SAP Interaction Design

Guide for WAP

Applications

Print version (PDF)

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SAP Interaction Design Guide for WAP Applications

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What's in the Interaction Design Guide?

This **Interaction Design Guide** presents guidelines for **SAP's WAP applications** covering **interaction design**, **screen layout** and **text** issues.

Status

The SAP Interaction Design Guide for WAP Applications is a preliminary version and currently under development. The final version will be issued in the course of this year.

Version 0.9, July 2000

This guideline can be found in *Resources* on the SAP Design Guild Website (www.sapdesignguild.org).

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Chararacteristics of WAP Applications

Device Dependency | Simplicity | Context of Use | Information Access

This page gives an introduction to WAP applications and lists their characteristics.

Device Dependency

Today all statements toward designing WAP applications are extremely device dependent, e.g. different display sizes and availability of softkeys.

Therefore a simple and well-structured design is the best strategy for minimizing the problem of supporting different browsers as well as phones and other WAP devices.

Simplicity

When it comes to designing any kind of electronic service, simplicity is the key to gaining acceptance and appreciation from the users.

Simplicity is especially important in the context of use in a mobile environment since the user often needs to concentrate on other things besides using the terminal. Two examples for this are:

- Fully mobile, such as walking through the streets
- Semi mobile, such as sitting in a train

Thus restrictions apply due to the factors device, application and context. Some implications of this are the following:

- It should be unnecessary to remember codes, numbers, or other information from one part of the application to another.
- In situations of choice the users should be asked to make simple decisions rather than complex ones. Divide the problem if possible.
- **Good utilization of the extremely limited display space is important. Therefore avoid unnecessary blank space.**
- The user interface should be as simple as possible, but not simpler. Unnecessary information and functionality should be removed. In conventional office applications one rule of thumb says that 20% of the functionality is used 80% of the time. To simplify, we could say that in mobile applications it is often advisable to cut out this 80% in order to reduce complexity and increase usability.

Context of Use

The situation or context of use is more demanding than under the usual circumstances when designing "stationary" software for office use. When using a mobile device, the users will probably experience a larger number of interfering factors, which will distract their attention.

- We recommend that user testing on all services are done in a live environment.
- To assure that the application is usable, the design process should be user centered, rather than technology driven. If you start to think about WAP applications consider your:
  - Primary user group
  - Context of use
  - Primary user tasks

Information Access

Motto: Keep the Focus on the Task and the most Relevant Information, Functions / Links, ...

The tasks conducted on a WAP terminal can be divided into two major task types:

- Information retrieval, e.g. getting the latest news:
  Usually the users will prefer to use a normal PC based Internet connection to browse for information.
- Problem solving, e.g. getting information about and book the next connection flight:
  This makes it important to make sure that the users are able to work on their tasks by allowing quick access to brief information.

Focus on the most needed functions in relation to most important information regarding the focused task.

Keep an acceptable and understandable ratio between information value and interaction effort.

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Layout of WAP Screens

Cards and Applications | Header Titles | Content Lines/Area | Tool Bars | Softkeys

Below we present an overview of the layout and structure of WAP applications.

Cards and Applications

The basic screen for WAP applications is called a **card**. The screen layout for a card should contain from top to bottom:

- A header title
- Content lines
- An (optional) tool bar

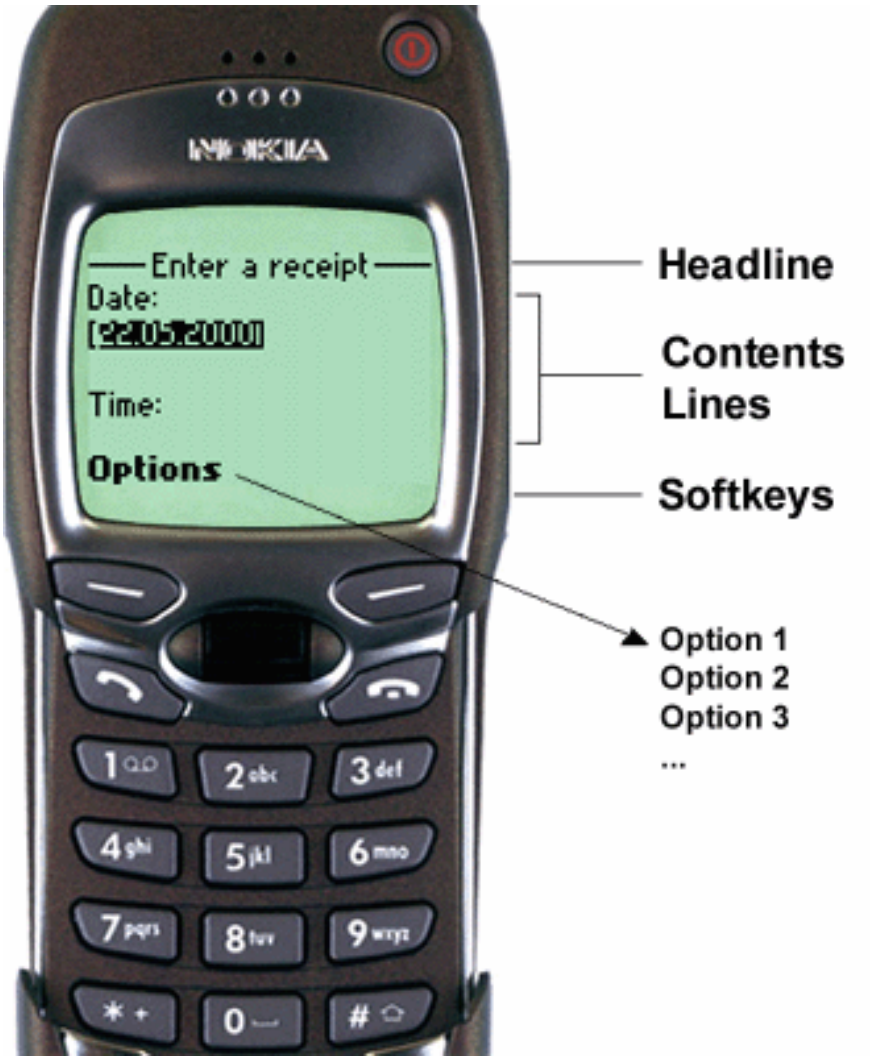

Figure 1: Layout of WAP screens

A WAP application may consist of several cards, may be combined in one **deck**, which should be linked together in a treelike or a

linear structure (see Navigation).

Make one of the cards the "home" card where users enter the application and where users can return to from any card within an application.

Header Titles

The **title** of a card should be descriptive so that users easily understand the purpose of the card or the WAP application. It has to be defined statically.

The header text should be determined by the item previously selected by the user.

Figure 2: Example for a header title with lines for emphasis

Content Lines/Area

The **content** lines of a card typically contain

- Text
- Fields for entering values
- Links for navigation
- Images, etc.

The number of content lines should be no more than 3-4 per screen, i.e. they should fit on one screen. Scrolling is possible on the phones, but often inconvenient.

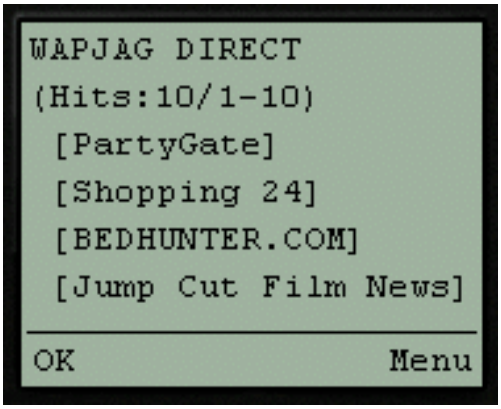

Figure 3: Example for content lines

Note: The different number of lines visible on the various phones make it very hard for the developer to determine a good place for input fields.

Tool Bars

The optional **tool bar** is always placed on the last line and includes 1-3 options. It typically contains options for:

- Navigation (e.g. back) and confirmation (e.g. OK) on the left side
- The options key menu which provides the functionality for a card and may contain local as well as global functions or links on the right side
- Also some devices have a third tool bar entry in the center, e.g. general phone functions

The toolbar items can be activated by using the corresponding softkeys.

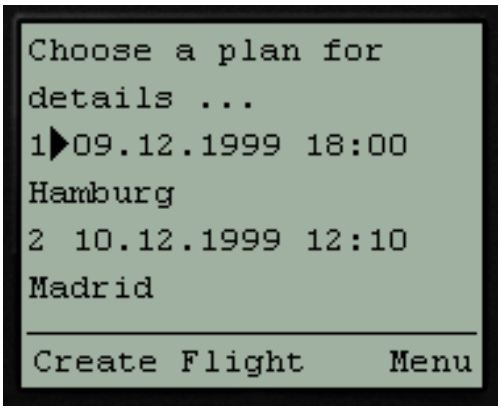

Figure 4: Example for a toolbar

Note: The appearance and usage of the toolbar is device dependent, e.g. navigation!

Softkeys

The phone might have a number of physical buttons - so-called **softkeys** - that work as navigational (e.g. scrolling) and selection (e.g. activate a hyperlink) tools for the user. The buttons are directly connected to act on WML screens elements.

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Using WML Screens

Overview | Text/Output Fields | Input Fields | Selection | Group Box | Tables | Links | Graphics | Toolbar (Menu, Options)

To design easy to use applications you can use the following WML based screen elements described below. Additional to the currently available interface concepts we discuss some SAP specific ones, e.g. group boxes, and show a way how to use these on a WAP screen.

Overview

The following screen elements are available for usage in WAP applications:

Element	Purpose
Text/Output Fields	Provide information or describe fields (label)
Input Fields	For entering values
Selection Fields	For selecting values
Group Box	For grouping fields and/or information
Table	For presenting tabular information
Softkey	For activating functions
Link	For navigation to other cards
Graphic/Image	Provide graphical information
Options	Provide an options menu with several items

Below you will find guidelines for using these screen elements.

Text/Output Fields

Text/Output Fields provide information or describe fields (label).

Note: See the section, which describes how to design texts, for topics such as formulations, abbreviations, hyphenation, use of country-specific characters, and also highlighting.

Input Fields

An input field is ready for input.

- The text label should appear before the input/output field.
- If there are several input fields, each should be in a separate line.
- Display a default value, if one exists.
- Required fields: All input/output fields on a card should be required fields; omit any optional fields.
- The input format (letter and/or digits) must correspond to the input context. If the input most likely will be letters, the input format should to be predefined to letters. Avoid a mixed input format with letters and digits, otherwise the user has to switch between different input formats.

Note: On some devices you get an extra input editor screen for input fields!

Selection

Instead of letting users input data, it is usually preferable and faster to let users choose from a set of predefined alternatives: selecting is faster and easier than writing.

- When the cursor stands on a dropdown listbox, use a key to display the list.
- Then the user should be able to make a selection.

Group Box

- Each card can act as one group box
- In case more group structures are needed, use a line to separate the items, but only one group box is recommended per screen.
- Each group box must contain more than one line.

Tables

We recommend to omit header titles for tables, if the values of the table can be understood easily.

There are two variants of tables, with editable fields and with non-editable fields.

Different cells can contain different objects, e.g. text, images, links, ...

In case of several columns, horizontal scrolling will be necessary. However horizontal scrolling should be avoided!

One technique that can be applied in order to avoid horizontal scrolling for multi-column tables is shown with a BW query of sales figures. Via options either a grouping by characteristics or key figures can be displayed for various sales periods.

Thus with this technique Group Sales, Costs and Operative Income can be displayed per sales period individually (see figure 1 below) or for all sales periods together.

Figure 1: Examples for tables on WML screens

Note: Tables are not available on all WAP devices!

Links

- Links are used for navigation to other cards, e.g. containing subtopic information or other services. They are a powerful tool for preventing long pages of text.
- Text links do not discriminate between unvisited, active and unvisited links.
- Text links are activated using the OK button on the phone.
- Do not use images as hyperlinks.
- The hyperlink should contain information what to expect if the link is selected.

Note: Links may be displayed differently on different WAP devices.

Graphics

If you want to use images on WAP screens consider the following aspects:

- Brand logo for service only as part of the content
- The image must contain valuable content information, e.g. chart images
- Do not use images for splash screens with no further content

- Do not use images for hyperlinks

Figure 2: Example for a graphic on a WML screen

Toolbar (Menu, Options)

Functions that are used on several cards within one application should always have the same placement and assignment to one softkey.

The SAP Menu is transformed into link lists: Consider that the user firstly walks through the menu in width and then goes down into one menu item.

Note: Menu structures which are more than three levels deep should be avoided!

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Navigation

Screen Structure and Sequences | Walking Through the Screens | Softkey Assignment for Navigation Purposes

Screen Structure and Sequences

When designing the sequence of steps or screens for the applications it should always be kept in mind that in particular for mobile applications the user should be offered a fast path. This fast path will be comprised only of the minimum number of screens.

A fast path should be offered no matter what navigational structure is used for the application.

If the user wants to read through additional information or there are several options he/she can choose from this should be structured in form of a tree structure. A tree structure is recommended because this allows the user to get back onto the fast path and prevents him/her of getting lost in the application (see also below). Thus in step four in the structure below (e. g. selection between three options) no navigation between the various tree branches is recommended.

The following figure shows an example for such a sequence:

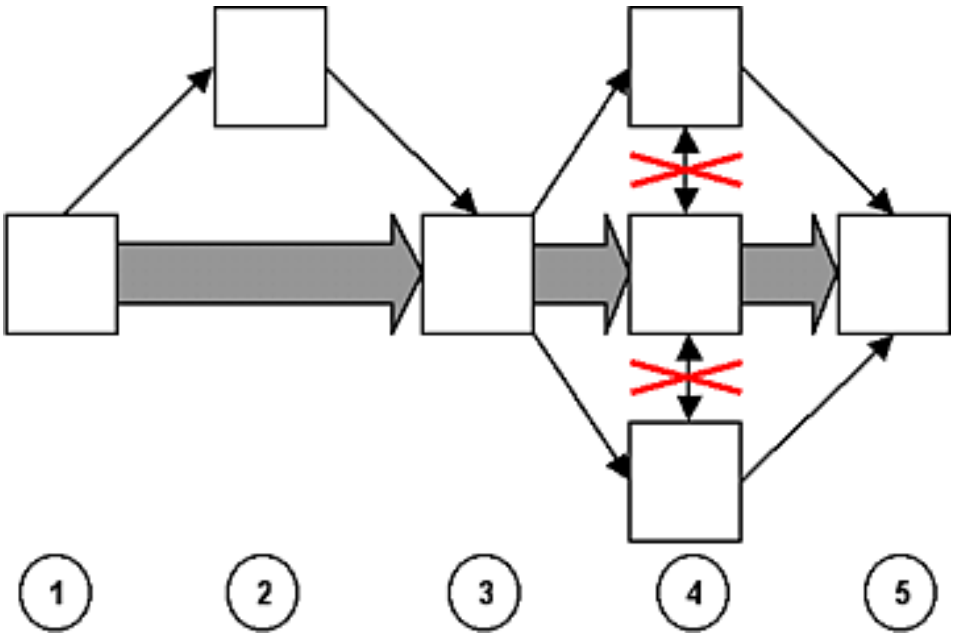

Figure 1: Example for a screen sequence

In case of searching a tree structure which allows browsing through categories, is sometimes, not always the best solution.

Walking Through the Screens

Being able to easily go back within an application is very important for mobile applications. Due to the limited display size applications might become nested and thus the user has to be able to step back while exploring the application. The availability of

a *Back* and/or a *Home* function gives the user the feeling of being in control of the application and prevents him/her of getting lost.

Softkey Assignment for Navigation Purposes

- The left key should be used to enter the menu structure (Options menu) and for execute commands.
- Exit menu structure (Options menu), cancel commands and navigating back in history should be assigned to the right key.
- Consider redundant function placement (link and Options menu).

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System Feedback

Success Messages | Error Messages | Help

Success Messages

If the system has executed a function the user should receives a confirmation message on the activity. For WAP applications such a success message is very important to give the user the control of what is going on. This is because there is only a limited possibility of online help available and also the user probably wants to stay online only as long as needed for completing the task.

Good:	New order with no. 1234 was created
Bad:	New record was created

Error Messages

- Avoid error messages if other ways on feedback are possible. The user should experience error messages only if it is strictly necessary.
- An error message should help users to overcome problem situations and to continue their work. Typically error handling is done by sending error messages that note the error, explain the reason for the error and - ideally - provide hints how to remedy the error situation.

Error Prevention Comes First!

Before handling errors, you should first ask how errors can be prevented.

WAP applications have little space for error messages, especially for messages that explain causes or provide hints for error recovery. This problem is counterbalanced by the fact that WAP applications typically have little functionality and that thus errors are less probable. However, this is not a satisfying answer to the problem of error handling. Therefore, the route to go is: Design WAP Applications so that errors cannot occur!

Help

Explaining Texts

Typically WAP applications should not have explaining texts on the screen. There may be exceptions, where special fields or status displays, alert or error indicators need explanation, but normally a WAP application should be self-explaining.

Field Help

There is no field help in WAP applications!

Value Help

Value help can also be provided by using dropdown listboxes instead of input/output fields, provided the number of possible values is small enough (typically less than 20 items).

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Formulations and Writing

Formulations | Shortened Sentences | Hyphenation | Upper-/Lower-case | Country-specific Characters

This section describes how to design texts. It deals with topics such as abbreviations, hyphenation, use of country-specific characters, and also highlighting.

Formulations

Terms

If possible, use terms that the users know and that they understand.

Suffixes

Except for the word "personnel number", you can do without the suffix "number". For example, we talk about a "vendor" and not a "vendor number". Use suffixes such as "key" and "indicator" only if they are necessary to understand the field.

Shortened Sentences

If you use short formulations, use the sequence verb -> noun (English) or noun -> verb (German) without the article. Avoid making verbs into nouns.

Exception: If several short phrases appear consecutively (for example, in a pulldown menu), the part containing the information, that is, the verb, is always written first. This also applies to German.

Examples

English	German
Enter account (alone)	Konto eingeben (einzeln)
Display account (for several)	Konto anzeigen (für mehrere)
Delete account	Konto löschen

Hyphenation

Do not hyphenate words on a screen, so that they extend over two lines. Write words with a hyphen in the same line.

Examples

Good: Enter all your relevant data into this dialog box.

The new object-oriented

User interface is fairly good.

Bad: Enter all your relevant data into this dia-

log box.

The new object-

oriented user interface is fairly good.

Upper-/Lower-case

Use both upper- and lower-case letters to improve readability. Do not use upper-case letters as design elements to highlight headers or other elements.

Examples

Good: Software ergonomics is an interdisciplinary science.

Bad: SOFTWARE ERGONOMICS IS AN INTERDISCIPLINARY SCIENCE.

Country-specific Characters

Use country-specific characters, for example, the umlaut and ß in German.

Examples (German)

Good: Möhren ärgern Spaßvögel übrigens nie.

Bad: Moehren aergern Spassvoegel uebrigens nie.

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Abbreviations

Space restrictions may necessitate the use of abbreviations in many situations: in dialog boxes, for field names in the applications, for lines in the menu bar or pulldown menus, and for function key names.

Do not use abbreviations if sufficient space is available.

Using Accepted Abbreviations

Refer to standard abbreviations such as listed in dictionaries and/or the ABAP Dictionary short forms. If there is already an accepted abbreviation for a word, use it. Use abbreviations only if you are sure that the user can easily understand them. In general, do not use abbreviations that consist of only one letter.

Examples

Good:	Dr.; Su.; min.; DEM
Bad:	Dctr; Snday; minmum; Deu. Mark

Creating New Abbreviations

If there is no accepted abbreviation available, words can be abbreviated according to the following guidelines arranged in order of priority:

1. Right truncate words

If possible, create abbreviations for individual words by omitting the end of the word. Menu options and function key names should have a period at the end of the word.

In a table column heading, also use the period, if possible.

Example: "abbreviation" becomes "abb."

Never use a closing period if the last letter of a word is contained in the abbreviation.

Example: "screen" becomes "scrn".

The word fragment "number" is generally no longer used in the field name. An exception to this rule is "Personnel number" which can be abbreviated to "Personnel no.".

2. Omit vowels

Omit vowels only if you cannot form a meaningful word fragment. Vowels that do not influence the pronunciation of the word very much can be left out.

Example: "group" becomes "grp"

3. Create an acronym

Create acronyms (artificially created new terms consisting of the first capitalized letters of the word fragments or individual words) only if this is clear from the application field (for example, GR for goods receipt in purchasing) or if this is required for table column headings.

Examples: "Data Processing" becomes "DP", "Human Resources" becomes "HR", "General Ledger" becomes "GL"

Abbreviating a Two-Word Structure

The guidelines for creating a new abbreviation apply here as well.

The individual word fragments are not separated by a period and not by space. Each new word fragment always begins with a capital letter if the previous word fragment has been abbreviated.

Examples

"Start date" becomes "StrtDate", "Document type" becomes "DocType", "Tolerance key" becomes "TolKey", "Object group number" becomes "ObjctGrp"

Abbreviating Several Words

Proceed as follows when abbreviating several words:

1. If the preceding word was abbreviated according to the guideline "Right truncate words", it should end with a period and be followed by a blank, if there is enough space.
   Examples:
   "Fixed vendor" becomes "Fix. vendor" or even "Fix.vendor",
   "Fixed capacity requirement" becomes "Fix. CapReq." or even "Fix.CapRep."
2. If the last letter of the word is used, insert a blank between the words.
   Examples:
   "Create new charge" becomes "Crte new chrg.", "Fixed vendor" becomes "Fixed vdr"
3. If the second or a following word is written in lowercase, use the lowercase.
   Example:
   "Fixed date" becomes "Fix. date"

Choosing from Several Words

If you look at the short descriptions in the ABAP Dictionary, you can also find complete phrases, such as "Fixed machine-related capacity requirements in hours".

For the abbreviation, only choose the significant words. You may need to change the word order to form a suitable abbreviation.

The guidelines 1. to 3. apply for the creation of abbreviations.

Example: "Fixed machine-related capacity requirements in hours" becomes "Mach.fix" or "Mach. fix"

Compounds

In the case of different abbreviations for words which consist of more than two word fragments, make sure that individual word fragments are not completely omitted. Otherwise, it could result in the impression that two different things are meant.

Example: "Minimum order amount" could be abbreviated to "MinAmount".

Here, it is better to use either "MinOAmt" or "MinOrdAmt", so that the word fragment "order" is not forgotten.

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Highlighting

Highlighting Types | Highlighting Usage

You can achieve better legibility in the work area of a screen by highlighting important or structuring elements.

Highlighting Types

From the ergonomic point of view, the possible types of highlighting can be divided into the following three groups:

Tolerable Highlighting

Use very sparingly and only in the case of an emergency (see below):

- Lines as single lines, interrupted lines and double lines
- Intensity (bold font)

Hardly Tolerable Highlighting

Avoid, if possible:

- Semi-graphic symbols such as * ! #

Ergonomically Bad Highlighting

Do not use on a screen:

- Uppercase, spaced text, flashing (inverse text)

Highlighting Usage

The highlighting in the first two groups is to be used only if all means of spatial and conceptual structuring have been exhausted.

As a rule, not more than 2-3 words of the screen should be emphasized.

Note: Highlighting with inverse text or bold font is not support on all WAP devices!


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