. The option is similar to the Results::Ranking Results Matrix option. You can generate the matrix for any goal or measure and can select the individuals in the group to display. This option is only available for named group preference sets.

When you select the option, LDWG will display the dialog box shown in Figure 24.

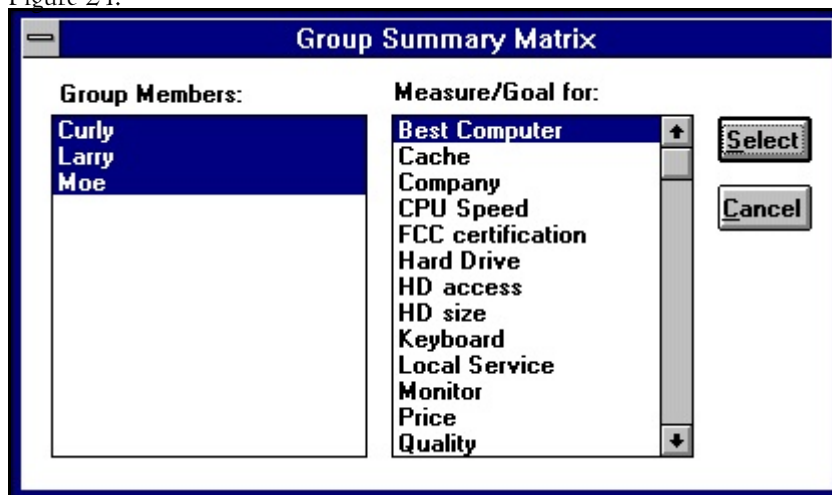


Figure 24. Dialog box for Results::Group Summary option.

The list on the left of the dialog box (labeled "Group Members") is where you select the group members to include in the matrix. The list on the right is where you select the measure or goal to compute the matrix for. The matrix will consist of the utility for each alternative for each selected group member for the selected goal or measure.

A typical group results matrix is shown in Figure 25.

	Moe	Larry	Curly	Mean	Std. Dev.
Local 1 33 MHZ	0.792	0.738	0.738	0.756	0.031
Local 1 25 MHZ B	0.775	0.760	0.760	0.765	0.009
Local 1 25 MHZ A	0.727	0.720	0.720	0.723	0.004
Local 2 25 MHZ A	0.713	0.682	0.682	0.692	0.018
Local 2 25 MHZ B	0.712	0.689	0.689	0.697	0.013
Local 2 25 MHZ C	0.683	0.660	0.660	0.668	0.013
Regional 1 20 MHZ	0.677	0.631	0.631	0.647	0.027
Regional 1 25 MHZ	0.662	0.601	0.601	0.622	0.035
Mail Order 2 20MHZA	0.629	0.606	0.606	0.614	0.013
Mail Order 2 20MHZB	0.611	0.566	0.566	0.581	0.026
Mail Order 3 20 MHZ	0.534	0.472	0.472	0.493	0.036
Mail Order 1 20 MHZ	0.512	0.482	0.482	0.492	0.017
Mail Order 1 25 MHZ	0.471	0.424	0.424	0.440	0.027
Mail Order 2 25 MHZ	0.436	0.426	0.426	0.430	0.005
Mail Order 3 25 MHZ	0.425	0.374	0.374	0.391	0.029

PS: Decision Group-Consensus

Figure 25. Typical display for Results::Group Summary option.

In the display, the numbers in the cells are the utility for each alternative for each group member on the selected measure or goal. LDWG adds two additional columns -- an average column, showing the average utility for each alternative and a column with the standard deviations of the alternatives' utilities.